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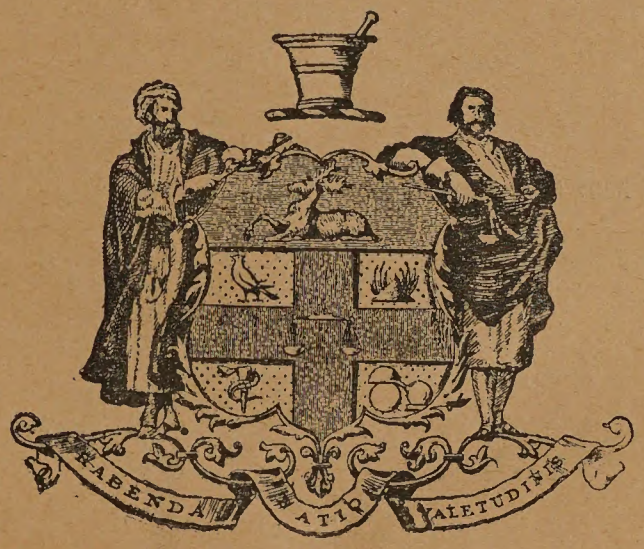

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CONTRACTIONS OF TITLES.

The following is a list of the contractions and the corresponding full titles of Journals most frequently used in "The Month," and elsewhere in the "Pharmaceutical Journal." The titles prefixed by an asterisk (*) are those of official Journals.

Amer. Journ. Pharm. = American Journal of Pharmacy. Philadelphia. Monthly.

Annalen = Justus Liebig's Annalen der Chemie. Liepzig. Monthly.

* *Apot.-Zeit.* = Apotheker-Zeitung. Organ of the Deutsche Apotheker-Verein. Berlin. Twice a week.

* *Apot. Zeit. Rep.* = Repertorium der Pharmacie. Supplement to the Apotheker-Zeitung.

* *Archiv* = Archiv der Pharmacie. Berlin: J. Greiss. Monthly.

* *Berichte* = Berichte der deutschen chemischen Gesellschaft. Berlin. Once or twice a month.

* *Brit. Med. Journ.* = British Medical Journal, London. Weekly.

Bull. com. = Bulletin commercial. Supplement to L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.

* *Can. Pharm. Journ.* = Canadian Pharmaceutical Journal. Toronto. Monthly.

Chem. News = Chemical News. London. Weekly

Chem. Zeit. = Chemiker Zeitung. Cöthen. Twice a week.

Chem. Zeit., Rep. = Chemisches Repertorium. Supplement to the Chemiker Zeitung.

* *Comp. rend.* = Comptes rendus des séances de l'Académie des Sciences. Paris: Gauthier-Villars. Weekly.

* *Journ. Chem. Ind.* = Journal of the Society of Chemical Industry. Monthly.

* *Journ. de pharm.* = Journal de pharmacie et de chimie. Paris: G. Masson. Twice a month.

Med. Press = Medical Press and Circular. London: A. A. Tindall. Weekly.

Mon. scient. = Moniteur scientifique. Paris. Monthly.

Münch. med. Woch. = Münchener medicinische Wochenschrift. Munich. Weekly.

Nouv. rem. = Les nouveaux rémèdes. Paris. Twice a month.

Pharm. Centralh. = Pharmaceutische Centralhalle Dresden. Weekly.

Pharm. Post = Pharmaceutische Post. Vienna. Weekly.

Pharm. Zeit. = Pharmaceutische Zeitung. Berlin: J. Springer. Twice a week.

* *Proc. Chem. Soc.* = Proceedings of the Chemical Society. London. About twice a month.

Répertoire = Répertoire de pharmacie, archives de pharmacie et journal de chimie médicale réunis. Paris. Monthly.

Scient. Amer. = Scientific American. New York. Weekly.

Union Pharm. = L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.

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"THE MONTH."

Persulphuric Acid and its Salts.

By electrolysis of a solution of sulphuric acid Berthelot obtained a compound having the formula $H_2S_2O_8$, which by reaction with water readily undergoes conversion into sulphuric acid and hydrogen peroxide or, when heated, into sulphuric acid and oxygen—

$$\left.\begin{matrix} H_2S_2O_8 \\ 2H_2O \end{matrix}\right\} = \left\{\begin{matrix} 2H_2SO_4 \\ H_2O_2 \end{matrix}\right.$$

or

$$\left.\begin{matrix} H_2S_2O_8 \\ H_2O \end{matrix}\right\} = \left\{\begin{matrix} 2H_2SO_4 \\ O \end{matrix}\right.$$

The known reactions of this compound are:—

1. Evolution of oxygen when heated.
2. Decoloration of indigo solution.
3. Elimination of chlorine from hydrochloric acid or sodium chloride.

Among the salts of this acid the most important is ammonium persulphate, $(NH_4)_2S_2O_8$. It is crystalline, soluble in two parts water, and is permanent at 100° C., but in the moist state is readily decomposed, yielding strongly ozonised oxygen. The salt can be prepared by electrolysis of a solution of ammonium sulphate. It gives the same reactions as the free acid, and when warmed with a solution of aniline sulphate it gives aniline black. A solution of fuchsine mixed with sodium acetate is bleached on addition of ammonium persulphate, and with a solution of manganese sulphate manganese peroxide is precipitated—

$$\left.\begin{matrix} MnSO_4 \\ (NH_4)_2S_2O_8 \\ 2H_2O \end{matrix}\right\} = \left\{\begin{matrix} MnO_2 \\ H_2SO_4 \\ 2NH_4HSO_4. \end{matrix}\right.$$

The ammonium salt can be used as an oxidising agent in alkaline neutral or acid solutions. The potassium salt is very sparingly soluble, and on adding potassium carbonate to a solution of the ammonium salt it is precipitated in a crystalline state. The reactions are represented by the following equations:—

$$3H_2S_2O_8 + 3H_2O = 6H_2SO_4 + O_3.$$
$$H_2S_2O_8 + H_2O = 2H_2SO_4 + O.$$
$$H_2S_2O_8 + 2HCl = 2H_2SO_4 + Cl_2.$$

Brunner has further studied this compound and its salts, and finds that when a warm solution of a persulphate is mixed with oxalic, tartaric, citric, or fat acid or the corresponding salts, immediate oxidation takes place with evolution of carbonic acid gas. A similar action is exercised on the alcohols, which are converted first into aldehydes and then into acids. Even resistant substances such as urea or caffeine are converted in a few seconds into carbonic acid and nitrogen, and these reactions may be applied for the purposes of quantitative analysis. Quinoline and pyridine are perfectly oxidised, but grape sugar only partially. Benzene, phenol, resorcin, benzoic and salicylic acid are coloured brown under the influence of persulphate salts, and yield intermediate products or are resinified or carbonised. Uric acid in presence of hydrochloric acid is not completely decomposed, but probably yields alloxan. Salicylic acid yields a yellow product (chloranil?). Nitrate of silver solution yields, with excess of persulphate, argentic peroxide, and even metallic silver becomes coated with that compound. Bromides and iodides are at once decomposed with evolution of bromine or iodine and the persulphates may be used for subjecting compounds to the action of nascent bromide or iodine. The easy production of ozone by the persulphates furnishes some probability that these salts may be of use in medicine, and it is suggested that since uric acid is so readily acted upon, a lithium persulphate may be usefully applied in the treatment of gout and rheumatism.—*Schweitz. Wochensch.*, 1897, p. 57.

Determination of Albumin in Urine.

Dr. Riegler, of Jassy, recommends the use of asaprol—calcium sulphonate of β-naphthol—as a means of determining albumin in urine. In an acidified solution albumin is entirely precipitated, and the reagent which is used for the purpose consists of—

Asaprol	8·0
Citric Acid	8·0
Water	200·

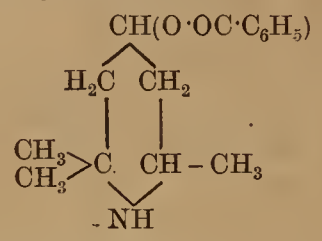
can be kept for any length of time without alteration. In testing for albumin about 10 C.c. of the urine is mixed with 15 to 20 drops of the reagent, and the presence of albumin in any considerable amount is indicated by a precipitate, and mere traces by distinct turbidity. When urine contains albumose or peptone, asaprol also gives a precipitate, but it disappears on heating, while that formed with ordinary albumin does not. Quantitative results may be obtained by using a graduated tube and measuring the bulk of precipitate produced on mixing known quantities of the reagent and of the urine to be examined. The asaprol reagent may be kept in the state of powder if more convenient. —*Pharm. Centralh.*, xxxviii., 349.

Bromalbumin.

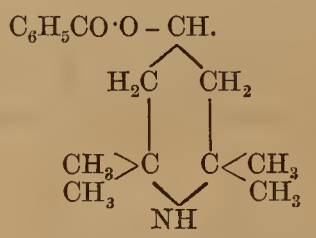
Under the name of "Bromosin" this compound has come into use since 1885, and in reference to it Professor O. Loew states that after removing loosely adherent bromine there remains 16·16 per cent. in a more intimate state of combination. After solution in ammonia and precipitating, there remains 13·10 per cent. bromine. On boiling bromalbumin with alkali, sulphur is not abstracted as in the case of ordinary albumin, and no tyrosin is formed by treatment with mineral acids. Millon's reagent does not produce a red coloration on boiling, though the biuret reaction takes place distinctly. Albumin which has been subjected to partial oxidation by treatment with potassium permanganate behaves in a similar manner, so that the groups affected by bromine are probably the same as those affected by incipient oxidation.

—*Chemiker Zeitung*, 1897, p. 264.

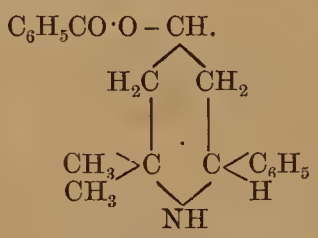
Cocaine Substitutes. Since the introduction of eucaine hydrochloride (see *Pharm. Journ.*, lvii., 337) statements have appeared as to its producing a burning sensation when the solution is applied to the eye, and another compound of the same class, which is a powerful local anæsthetic, has been recommended by Silex as especially adapted for use in ophthalmic practice (*Deutsch. Med. Wochensch*). It is a benzoyl-vinyl diacetone-alkamine having the constitution represented by the formula—



This compound is named eucaine B, in order to distinguish it from the eucaine salt first introduced, which is eucaine A, and it is stated by Silex to be very much less toxic than either cocaine or tropacocaine. The solubility of the hydrochloride at ordinary temperature is about 1 in 20 parts of water, and a 2 per cent. solution has been used with advantage in the Berlin Eye Hospital. This solution can be boiled for sterilisation without alteration. A patent has been obtained in Germany by E. Schering for the production of similar compounds by heating triacetone alkamine or benzal-dicetonamine or their salts with benzoyl chloride, so as to replace hydrogen by the benzoyl group—



Benzoyl triacetone-alkamine.



Benzoyl-benzal-diacetone-alkamine.

—*Pharm. Centrh.*, xxxviii., 355.

Reaction of Methyl Alcohol with Magnesium Nitride. Magnesium nitride and water react as shown by the following equation—

$$Mg_3N_2 + 6H_2O = 3Mg(OH)_2 + 2H_3N$$

and from the chemical as well as structural analogy between water and methyl alcohol it was to be expected the reaction with methyl alcohol would yield tri-methylamine—

$$Mg_3N_2 + 6CH_3OH = 3Mg(OH_2) + 2(CH_3)_3N.$$

But according to Szarvasy that is not the case altogether. The products are ammonia, tri-methylamine and magnesium hydroxy-methylate—

$$\left.\begin{matrix} Mg_3N_2 \\ 6CH_3OH \end{matrix}\right\} = \left\{\begin{matrix} 3Mg{<}^{OH}_{OCH_3} \\ NH_3 \\ N(CH_3)_3. \end{matrix}\right.$$

More ammonia is formed than is shown by the equation, and the solid product contains a substance with more carbon and less magnesia, probably $Mg(OCH_3)_2$, in consequence of another reaction.

$$\left.\begin{matrix} Mg_3N_2 \\ 6CH_3OH \end{matrix}\right\} = \left\{\begin{matrix} 3Mg{<}^{OCH_3}_{OCH_3} \\ 2NH_3 \end{matrix}\right.$$

In contact with water, magnesium hydroxymethylate swells up and is decomposed, yielding methyl alcohol—

$$Mg{<}^{OH}_{OCH_3} + H_2O = Mg(OH)_2 + CH_3OH.$$

—*Bericht*, 1897, p. 305.

Oxyethyl Bases. Oxyethylamine, $OH{\cdot}C_2H_4NH_2$, and the corresponding secondary and tertiary amines $(OHC_2H_4)_2NH$ and $(OHC_2H_4)_3N$, which may be regarded as amides of glycol, are of interest as the first oxygenated bases prepared synthetically and on account of their relation to choline. Their formation by the reaction of one, two, or three molecules of ethylene oxide with ammonia is analogous to the formation of glycols by the reaction of ethylene oxide with water.

$$\left.\begin{matrix} C_2H_4O \\ HOH \end{matrix}\right\} = C_2H_4{<}^{OH}_{OH}$$

Glycol.

$$\left.\begin{matrix} C_2H_4O \\ H_2NH \end{matrix}\right\} = C_2H_4{<}^{OH}_{NH_2}$$

Oxyethylamine or Ethanolamine.

$$\left.\begin{matrix} 2C_2H_4O \\ HOH \end{matrix}\right\} = C_2H_4{<}^{O}_{OH}{>}C_2H_4$$

Diethylene glycol.

$$\left.\begin{matrix} 2C_2H_4O \\ H_2NH \end{matrix}\right\} = C_2H_4{<}^{NH}_{OH}{>}C_2H_4$$

Diethanolamine.

$$\left.\begin{matrix} 3C_2H_4O \\ HOH \end{matrix}\right\} = C_2H_4{<}^{O}_{OH}{>}C_2H_4 \quad (C_2H_4OH \text{ on the OH})$$

Triethylene glycol.

$$\left.\begin{matrix} 3C_2H_4O \\ H_2NH \end{matrix}\right\} = C_2H_4{<}^{N(C_2H_4OH)}_{OH}{>}C_2H_4$$

Triethanolamine.

Knorr finds that these addition compounds, which are formed simultaneously, can be separated in the free state by fractional distillation, and he has described their several characters.

ETHANOLAMINE, $\begin{matrix} CH_2OH \\ CH_2NH \end{matrix}$ is a thick colourless liquid having an alkaline reaction and an odour resembling that of ethylene-diamine. It absorbs water and carbonic acid from the air, dissolves in water or alcohol in all proportions, but only slightly in ether. The aqueous solution acts upon the skin like potash or soda solution. Like hydrazin-hydrate, and ethylene-diamine, the base can be easily separated, even from weak solutions, in the anhydrous state, by distillation. The base boils at 171° C., and in its other physical characters closely resembles glycol.

DIETHANOLAMINE, $\begin{matrix} HOCH_2{\cdot}CH_2 \\ HOCH_2{\cdot}CH_2 \end{matrix}{>}NH$, is a thick syrupy liquid, crystallisable when cooled; the crystals melt at 28° C.; it is very alkaline.

TRIETHANOLAMINE, $N{<}^{CH_2{\cdot}CH_2OH}_{CH_2{\cdot}CH_2OH}_{CH_2{\cdot}CH_2OH}$ is a thick liquid boiling at 277°–279° under a pressure of 150 Mm.; it is a strong base, and can be separated from an aqueous solution by caustic potash, with which it combines, as glycol does, like an acid. When diethanolamine is heated to 160° C. with sulphuric acid (70 per cent.) it is converted by dehydration into morpholin, a compound bearing some relation to morphine.—*Berichte*, 1897, p. 909.

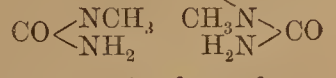
Convolvulin. Hochnel attributes to convolvulin the formula $C_{51}H_{96}O_{27}$. The tribromo derivative, $C_{51}H_{93}Br_3O_{27}$, has been prepared for the first time, the tribenzyl, $C_{51}H_{93}(COC_6H_5)_3O_{27}$, and the monoacetyl, $C_{51}H{\cdot}87(COCH_3)_9O_{27}$. The glucoside splits up with bases into three acids, convolvulinic acid, $C_{45}H_{80}O_{28}$, which is monobasic, purginic acid, $C_{25}H_{46}O_{12}$, and methylethylacetic acid.

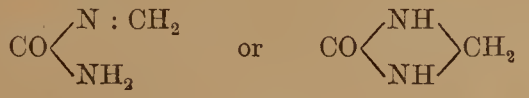
Quinine Testing. Kubli's "water test" for the determination of the purity of quinine sulphate (*Pharm. Journ.*, lvii., 157) has not been favourably received by quinologists, notably by Dr. Hesse and Dr. Albert Weller, both of whom consider that it has no advantage over the ammonia test. According to Weller, who again refers to the subject (*Pharm. Zeit.*, 1897, 40), tests carried out by Kubli's method on one and the same sample of quinine sulphate will frequently yield different results. Even with pure quinine sulphate one test required 9·4 C.c. and another test of the same sample 15·4 C.c. of water, showing a difference in the titration of 6 C.c. A sample of quinine sulphate (*Ph. G.*, ii.) required 15 C.c. by Kubli's water test, whilst the same sulphate after twice re-crystallisation from water required 18·2 C.c., thus condemning the purer salt; whereas the ammonia test required 9 to 10 C.c., and after re-crystallisation 6 C.c., being in accordance with the evidence of purification. Hesse would explain the great differences obtained in the water test by supposing that quinine sulphate can exist in two modifications, one of which has a low titre and the other a high titre. Weller considers that whilst there is much to be said in favour of Hesse's theory, it can also be explained in another way. In Kubli's test the solution of quinine sulphate, after having been boiled, is kept at a temperature of 20° C. for half an hour, and it is this cooling operation that influences the titration results, as the crystallising out of the cinchonidine sulphate with the quinine sulphate is a varying quantity, and there are, moreover, the phenomena of super-saturation and the formation of basic sulphates. Kerner and Weller have already studied these points, which occur in the crystallisation of pure and impure quinine sulphate at various temperatures, and accordingly they modified the original ammonia test, so as to overcome these difficulties as much as possible, by operating at a temperature of 60° C. Even then, as Hesse has remarked, there is still an error possible to the extent of 0·5 C.c. Finally, Dr. Weller is of Dr. Hesse's opinion that Kubli's water test is less to be relied on than the modified ammonia test, and that it is not suitable for official purposes. As giving evidence of the necessity of a due appreciation of the many points in connection with the proper carrying out of the ammonia test, Dr. Weller shows that the ammonia test of the *Pharm. Nederland*, iii., for quinine hydrochloride is inaccurate, and that the pure salt itself could not pass the test as there prescribed.

Products of Alcoholic Fermentation. According to Pasteur, the relative amounts of alcohol, succinic acid and glycerol produced in the alcoholic fermentation caused by yeast are constant within certain fixed limits, and the question whether that is also the case in fermentation caused by moulds (*schimmelpilzen*) has been investigated by Dr. Emmerling, with the result that, respectively to the alcohol produced, the glycerol amounted to 8·3 per cent. and the succinic acid to 1·4 per cent.; proportions which are the same as in the case of alcoholic fermentation caused by yeast.—*Berichte*, 1897, p. 454.

Rusting of Iron or Steel. In aërated water or alcohol, in moist air metals such as iron, zinc or aluminum oxidise readily, but in slightly alkaline water they remain bright. Maréchal therefore recommends that the needles of Pravaz syringes should be kept in solutions containing 2 per cent. of sodium carbonate, bicarbonate, borax, or in an alcoholic solution of sodium benzoate, a very minute amount of alkali appears to be sufficient for preventing rusting, as Maréchal has used a mixture of alcohol (95 per cent.) with one-fifth of borax, and found it quite effectual, though there could have been only a minute trace of borax in solution. —*Journ. Pharm. Chim.*, and *Ph. Centralh.*, 1897, p. 377.

Action of Formaldehyde on Urine. Diabetic urine mixed with a 40 per cent. solution of formaldehyde for preservation gives a larger reduction of Fehling's solution than is due to the glycose present (see Cotton, *Rép. Pharm.*, 1897, p. 54). Formaldehyde also combines with urea as well as with uric acid very readily when urine is acidified with hydrochloric acid. The uric acid compound remains in solution, and can be obtained crystalline by evaporation. The urea compound is very slightly soluble and is at once precipitated, so that it may serve the purpose of quantitative determination. C. Goldschmidt has continued his investigation of the action of formaldehyde on hydrochlorides of the amido compounds in this direction, and has prepared the urea compound, to which he gives the formula $C_5N_4O_3H_{10}$, according to which it would appear to result from the union of two molecules urea and three of formaldehyde, with elimination of two molecules of water. Its constitution is probably represented by the annexed formula, and its formation would resemble the reaction of formaldehyde with aniline hydrochloride (see Rackow, *Pharm. Centralh.*, xxxvii., p. 265). The more simple product of the action of formaldehyde on urea, methylene urea, obtained by Holzer and Ludy has the composition $C_2N_2OH_4$. Its constitution may be represented by —





or

and Goldschmidt's compound may be represented as originating from combination of two molecules of methylene urea with one of formaldehyde—

$$2C_2N_2OH_4 + CH_2O = C_5N_4O_3H_{10}.$$

—*Pharm. Centralh.*, xxxviii., 341.

This subject has since been studied by Thoms, who comes to the conclusion that the separation of the condensation product is only partial, and cannot be relied upon for determining urea. Further experiments have also led him to the opinion that the precipitate formed has the composition of methylene urea, $CON_2H_2CH_2$. —*Berichte Deutsch. Pharm. Gesellsch.*, vi., 161.

Value of Peptones. Denacyer classes peptones in regard to their capability of being assimilated as follows:— 1. Peptone produced by the action of steam on minced flesh. 2. Peptone produced by digesting the flesh with pepsin and tartaric acid. 3. Peptone produced by the action of hydrochloric acid. And he comes to the conclusion that the third kind is most effective from a physiological point of view, as it contains from 60 to 70 per cent. of true peptone. The second kind contains only 35 per cent. associated with acid amides, resulting from the action of tartaric acid, while the first kind contains chiefly syntonin, which may stimulate digestion, but is not in a condition to be assimilated.—*Répert. Pharm.*, 1897, p. 98.

Stability of Potassium Iodide Solutions. Dr. Eschbaum draws attention to the difference between concentrated and dilute solutions of potassium iodide in regard to elimination of iodine. Solutions containing 2 per cent. iodide remained for a year without any alteration, but solutions containing from 20 to 50 per cent. of the salt soon showed signs of decomposition, although the water used in both cases was the same. The stronger the solution the sooner decomposition became apparent. Dr. Eschbaum infers from his observations that other influences beside that of active oxygen must be concerned in the alteration.

—*Pharm. Zeitung*, 1897, p. 353.

Determination of Potassium. H. N. Warren thinks the following operation more expeditious and accurate, whilst less troublesome, than the general methods advised for the determination of potassium. A solution containing alkaline chlorides, from which the accompanying group metals have previously been removed, is heated with excess of platinic chloride, and the whole evaporated to a very small bulk in a platinum dish. Then add to the contents about double the original quantity of a mixture of equal parts of amylic alcohol and ether. A dense yellow precipitate is thus obtained, which can be washed once or twice with great facility. It is next placed in a small glass beaker with about 5 C.c. of formic acid and heated to boiling point. When the solution assumes a brownish tint, a slight excess of ammonia is introduced and the mixture again boiled, when the whole of the platinum is precipitated in the form of black flocks, which may readily be washed and dried. Finally, the platinum is weighed, and the percentage of potassium present calculated from the weight.—*Chemical News*, lxxv., 256.

Coloration of Haloid Salts. Under the influence of the cathode rays haloid salts of alkali metals acquire a more or less intense coloration, which was supposed by some to be the result of allotropic modification, and ascribed by others to a reduction of metal. By heating the crystals to redness in potassium or sodium vapour, Giesel has produced a similar result, and it appears that the colour depends on the nature of the salt. Potassium bromide or iodide is coloured clear blue, potassium chloride violet, and sodium chloride brown. The colours resist the action of air, but on dissolving the salts in water colourless solutions are obtained, as in the case of the natural blue rock salt. Salts coloured in this way, as well as those coloured by the cathode rays, lose their colour when heated to a sufficiently high temperature.—*Berichte*, 1897, p. 156.

Triphenyl Albumin. Prepared by heating dry powdered egg albumin with ten times its weight of phenol on a water bath and precipitation with alcohol. The flocculent precipitate is then washed with alcohol and water: it is free from taste or smell, insoluble in hot water, alcohol or potash solution, but readily soluble in phenol. According to Shimada it is albumin in which three hydrogen atoms—in Leberkuhn's formula—are replaced by phenyl groups, $C_{72}H_{109}(C_6H_5)_3N_{18}SO_{22}$. Triphenyl albumin is described as being a good material for the culture of bacteria, and it is susceptible of fermentation like ordinary albumin.—*Chem. Centralb.*, 1897, p. 18.

Isomerism of Inorganic Compounds. Sabanijew has prepared hydroxylamine hypophosphite, $NH_3O \cdot H_3PO_2$, and examined it comparatively with acid ammonium phosphite, $NH_3 \cdot H_3PO_3$, which has the same percentage composition. He suggests the probability that these salts are structurally isomeric. Both salts were ascertained to have the same molecular weight from the lowering of the freezing point of their solutions. The author purposes extending his observations to other compounds which do not contain carbon.—*Chemiker Zeitung*, 1897, p. 267.

Crystalline Thorium Nitrate. This thorium salt, which is used in the preparation of incandescent mantles may according to Fuhse be readily crystallised from a water solution and in that form would be a more trustworthy material than the granular mass now met with in commerce. The crystals are large acute pyramids having a composition represented by the formula, $Th(NO_3)_4 + 6H_2O$. —*Zeitsch. Angew. Chem.*, 1897, p. 115.

Chrysoidin. This name is given to diamidoazobenzene hydrochloride, $C_6H_5-N=N-C_6H_3(NH_2)_2 \cdot HCl$. It is one of the azo colour materials which has recently become of interest in medicine on account of the statement made by Blachstein (see last vol., p. 508) that it is a specific against Koch's cholera vibrio. It is a reddish-brown crystalline powder, soluble in water. According to Blachstein it has the same effect upon the comma bacilli of cholera as the bactericide cholera serum, causing a precipitation of the bacilli in the agglutinated condition, but without affecting any of the other kinds of bacilli. Blachstein considers that chrysoidin may be usefully applied for the disinfection of sewage and medicinally as an application for washing the mouth, etc. For disinfection of the intestinal canal it cannot be used, as it is absorbed in the stomach and excreted by the kidneys. Some doubt has been thrown upon Blachstein's observations by Sobernheim, who was unable to obtain similar results. —*Merck's Bericht* for 1896.

Production of Ethyl Sulphuric Acid from Gases Containing Ethylene. When ordinary coal gas is passed through concentrated sulphuric acid, the formation of condensation products from the hydrocarbons present is the first effect shown by the darkening of the acid. Fritzsche considers that these products interfere with the absorption of ethylene, and to avoid that he first washes the gas with moderately dilute acid heated to 70° or 80 C. before passing it into the absorption chamber, where it is brought into contact with concentrated acid at a temperature of 110°–120° C., and in that way a considerable quantity of ethyl sulphuric acid is formed.—*Zeitschr. Analyt. Chem.*, No. 5, 36.

Ichthalbin. The internal administration of ichthyol is attended with inconvenience, owing to the disagreeable smell and the eructations it causes: as a means of overcoming these difficulties Dr. Sack has suggested the use of a compound of ichthyol with albumin, which is odourless and tasteless, and has the further advantage of passing through the stomach unaltered, but of being decomposed into ichthyol and albumin when in contact with the alkaline contents of the intestine. Ichthalbin is a greyish-brown powder, and the dose is from 1 to 2 grammes two or three times a day. —*Deutsch. Med. Wochensch.*, 1897.

Spontaneous Oxidation. In contact with air and under the influence of light ether and various other liquids undergo oxidation and give indications of hydrogen peroxide when tested with bichromate and sulphuric acid. Jorissen finds that under the same conditions amyl alcohol undergoes oxidation, and that the development of hydrogen peroxide is accompanied by formation of valerianic acid. —*Journ. Pharm. Chim.*, 1897, p. 59, and *Ph. Centralh.*, p. 353.

Preparation of Lactic Acid. Professor Kassner points out that the use o zinc oxide for neutralising lactic acid produced by fermentation so as to obtain zinc lactate without subsequent decomposition of the calcium lactate produced when chalk is used, does not answer so well as the older method, and he attributes the difference to the formation of a soluble zinc salt which destroys the micro-organism that produces lactic acid. He therefore recommends that chalk should be used instead of zinc oxide, and that in the subsequent treatment of the calcium lactate solution with zinc chloride an excess of the latter should be avoided, as it prevents the crystallisation of zinc lactate —*Apotheker Zeitung*, 1897, p. 325.

Dextroform. Under this name a preparation has been introduced by Professor Claassen as an antiseptic which is especially useful in the treatment of gonorrhœa. It is a compound of dextrin with formaldehyde, and has the advantage over amyloform, the similar compound with starch, that it is readily soluble in water or glycerin. It is a colourless powder almost free from taste or smell, insoluble in ether, alcohol or chloroform; when heated it becomes yellowish or brown, and at 200° C. it begins to melt, swelling up and giving off formic acid, acetic acid, and other products until it burns without leaving any considerable residue. At a temperature of 105° C. dextroform undergoes no alteration, and therefore dressings prepared with it can be sterilised without danger. The water solution is quite neutral, and is not coloured by iodine or rendered turbid by baryta water.—*Pharm. Zeitung*, 1897, p. 422.

Separation of Calcium from Barium and Strontium. The detection of calcium in presence of barium or strontium and its separation from those metals can be effected according to Rawson by means of the nitrates, calcium nitrate being almost insoluble in strong nitric acid, while barium nitrate and strontium nitrate are both very soluble in nitric acid.—*Journ. Soc. Chem. Ind.*, 1897, p. 113.

Test for Iodine. According to Wachhusen, paraldehyde is a delicate reagent for iodine. On mixing a solution, containing iodine, with starch paste and adding a few drops of paraldehyde without shaking, a reddish or blue colour is developed at the line of contact of the two liquids, or the liquid to be tested may be shaken with some paraldehyde and then either mixed with starch paste or shaken with carbon bisulphide to remove the iodine. In this way iodine can be detected in solutions containing only 1 part in 500,000, or even in 1,000,000 parts. —*Pharm. Zeitung*, 1897, p. 95.

Phospho-Guaiacol Is a definite compound prepared by Ballard by reaction of phosphorus trichloride and guaiacol in alkaline alcoholic solution. It is a colourless crystalline powder, containing 7·75 per cent. phosphorus; it is soluble in water, readily in alcohol, ether, and benzene, is not caustic, and is tolerated in doses of 6 to 8 grammes. PHOSPHATOL is a similar preparation, obtained from creosote as a thick reddish-brown liquid. —*Rép. Pharm.*, 1897, p. 104.

Kreosolid Under this name Dr. Denzel, of Tubingen, has introduced a magnesium compound of the divalent phenols of creosote: it is a white powder with slight smell and taste, has no caustic action, and can therefore be taken without discomfort. In the stomach guaiacol and creosol are liberated in a minute state of division by the acid there present. The dose is seven grains four times a day. —*Therapeut. Monatsh.*, 1897, p. 292.

Kryofin. A p. phenetidin derivative, corresponding to phenacetin, obtained by heating p. phenetidin with methyl glycolic acid. As a condensation product its formation is represented by the equation

$$\left.\begin{matrix}CH_3OCH_2COOH\\NH_2C_6H_4OC_2H_5\end{matrix}\right\} = \left\{\begin{matrix}CH_3OCH_2CONHC_6H_4OC_2H_5\\H_2O\end{matrix}\right.$$

Kryofin dissolves in 600 parts cold water, 52 parts boiling, it is comparatively tasteless, and crystallises from water in white odourless needles, melting at 98°—99°C. It is recommended by Professor Eichhorst, of Zurich, as more active than phenacetin in allaying neuralgic pain.—*Deutsche Med. Wochensch.*, 1897, p. 257.

Tannalbin. The preparation of this article has been modified by the makers, Knoll and Co., by subjecting the precipitate produced on adding tannic acid solution to a solution of albumin to treatment with alcohol or with a large quantity of hydrochloric or other acids, and a patent has been obtained for this method of manufacture.

Influence of Organic Substances on Precipitation. The statement, frequent in manuals, that the hydrates of iron, nickel, and copper are not precipitated from solutions containing fixed organic substances is only partially correct according to Roscowski. Precipitation is prevented chiefly by the polyvalent alcohols and acids, carbo-hydrates, some amido acids, and the polyvalent phenols and phenolic acids. —*Zeitsch. anorg. Chem.*, 14/1.

Alexandrian and Indian Senna. L. E. Sayre distinguishes the two kinds of senna in powder by the number of leaf hairs present. He places a portion of the No. 60 powder in a small homœopathic vial and adds to it twice its volume of a mixture of glycerin and water in equal parts. After thoroughly shaking, a drop of the turbid mixture is placed on a glass slip, a cover glass imposed, and heat applied to remove air-bubbles or too great opacity. It is claimed that if the number of tips of hairs present is abundant —"one to four in each field of a ¼-inch objective—" Alexandrian senna is present. Confirmation of the fact is obtained by examining several fragments of the normal epidermis for stomata. If many are found that are quite round in outline, the presence of Alexandrian senna is said to be assured. The hair-scars upon the epidermal fragments should be found frequently at a distance of from two to five epidermal cells apart. Indian senna, on the contrary, exhibits few hairs, often none in the field, and the great majority of the stomata are found with the long diameter much longer than the short one. The hairs should not often be closer than five epidermal cells apart. It is stated that in simple powders the mere number of hairs will at once distinguish between the two kinds of senna, but in cases of mixtures of the two the shape of the stomata must also be examined. It is stated that many of the elongated oval form always indicate the presence of Indian senna.—*Amer. Journ. Pharm.*, lxix., 298.

Andrographis paniculata. The Karajàt or Creyat of the Indian bazaars has been offered during the present month as Chirata, and it is understood that a lot of twenty-one bales is being offered by a London broker, of which four have been already sold. The drug will probably not fetch its value, and the present is therefore an excellent opportunity for investigating its bitter principle. An account of the plant is given in Bentley and Trimen's 'Med. Plants' and in 'Pharmacographia,' and its histology has been dealt with by Professor Greenish (*vide Pharm. Journ.* [4], vol. i., p. 413).

Adulterants of Jaborandi. According to Dr. Albert Schneider, certain differential characters of true and false jaborandi leaflets can readily be recognised when the leaflets are in the powdered state, whether mixed or not. No. 80 to 100 powder should be mounted in a mixture of equal parts of glycerin and water, or of the same with alcohol. Pernambuco jaborandi (*Pilocarpus jaborandi*, Holmes) is recognised by the large size of its epidermal cells; Rio jaborandi (*P. selloanus*, Eng.) has smaller epidermal cells, and differs from other varieties in having no sphæro-crystals or other epidermal cell contents, and no long curved hair cells or resin cells; Paraguay jaborandi (*P. pennatifolius*, Lem.) contains markedly reddish-brown resinous

substances in the various tissue elements and coloured guard cells; Aracati jaborandi (*P. spicatus*, St. Hil.) has its epidermal cells filled with sphæro-crystals and resinous substances; Ceara jaborandi (*P. trachylophus*, Holmes) is characterised by long palisade cells and numerous long sickle-shaped hair-cells on the lower surface of the leaflets, with a few shorter ones on the upper surface; Maranham jaborandi (*P. microphyllus*, Stapf.) has guard cells and companion cells filled with yellowish granular contents, whilst the contents of the resin cells are of a dark olive colour; false Maranham jaborandi (*Swartzia decipiens*, Holmes) is recognised by the wavy outlines of the vertical walls of the epidermal cells.—*Journal of Pharmacology*, iv., 141.

Proteids of Seeds.

T. B. Osborne and G. F. Campbell find that both yellow and blue lupin seeds contain very little proteid matter soluble in water. The total quantity obtained from the yellow lupin amounted to 0·37 per cent. only, and of that part consisted of proteose. Peptone is not contained in the freshly-ground seed, but is formed in small quantity after prolonged contact with water. The proteid matter soluble in saline solutions was found to be conglutin, the yellow lupin yielding 26·2 per cent. Sunflower seeds yield a large quantity of a globulin, probably edestin, but as obtained by extraction from the seed it is mixed with helianthotannic acid. The chief proteid of the cow-pea (*Vigna catjang*) is also a globulin, essentially different in composition and properties from the legumin of the pea and vetch. The name proposed for it is "vignin." Besides this the cow-pea contains two other globulins, one resembling phaseolin. The white-podded adzuki bean (*Phaseolus radiatus*) contains phaseolin and a distinct globulin, which is being further investigated. —*Journ. Am. Chem. Soc.*, xix., 454, *et seq.*

Collecting Papaw Juice.

F. B. Kilmer recommends that an incision, not more than ⅛ inch deep, be made lengthways in the green and full fruit, and the juice collected in tin pans made so as to surround the trunk of the tree. The collection should take place early in the morning, as the sun quickly dries the juice and so stops the flow. The yield is much larger just after a rain storm or a spell of wet weather. The juice must be dried in the sun the day it is collected, after spreading out thin in the tin pans or on sheets of glass.—*Bull. Bot. Dept., Jamaica*, iv., 68.

Blue Grass Manna.

R. T. Baker and H. G. Smith describe a true manna found on a "blue grass," *Andropogon annulatus*, Forsk. Its chief constituent is mannite, of which it yields 58 per cent., together with glucose and other sugars. The manna is mostly white, and in general appearance resembles eucalyptus manna. It is sweetish to the taste, not moist, breaks easily into fragments, and feels slightly greasy.—*Proc. Roy. Soc., N.S. Wales.*

On the Ginger-Beer Plant.

Professor H. M. Ward has previously pointed out the resemblances between kephir and the symbiotic compound organism known as the ginger-beer plant, and he has also given reasons for believing that the bacterium is introduced with the sugar used. He now has good reason for believing that the early accounts of kephir are not correct, or that there are several distinct varieties of that and other ginger-beer plants, and that in all cases the Schizomycete he named *Bacterium vermiforme* is concerned, but associated with different yeasts. In any case it appears certain that the bacterium can be artificially made to form a symbiotic union with other yeasts than the one he used in 1892, the aerobic yeast protecting the anaerobic bacterium. He now describes a case of an aerobic bacterium, derived from grains produced as excrescences on the sugar-cane in Madagascar, which is capable of fermenting sugar to carbonic acid and some other organic acid, and requires merely such traces of nitrogen as would be present in moist sugar. The liquid produced had a pleasant acid flavour at the end of the fermentation.—*Annals of Botany*, xi., 341.

Fungi for Class-Work.

W. G. P. Ellis obtains class-material for *Telletia* by breaking up three or more bunted grains of wheat in water contained in a small evaporating dish. The seed-wheat required is weighed or counted out and added to the water, stirred thoroughly and carefully, and then allowed to dry, stirring being continued as drying proceeds, so as to get the spores well distributed. The seed may then be sown. Barley is infested with smut by soaking in water for about twenty-four hours, then removing the chaff and stirring up the naked kernels in a little water in which several grains of smutted barley have been broken. Allow the grains to dry and then sow. The petioles and midribs of *Solanum laciniatum* are depended upon for a supply of *Phytophthora infestans*, and are said to furnish material much superior to potato leaves.—*Annals of Botany*, xi., 333.

Stearic Acid in Spermaceti.

Hirschsohn recommends the following quick and easy process for the determination of adulteration with stearic acid:—1 gramme of spermaceti is dissolved in 10 C.c. of petroleum ether. If the solution is turbid this points to impurity. Shake with an equal volume of aqueous copper acetate solution (1 : 1000). It is stated that 2 per cent. of stearic acid can easily be recognised by means of the resulting green coloration of the petroleum ether.—*Pharm. Centralh.*, xxxviii., 283.

Physiological Effects of X Rays.

According to Destot, the serious effects which are sometimes observed to follow the exposure of the skin to the influence of Röntgen's rays are not due to the rays themselves, but are to be attributed to electrical disturbance produced, which acts upon the sensitive nervous extremities. The unpleasant after-effects are not met with when a static machine is used as the source of electricity for the tubes; and with dynamic electricity no ill effects follow if the rays are first caused to pass through a sheet of aluminum connected to earth, which, however, is perfectly permeable by the X rays. The two forms of electrical discharge had also a marked difference in their action on the pulse. When the current was derived from a dynamo, a marked irregularity in the sphygmographic tracings was observed. It was further noted that the field of electrical disturbance is limited; the nearer to the tube the subject was placed the more pronounced were the effects obtained. The conclusions point to the fact that the X rays themselves are quite devoid of physiological action.—*Comptes rendus*, cxxiv., 1114.

Sea Sickness.

Mosel-Lavalée recommends as a remedy for sea sickness the following preparation:—

	Grammes.
Menthol	0·1
Cocaine Hydrochloride	0·2
Alcohol	60·0
Syrup	30·0

A dessert-spoonful to be taken at intervals of half and hour.

Elastic Varnish.

Dr. Klein recommends a mixture of Peru balsam with nine times its weight of collodion as a suitable material for protecting small wounds. It forms an elastic and very adherent coating which is not removed by repeated washing.

—*Therapeut. Monatsh.*, 1897, p. 238.

OUR MOTHER TONGUE *

BY F. A. UPSHER SMITH.

The interest taken in Mr. Brudenell Carter's address at the opening of this session by numbers of our fellow-craftsmen throughout the country must be my excuse for dealing with a subject so familiar to all of you. In these few remarks I wish to speak as a student to fellow-students, and I ask your patience whenever I may tell you something you already know perfectly well.

Value of a Sound Knowledge of Etymology.

The leading thought in my mind is that a sound knowledge of etymology is of real value to all Britons, and to none more so than to those engaged in the study of science. I will endeavour to illustrate this idea by examples. One often hears students say that Botany would be a most interesting study if it were not for the multiplicity of terms with which that science is endowed. Truly the mere committing to memory of long names and their meanings is sufficiently irksome to justify this objection. But this is not the right way to learn botanical terms. If each term be looked up in a dictionary, and its derivation noted, its meaning will suggest itself more readily, and the word will no longer appear formidable and senseless. For some people have an idea that many high-sounding names have been coined by some idiotic learned persons merely to bewilder unfortunate students. Thus protoplasm is formed from two Greek words, πρῶτος, first, and πλασμα, anything formed or moulded [πλασσω, I mould]. Hence it means "what is first formed," and readily paves the way for a definition of protoplasm as "the basis of living matter in animal and vegetable tissues."

In general usage we have the word "stalactite." The Greek σταλακτος means a "trickling or dropping" [σταλασσω, I let fall or drop]. How ingeniously the derivation suggests the continuous percolation of water through the crevices of rocks, which results in the very gradual deposition of the lime of which these magnificent crystals are composed.

In materia medica we find that "hydrastis" takes its name from "ὑδωρ, water, and δραω, I draw," from its supposed diuretic qualities. "Podophyllum" is literally "foot-leaf," from πους, a foot, and φυλλον, a leaf, in reference to the similarity which the leaf of this plant bears to the feet of some aquatic birds.

"Tropaeolum," the genus to which the nasturtium belongs, has reference to the morphological features of the plants of this genus, because their leaves are shield-like in form and their flowers helmet-shaped, these together forming a τροπαιον, or trophy. And "nasturtium," by the way, is so called on account of the acridity of its smell, being made up of the two words, "*nasus*, a nose," and "*torqueo*, I twist."

Coleridge said, "In order to get the full sense of a word we should first present to our minds the visual image that forms its primary meaning." Take, for instance, the word "desultory." In the Roman circus a desultor was a man who rode several horses round the arena at the same time, taking his name from "*de*, and *salio*, I leap." Therefore, a "desultory" person is one who goes from one occupation to another, never persevering with any one subject, whether of thought or action, just as a circus rider leaps from one horse to another, never remaining long on the back of any one of them.

"Caprice" comes from "*capra*," Latin for "a goat," and is applied to movements of the mind, so unaccountable and so unpremeditated, that they can only be likened to the springs and bounds of that agile animal, as it leaps from rock to rock, to and fro, and from side to side. Such meanings as these unfold new beauties in our mother tongue, and give to our minds clearer conceptions of the fitness of the words we every day employ.

Labour, like virtue, or perhaps as a part of virtue, brings its own reward. Our dictionary-hunting will often reward us far beyond our expectations.

I was curious to know whether the word "halcyon" like "halogen" is derived from the word ἁλς, meaning salt; my trouble was rewarded by finding that the word is connected with a most interesting legend. According to the Ancients, the Halcyon or King-fisher was able to charm the sea, so that there was calm weather for seven days before and after the winter solstice, during which period she was brooding over her nest.

Sometimes philosophy gleams through a word as we trace it back to its primary meaning. Take the word "prejudice." It originally meant nothing more than a preconceived judgment. But, alas for the depravity of the human race! so prone are we to form unkind opinions of our fellow men, that in course of time the word has acquired an unfavourable meaning when used in an absolute sense.

Many names of things are derived from their place of origin. As examples may be cited: "Carrageen," from Carragaheen, near Waterford, where Irish moss grows most plentifully. The "magnet" takes its name from Magnesia, a city in Asia Minor, as also does "magnesia," the well-known medicine. "Sherry" first came from Xeres, a town in Andalusia, in southern Spain. "Strontium" owes its name to a mining village in Argyleshire, where the mineral strontianite was first discovered. Jalap came from Xalapa in Mexico; and "parchment," it is said, from Pergamum, or Troy, of classic fame. We are told that the first "guinea" was coined in 1663 from gold brought from the Guinea Coast of Africa. The "cherry" was first brought by Lucullus from Cerasus, a city in Pontus; hence also the adjective of colour "cerise." "Spaniels" were first brought to England from Spain; "bayonets" from Bayonne, a town in southern France, just north of the Pyrenees. The word "sybarite" carries us back to Sybaris, an ancient Greek city of southern Italy, the inhabitants of which were noted for their devotion to luxury and self-indulgence.

Results of Analysis of Words.

The analysis of some words, as a rift in the cloud which obscures the far-away past, gives us an interesting glimpse of ancient life, manners, and customs. Take the word "sycophant"; it originally meant a "fig-informer" [συκον, a fig; and φαινω, I show], *i.e.*, a man who informed against persons exporting figs from Attica, which was contrary to law. Hence, by a transference of meaning, we understand nowadays by sycophant a flatterer or parasite.

Our word "stipulation" comes from "*stipula*," a "straw," in allusion to the Roman custom of breaking a straw when two persons came to an agreement. Let me mention another word—"rival." "*Rivus*," you will remember, is Latin for a "brook," and "rivales" were those who dwelt by the same brook, *i.e.*, neighbours. Now it followed that the dwellers on opposite banks were often at strife with regard to the periods during which they severally had a right to the use of the stream; thus "rivals" were people engaged in any sort of unfriendly competition. But nowadays the word does not imply so much enmity and ill-feeling as it originally did.

I must, in all fairness to Max Nordau and to the advocates of the doctrine of degeneration, instance a word whose meaning has certainly suffered demoralisation. It is the word "blackguard." It dates back from olden times when a prince or nobleman was journeying from one residence to another. Palaces of those times not being so well furnished as at the present day, it was customary at such a removal to carry with the household all kitchen utensils, pots, pans, and even coals. Those of the retainers who had charge of these "*arma Cereris*" were called the "black-guard," since they formed the lowest, meanest, and dirtiest members of the retinue. In course of time the word, which, strictly speaking, was two words, "black guard," was applied to any disorderly mob, and lastly to individuals comprising such a mob. To-day the word means morally bad, *i.e.*, a scamp or scoundrel.

The memory of many illustrious men is kept alive in names: a few examples of this will readily suggest others. The great Swedish chemist Scheele gave his name to the pigment, Scheele's green, of which he was the discoverer. The water plant "*Vallisneria*" takes its names from an Italian naturalist named Vallisneri, and in the same way we have the name of the drug "krameria" from Kramer, a Hungarian physician. "Cinchona" is so called after the wife of the fourth Count of Chinchon, the Spanish Viceroy of Peru; it appears that she was cured of a tertian ague in 1638 by the use of Peruvian bark, and on her return in 1644 introduced it into Europe. When we speak of a "stentorian" voice we call to mind a certain Greek herald named Stentor, who was celebrated for his powerful lungs. Other instances of this style of nomenclature are found in boycott, macintosh, macadamize. The "cravat" was so called after the Croats, a wild soldiery who entered the service of the French during the Thirty Years War, and introduced that article of dress into Western Europe.

We occasionally find a connection existing between words having no apparent relations. Thus "earth" is that which is "eared"; "wrong" is the past participle of "wring," and means that which is "wrung" or "wrested" from the right; the "brunt" of the battle is the heat of the battle, where the fight rages or "burns" the most fiercely; "slide" and "sledge" have a common origin; so, too, have the words "shire," "shear," "share," "shears,"

* Read before the School of Pharmacy Students' Association.

"shore," "shred," all from an old English word meaning to divide. The "haft" of a knife is that part by which you "hold" or "have" it.

CHANGE IN MEANING OF WORDS.

Many words have undergone a change of meaning since first they were introduced. Thus, "carriage" formerly meant the "baggage," or that which was carried. Thus we read in the Acts, "We took up our 'carriages' and went up to Jerusalem." The word also means the price or expense of carrying goods, by a further extension of meaning.

Our word "character," too, has acquired a secondary meaning. It formerly signified the tool (Greek, χαρακτηρ) which was used in engraving, and became transferred to the marks or letters engraved with it, just as we speak of "Roman characters." But inasmuch as objects often have marks, signs, or tokens which may indicate them, as well as artificial "characters," the name was generalised, and now means any peculiar or distinctive mark or quality by which an object is easily recognised. In scientific nomenclature we find the same process has taken place. Thus, "soap" in ordinary usage is applied only to a compound of soda or potash with a fat, which is intended for "cleansing" purposes, but in pharmacy the term is extended to any compound of a metallic salt or alkali with a fatty acid; we have soaps of lime, lead, ammonia, and so on.

Superstition is wrapped up in the word "cobalt," the German miners used to give the name "Kobold" to a demon who was supposed to inhabit the mines, and as the ores of cobalt gave them a lot of trouble, they attributed it to the evil doings of the demon, and called the metal after him Kobold or Cobalt. Antimony was so called by Basil Valentine about 1490, from anti, against, and moine, French for monk, on account of the serious effects produced by it on certain monks.

Onomatopœic words are formed by imitation of natural sounds: such are "cuckoo," "pewit," "hush," "bang," "clatter," "splutter," "crack," "splash." Frequently an object takes its name directly from some peculiarity which it possesses. The "hawk," coming direct from the Anglo-Saxon "hafoc," forcibly describes the "havoc" which the hawk made when it swooped down upon smaller birds. It is said that the word "sincere" was first applied to honey which was "without wax" (*sine cera*) as the best honey should be.

"Hydrargyrum" suggests the mobility and silvery appearance of that metal, ὑδωρ meaning water, and ἀργυρος silver.

WORDS AS RECORDS.

Language has stored up not only manners, customs, and histories, but occasionally we can trace much poetic feeling. We speak of "dilapidated fortunes"; the word dilapidated suggests to us an old palace falling to ruins, stone detaching itself from stone, until all has sunk into desolation and decay. Returning to matter of fact topics, the word "antimacassar" is a monument of honour to the careful housewife, of whatever age or clime, who invented this device for keeping chair-backs free from a hair-oil first procured from Macassar, a port in Celebes.

Two interesting contractions may be mentioned here; "nincompoop," a name for a simpleton, being derived from "*non compos mentis*," and the verb "shunt" from "shun it."

I think from the foregoing we shall have seen that the study of words is instructive as well as interesting, and that it will prevent us falling into numerous errors, such as the following announcement which appeared in a provincial newspaper of last December: "Novelties in antiques." Then, again, an auctioneer's catalogue contained these items, "an unique statuette," "ditto to match." There are many words whose derivation is uncertain; "trivial" by some is traced to the gossip exchanged at the corners where one street met another at right angles, the "*tres viae*." This explanation is perhaps more open to objection than that adopted by other etymologists who understand "trivial" to come from "*trivium*" meaning the three preparatory courses of instruction given in the Middle Ages—grammar, geometry, and arithmetic, as contrasted with the advanced course or "*quadrivium*," which used to complete a liberal education in those times. Hence, it came about that schools were termed "trivial," as being occupied only with the "*trivium*."

"Carnival" seems to equal "*caro*, vale," and as such may mean either "flesh farewell," in view of the near approach of Lent, or "flesh be strong," strong that is, in sustaining the privations of that season of fasts.

"Gazette" is of Italian origin, and referred to a circulating newspaper. It may owe its name either to the Venetian coin, the gazzetta, for which the paper was sold, and thus claim kinship with "*gaza*," the Persian word for treasure, or to "gazzetta"; dim. of "*gazza*, a magpie," in which case the word would be equivalent to our "Chatterer."

(To be continued.)

REAGENTS, REACTIONS, METHODS AND FORMULÆ, KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from Vol. iv., page 533.)

Dupasquier's reagent for organic substances in water. If water is boiled with an aqueous solution of gold chloride the presence of organic matter is indicated by a bluish-violet colour due to the reduction of the gold, or by the formation of a gold mirror.

Durig's formaldehyde mixture. A 3 per cent. potassium bichromate solution containing 4 to 6 per cent. of formaldehyde.

Duval's carmine and aniline blue method. After staining with carmine, dehydrate the sections and stain for a few minutes in a mixture of 10 drops of saturated alcoholic solution of aniline blue with 10 Gm. of absolute alcohol. Clear with tupentine, without further treatment with alcohol, and mount in balsam.

Duval's imbedding process. Objects are imbedded in celloidin solution or collodion, after thorough dehydration with absolute alcohol.

Duval's method of unrolling sections. Float the rolled sections on the surface of warm water or alcohol in a watch-glass. Or, place them on a layer of water on a glass slide, and heat the latter to 45° or 50° C.

Ebner's decalcification fluids. (1) Mix 100 C.c. of cold saturated aqueous solution of sodium chloride, 100 C.c. of water, and 4 C.c. of hydrochloric acid. Preparations are placed in the fluid, and 1 to 2 C.c. of hydrochloric acid added daily until they are soft. (2) Mix 2·5 parts of hydrochloric acid (s.g. 1·16) with 500 of alcohol (90 per cent.), 100 of water, and 2·5 of sodium chloride.

Eboli's reaction for cantharidin. The solution to be tested is heated with sulphuric acid and potassium bichromate added. If cantharidin be present a handsome green colour is produced.

Ehler's fixing fluid for Annelids. Add 1 to 5 drops of glacial acetic acid to 100 C.c. of 0·5 to 1 per cent. chromic acid solution.

Ehrenbaum's imbedding method. Objects are penetrated by a mixture of 10 parts of resin to 1 part of wax. Sections are obtained by grinding in the usual way, and the imbedding mixture is afterwards removed by treating successively with turpentine and chloroform.

Ehrlich's diazo-reaction. This is the test for pathologically changed urine by means of diazo-benzene sulphuric acid. The reagent is always freshly prepared, according to the following formula:—(*a*) Sulphanilic acid, 5; hydrochloric acid, 50; distilled water, 1000; (*b*) Sodium nitrite, 0·5; water, 100. For use add 6 C.c. of solution (*b*) to 250 C.c. of solution (*a*). According to more recent statements a diazo-benzene sulphuric acid (1:60) is employed as Ehrlich's reagent. Pentzoldt (*q.v.*) utilises the reaction for the detection of glucose upon the addition of potash. Ehrlich and others employ it for the diagnosis of various diseases (upon addition of ammonia), especially for the detection of bile colouring matter. Urine is tested according to different methods:—(1) Equal volumes of urine and the reagent are mixed, and ammonia (one-eighth volume) is added. In cases of typhus, pneumonia, and measles the solution assumes a red colour, which is readily recognisable in the foam when the solution is shaken. (2) In Charité's modification, for the detection of bile colouring matter, Ehrlich's reagent is added to urine diluted with an equal volume of dilute acetic acid. The resulting dark colour is converted into violet upon the addition of glacial acetic or other acid. (3) The urine to be tested is shaken with chloroform, and to the chloroformic solution 1 to 2 volumes of Ehrlich's reagent are added with sufficient alcohol to make the mixture homogeneous. If bilirubin is present a red colour is produced, which upon careful addition of concentrated hydrochloric acid becomes changed to violet and blue. Upon the addition of potash solution three zones are produced, a greenish-blue lower one, a pure blue upper zone, and a reddish band between.

Ehrlich's dahlia stain. Add to an aqueous solution of dahlia 5 per cent. of acetic acid, or stain in a neutral solution, and wash

* After Schneider, Altschul, Lee, Squire, Crookshank, and others.

out with acidulated water. Dehydrate with alcohol and mount in resin-turpentine solution.

Ehrlich's acid hæmatoxylin. Dissolve hæmatoxylin, 2 Gm., in absolute alcohol, 100 C.c., and add glycerin, 100 C.c., distilled water, 100 C.c., ammonia alum, 2 Gm., glacial acetic acid, 10 C.c. Expose to daylight for at least a month before use, removing the stopper at intervals.

Ehrlich's ammoniated hæmatoxylin. Dissolve ammonium carbonate, 0·4 Gm., and hæmatoxylin, 2 Gm., in proof spirit, 40 C.c., and expose to the air in a shallow dish for 24 hours. Then make up the volume to 40 C.c. with proof spirit (warming if necessary to re-dissolve any separated crystals), and add ammonia alum, 2 Gm., dissolved in distilled water, 80 C.c., together with glycerin, 100 C.c., rectified spirit, 80 C.c., and glacial acetic acid, 10 C.c.

Ehrlich's staining method. Use a saturated aqueous solution of aniline as a mordant, the dye being dissolved in this or added in the form of a concentrated alcoholic solution till a slight opacity appears.

Ehrlich's "mastzellen." An almost saturated solution of dahlia in the following mixture: Absolute alcohol, 50 C.c.; water, 100 C.c.; glacial acetic acid, 12·5 C.c. The tissues are well hardened in strong alcohol, and then placed for at least 12 hours in the above. Afterwards wash out in alcohol, and mount in resin-turpentine solution.

Ehrlich's gentian-violet stain. Gentian violet, 1 part; alcohol, 15 parts; aniline oil, 3 parts; water, 80 parts.

Ehrlich's acidophilous mixture. Indulin, aurantia, and eosine, of each 2 parts; glycerin, 30 parts.

Ehrlich's "triacid" mixture. Mix saturated solutions of orange G., 120 parts, acid fuchsine, 80 parts, and methyl green, 100 parts, then add distilled water, 300 parts, absolute alcohol, 180 parts, glycerin, 50 parts.

Ehrlich-Biondi mixture (or Ehrlich-Biondi-Heidenheim mixture). Dissolve (*a*) methyl green, 0·5 Gm., in distilled water, 100 C.c.; (*b*) acid fuchsine, 0·5 Gm., in distilled water, 40 C.c.; (*c*) orange, 2 Gm., in distilled water, 200 C.c. Mix the three solutions and filter before use. Stain sections for 12 hours, then wash, dehydrate, clear, and mount.

Einbrodt's reagent for ammonium salts. A solution of mercuric chloride made slightly alkaline by the addition of potassium carbonate. This solution produces a white turbidity or precipitate with ammonium salts.

Einhorn's test for sugar in urine. This depends upon the fermentation method, the formation of carbonic acid upon treating the urine with yeast being construed as a certain indication of the presence of glucose in the urine. Einhorn and others (*vide* Arndt) have constructed special fermentation saccharometers, which permit of an exact quantitative determination.

Eisig's fixing solution. Mix equal parts of 0·25 per cent. platinum chloride solution and 1 per cent. chromic acid solution. Pelagic fish ova are left in this for 1 or 2 days.

Eismond's method for quieting infusoria. Add to the water containing the organisms a drop of thick aqueous solution of cherry-tree gum.

Elsching's celloidin solution. Allow the celloidin shavings to swell up for 24 hours in the necessary quantity of absolute alcohol, then add the proper amount of ether.

Emery's aqueous carmine injection. Add acetic acid to a 10 per cent. ammoniacal solution of carmine, with continual stirring, until the mixture becomes blood-red. Pour off the supernatant clear solution and inject cold without further preparation.

Entz's method for infusoria. Add a few drops of Kleinenberg's liquid to a watch-glass of water containing the organisms. Remove the liquid after 1 or 2 minutes, and wash the objects for half-an-hour with alcohol of medium strength; then stain for 10 to 20 minutes in picro-carmine solution, wash with water till the picric acid is removed, and mount in a mixture of equal parts of glycerin and water.

Erdmann's reagent for alkaloids. Mix 6 drops of nitric acid (sp. gr. 1·25) with 100 C.c. of water, and add 10 drops of this solution to 20 C.c. of pure concentrated sulphuric acid. According to another statement 10 drops of nitric acid (sp. gr. 1·185) should be diluted with 20 C.c. of water, and 20 drops of this solution are added to 40 C.c. of pure concentrated sulphuric acid. Add 1 C.c. of the reagent to 1 to 2 Mgm. of the dry alkaloid, placed on a watch-glass over white paper or in a white porcelain dish, and set the mixture aside for ¼ to ½ hour at a temperature of from 18° to 22° C.

Erlicki's solution. A hardening solution for microscopic preparations, contains 2·5 Gm. of potassium bichromate and 0·5 Gm. of copper sulphate in 100 C.c. of water.

Erlich's gentian violet solution for staining bacteria. This is produced by shaking 4 C.c. of aniline with 100 C.c. of distilled water and separating the solution from the undissolved aniline by filtration through a moist filter. To the filtrate add 11 C.c. of a concentrated alcoholic solution of gentian violet, shaking meanwhile, and afterwards allow the mixture to stand for 24 hours.

Errera's solution for the extraction of alkaloids. A 5 per cent. alcoholic solution of tartaric acid.

Esbach's reagent for albumin. A solution of 10 Gm. of picric acid and 20 Gm. of citric acid in 1 litre of water. In albuminous solutions such as urine, the reagent produces a yellow precipitate, either with or without the addition of acetic acid. The amount of the precipitate, which can be estimated approximately in the albuminometer, will serve also for the quantitative determination of albumin.

Esbach's ureometer. See Huefner's reagent.

Eulenstein's cement. Mix equal parts of Brunswick black and gold size with a very little Canada balsam.

Everard, Demoor, and Massart's hæmatoxylin-eosine. Dissolve alum, 20 Gm., in water, 200 Gm., by the aid of heat, then filter and after 24 hours add a solution of hæmatoxylin, 1 Gm., in alcohol, 10 Gm. Let the solution stand for 8 days, again filter, and mix with an equal volume of the following solution:—Eosine, 1 Gm., alcohol, 25 Gm., water, 75 Gm., glycerin, 50 Gm.

Eyclesheimer's clearing mixture. Mix equal parts of bergamot oil, cedar oil, and carbolic acid.

Eykmann's phenol reaction. Upon the addition of a few drops of spirit of nitrous ether in contact with concentrated sulphuric acid to a very dilute phenol solution, a red zone is produced.

Fabre-Domergue's glucose medium. Mix glucose syrup (sp. gr. 1·1968), 1000 parts, methyl alcohol, 200 parts, glycerin, 100 parts, and saturate with camphor. If acid the medium should be neutralised with potash or soda.

Faris's glycero-gum. Mix gum acacia, 2 ozs., glycerin, 1·5 oz., water, 1·5 oz., and thymol, 1 Gm.; dissolve with heat and filter.

Farrant's medium. According to Squire, gum acacia, 130 Gm., is dissolved in a solution of arsenious acid, 1 Gm., in distilled water, 200 C.c., with frequent stirring, then add glycerin, 100 C.c., and filter through fine Swedish paper, upon which has been deposited a thin layer of talc. Sometimes 1 per cent. of formic acid (sp. gr. 1·2) is added. Altschul says the medium should consist of 1 part gum arabic, 1 of glycerin, and 1 of concentrated aqueous solution of arsenious acid.

Faure's test for genuine wine-colouring matter. If 10 drops of a 2 per cent. tannin solution and 6 drops of a 2 per cent. gelatin solution be added to 2 C.c. of red wine, the true colouring matter of wine is completely precipitated, whereas coal-tar dye-stuffs remain in solution.

Fehling's solution for the determination of sugar and reagent for other reducing substances. For immediate use mix equal volumes of the following solutions: (1) 34·639 Gm. of crystallised but not effloresced copper sulphate is dissolved in water, and the solution diluted to 500 C.c.; (2) 173 Gm. of crystallised Rochelle salt and 50 Gm. of caustic soda are dissolved in sufficient water to make 500 C.c. Gradually add the sugar solution of about 1 per cent. strength to the reagent diluted with 5 parts of water; decoloration takes place, and red cuprous oxide is precipitated. 10 C.c. of Fehling's solution should be reduced by 0·05 Gm. of grape sugar, 0·067 Gm. of milk sugar, 0·0475 Gm. of cane sugar, and 0·045 Gm. of dextrin or starch, the last three having been previously inverted with dilute mineral acid. It should be understood that many other substances also reduce Fehling's solution. According to an older formula this reagent was prepared as a single solution, and had to be prepared fresh every time, since the mixed solutions do not keep well. Solutions identical with or similar to Fehling's reagent are Barreswil's, Frommherz's, Trommer's, Violette's, and Worm-Mueller's solutions (*q. v.*).

Ferreri's phloroglucin mixture. Dissolve phloroglucin, 1 Gm., in hydrochloric acid, 10 Gm., and water 100 Gm., with the aid of heat, and after cooling add 200 Gm., of 70 per cent. alcohol.

Ferrier's liquid for examining blood. Dissolve fuchsine, 1 Gm., in distilled water, 150 C.c., and rectified spirit, 50 C.c., then add 200 C.c. of glycerin.

(To be continued.)

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

HYDRARGYRI OXIDUM RUBRUM.—When metals are acted upon by nitric acid note that hydrogen is never evolved, as in the case of dilute sulphuric or hydrochloric acid. The reason for this is that the nascent hydrogen displaced by the metal from the acid molecule ($Hg + 2HNO_3 = Hg2NO_3 + 2H$) is oxidised by more nitric acid, which is consequently reduced, and yields one or more of the lower oxides of nitrogen. Nitric acid is derived from the pentoxide (nitric anhydride) $N_2O_5 + H_2O = 2HNO_3$. The composition of the gas obtained by the action of nitric acid upon metals depends partly upon the metal acted upon and partly upon the strength of acid used. Broadly speaking, it may be stated that with strong acid, nitric peroxide, NO_2, is chiefly obtained, while with diluted acid nitric oxide, NO, predominates. If the acid be very dilute, and particularly if zinc be the metal acted upon, the reduction of the nitric acid proceeds in part so far as the formation of ammonia. It must therefore be remembered that the equations usually given for the action of nitric acid on metals are only accomplished under certain conditions, and are never so simple as the equation shows. Thus in the process usually given for the preparation of nitric oxide by the action of nitric acid diluted with two or three volumes of water on copper or mercury the equation given is—

$$3Cu + 8HNO_3 = 3Cu2NO_3 + 2NO + 4H_2O.$$

As a matter of fact, while nitric oxide is, under these circumstances, the main constituent of the gas evolved, some nitric peroxide, as well as the still lower oxide, nitrous oxide, N_2O, is also obtained.

In the case of dilute sulphuric acid the hydrogen displaced by the metal is evolved, since no interaction takes place between nascent hydrogen and this dilute acid. All the apparently complex equations representing the action of metals upon nitric acid may be simplified by considering the reaction to occur in two stages.

(i.) The displacement of the hydrogen by metal—

$$Hg + 2HNO_3 = Hg2NO_3 + 2H.$$

(ii.) The reduction of another portion of the nitric acid by this nascent hydrogen (2H, not H_2) which is oxidised to water. If NO_2 is obtained then—

$$2HNO_3 + 2H = 2NO_2 + 2H_2O.$$

For $2HNO_3 = H_2O + N_2O_5$, and N_2O_5 will be reduced by two atoms of hydrogen with formation of $2NO_2$ and H_2O. On the other hand, when nitric oxide is obtained, two molecules of nitric acid will require six atoms of hydrogen. The following representation will serve to make this clearer :—

$$2HNO_3 \begin{cases} H_2O \\ N_2O_5 \begin{cases} 2NO \\ 3O \end{cases} \end{cases}$$

Since three atoms of oxygen combine with six atoms of hydrogen the equation written in two stages becomes—

(i.) $3Hg + 6HNO_3 = 3Hg2NO_3 + 6H.$
(ii.) $2HNO_3 + 6H = 2NO + 4H_2O.$

In making the red oxide of mercury the first step is to prepare mercuric nitrate by dissolving mercury in excess of nitric acid. When heated this yields mercuric oxide—

$$Hg2NO_3 = HgO + 2NO_2 + O.$$

By mixing the mercuric nitrate with more mercury, mercurous nitrate is formed, which also yields mercuric oxide when heated—

$$HgNO_3 = HgO + NO_2.$$

This obviously effects an economy in nitric acid, since the same amount suffices for the production, in the latter case, of twice as much oxide as in the former. The action of a low red heat upon mercuric oxide should be remembered as the classical experiment by which oxygen was first prepared. The absence of red vapours (NO_2) when this is done shows that the oxide is free from nitrate.

HYDRARGYRUM AMMONIATUM.—Compare the action of ammonia with that of potash (or soda or lime) on solutions of perchloride of mercury. The latter gives the corresponding mercur*ic* oxide, HgO, the hydrate being unstable, while with ammonia an insoluble complex metallo-amine, known as "white precipitate," is thrown down. This may be regarded as ammonium chloride, NH_4Cl, in which two univalent hydrogen atoms are replaced by one divalent atom of (mercur*ic*) mercury. The corresponding mercur*ous* compound, NH_2Hg_2Cl, is met with in the usual course of qualitative analysis when that portion of the first group precipitate insoluble in water, and containing AgCl and HgCl, is treated with ammonia. The AgCl is dissolved, while the calomel forms a mercur*ous* amine, which is black, while the mercuric amine is white. The identity of white precipitate is completely revealed by the action of hot solution of potassium hydrate (*vide* tests B.P.).

$$NH_2HgCl + KOH = KCl + HgO + NH_3.$$

This decomposition can be best understood by comparing the action of caustic potash on ammonium chloride; the hydrate is first formed, and this decomposes into ammonia and water.

i. $NH_4Cl + KOH = KCl + NH_4OH$
ii. $NH_4OH = NH_3 + H_2O.$

The hydrate corresponding to the chloride of mercuric-ammonium $(NH_2Hg)OH$ is, however, unknown, but it may be formed as an intermediate stage.

(i.) $NH_2HgCl + KOH = KCl + NH_2HgOH,$

and then immediately decomposes—

(ii.) $NH_2HgOH = NH_3 + HgO.$

Stannous chloride exerts its usual reducing action, the stann*ous* becoming stann*ic* chloride while metallic mercury is produced.

White precipitate should yield, when heated (*e.g.*, with sodium carbonate and carbon) 77·5 per cent. metallic mercury.

$$\underset{251{\cdot}5}{NH_2HgCl} : \underset{200}{Hg} :: 100 : 79{\cdot}5.$$

The difference between 79·5 and 77·5 is presumably to allow for experimental error. The test serves to detect adulteration with "fusible white precipitate," NH_2HgCl, NH_4Cl, obtained by an old process not now official, which contains only 65·5 per cent. of mercury—

$$\underbrace{NH_2HgCl, NH_4Cl}_{305} : \underset{200}{Hg} :: 100 : 65{\cdot}5$$

HYDRARGYRUM CUM CRETA.—The mercury being finely divided is apt to become partially oxidised by keeping. Such an oxidised sample of "grey powder" would have an undesirably powerful action, and might be dangerous if given in the usual doses, because the oxide would dissolve in the hydrochloric acid of the gastric juice, producing mercuric chloride (corrosive sublimate), whereas dilute hydrochloric acid is entirely without action on metallic mercury. The medicinal action of finely divided insoluble mercury is very much milder than the corresponding weight of soluble perchloride. In the official test, treatment with diluted hydrochloric acid should result in the production of a solution of calcium chloride while the metallic mercury is left insoluble—

$$Hg + CaCO_3 + 2HCl = Hg + CaCl_2 + CO_2 + H_2O.$$

The filtrate containing only calcium chloride gives no reaction with stannous chloride. If, however, any oxide of mercury be present, this dissolves in the dilute acid,

$$HgO + 2HCl = HgCl_2 + H_2O,$$

and the filtrate will contain soluble mercuric chloride, which yields a precipitate of mercury by the reducing action of stannous chloride—

$$HgCl_2 + SnCl_2 = Hg + SnCl_4.$$

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PHARMACOPŒIA TOPICS.

During the past few months the Pharmacopœia has failed to serve as an exciting topic for discussion on this side of the Atlantic, probably because it has been felt that time and labour devoted to the subject now would be misspent, in view of the fact that the new edition of the work is too far advanced to be appreciably altered. Everyone, therefore, is saving up his criticisms until next spring, when it is hoped the new British Pharmacopœia will become more than an idea to most pharmacists in this country, and may be expected, for the time being, to approach perfection somewhat nearer than the existing work. But whilst we are resting on our oars, our American cousins are agitating for further improvements, or at any rate alterations, in their national medicine book. As a matter of fact they are continually agitating in that respect, for as soon as they have published one pharmacopœia they promptly appoint a committee to prepare material for the next, and numerous sub-committees on investigation report progress as opportunity offers. In the fulness of time some such rational plan may find consideration here, but the present notions of those responsible for the production of the British Pharmacopœia, with regard to progress, do not encourage the hope that this ideal will be realised yet awhile. Of course, if a permanent committee of pharmacists and medical men should be appointed by the General Medical Council at its meeting next May, all will be heartily glad, and do their best to facilitate the smooth working of the new arrangements. But until that idea has been accepted in leading medical circles, as a necessity under existing conditions, it seems hopeless even to pray for its realisation.

One of the latest American notions is that none of the fermented and distilled liquors used as beverages should be recognised in the United States Pharmacopœia as medicinal agents. Dr. Nathan S. Davis, of Chicago, urges that this rule should be adopted because of the wide variations in strength and quality that exist in wine, whisky, and brandy, according to where and when they are bought. He argues that, as no two samples of wine are alike, no two samples of whisky agree in strength, and no two samples of brandy contain the same amount of alcohol, the Pharmacopœia can only fix the vaguest kind of a standard for their strength and quality, because they are not made by pharmacists, nor by anyone connected with pharmacy or who would be likely to be guided by pharmacopœial considerations. It is pointed out that the therapeutic effects sought for by all who prescribe wines, whisky, or brandy are usually the effects of alcohol. Then why not order alcohol rather than an unknown something, of which the prescriber cannot tell the exact results? When alcohol, diluted to the strength deemed proper, is ordered, the prescription is a scientific one, and at the same time less likely to lead to the sad consequence of establishing a bad habit, as the absence of palatable aroma makes the spirit less likely to be craved for. But the main idea is to encourage the use of the substance which produces the definite effect required. If the effects of morphine, pure and simple, are required, it is not customary to prescribe opium, nor is nux vomica ordered when the peculiar and recorded effects of strychnine are required. If then it be desired to produce the medicinal effects known to follow the administration of pure alcohol, why should it be necessary to associate with it fusel oil or any of the compound ethers, etc., that give the characteristic flavours to alcoholic beverages?

Advance towards definiteness is the object Dr. Davis has in view, and though he can attain it by always ordering pure alcohol or preparations made with it, he thinks it better to decide, once for all, to erase alcoholic beverages from the list of recognised medicinal agents. Professor Remington thinks it will scarcely be possible to remove wines, at least, from the list of officially recognised solvents, though the difficulty is more apparent than real. At the same time he urges that more stringent tests should exist, but *Merck's Report* suggests that the professor has evidently lost sight of the fact that much of the wine used by pharmacists is artificial (*sic*), and that official tests cannot guard against this. "Why then cannot the pharmacist make his own wine, or else change the official formula of the medicinal wines so that he can use diluted alcohol of a definite strength for making them?" If it be correct, as alleged, that the strength and quality of wines, etc., can only be fixed by Pharmacopœia standards if official methods be prescribed for preparing them artifically or doctoring the natural products, the argument in favour of the substitution of diluted alcohol is indeed a strong one. And though we doubt whether the position is quite so bad as stated, knowing well that cheap and genuine wines are readily obtainable, there is good reason for believing that pure alcohol will in time replace many, if not all, of its impure forms for medicinal purposes. Economy and scientific accuracy truly favour the reform, as stated by our American contemporary, while little beyond habit and sentiment are opposed to it.

In the same issue of *Merck's Report* are published a number of replies to a proposal by Mr. S. W. Williams that, whilst pharmaceutical and chemical nomenclature should accord, the words "hydrochloride" and "hydrobromide" ought to replace "hydrochlorate" and "hydrobromate," and terms of this class should be contracted by writing an apostrophe in place of the prefix. "Professor William Martindale, F.R.C.S.," in whom we seem to recognise an old friend, approves generally of what is proposed, as also do Professors Remington and Norton, but Dr. Dohme thinks the use of the apostrophe in place of the prefix "hydro" inadvisable. So do we and, more than that, stigmatise the suggestion as an absurdity, the adoption of which would almost certainly lead to confusion. Life is short, as we all allow, but not too short to write words in full, rather than to adopt abbreviations the interpretation of which may cause the loss of double the time originally saved. Why nearly two pages of an important journal should be devoted to this trifling point it is difficult to see, but perhaps more valuable matter is scarce.

ANNOTATIONS.

Chemists and Druggists in the East Riding of Yorkshire, ought to demand from Mr. James Baynes, the analyst for that district, an explanation of what appears, on the face of it, to be a very serious imputation. He is reported to have stated at an inquest held at Thorganby a few days ago that he had met with cases of persons having been treated for cancer with arsenical plasters "by chemists and druggists." If any such instance is actually known to him, it is desirable in the interest of the general body of chemists and druggists that the details should be published. We are disposed to doubt the possibility that the statement can be substantiated. If not, this will afford one more instance of the indiscretion of public analysts in their public utterances, and there will be further ground for regretting that chemists and druggists should so frequently be unfairly condemned by implication on those occasions.

The Inquest Referred to was held to inquire into the death of a woman who had died after the application of an arsenical plaster to a tumour on her breast, following preliminary treatment with a fly blister. The individual who supplied the plaster is described as a wholesale spirit merchant, and he stated that it contained arsenic, sulphur, and some vegetable substances. The proportion of arsenic in the powder from which the plaster was made was two ounces to the pound, and the plaster used by the deceased contained about one-eighth of an ounce of the powder. Under the circumstances it is not surprising to find that the jury thought the maker of the plaster had shown gross ignorance and been culpably rash in treating the case, and as he has been committed for trial by the coroner on a charge of manslaughter, he will doubtless have ample time to reflect on the superiority of the advantages offered by the wholesale spirit business as compared with those accruing from the practice of "cancer curing."

The Accidental Poisoning Cases to be recorded this week are numerous, but all reveal evidence of great carelessness, the effects of which it appears difficult for any efforts of the Legislature to counteract. In one instance (West Hampstead) belladonna liniment, contained in a bottle labelled "For External Application," was administered to a young child by its grandmother in mistake for extract of cascara. Death resulted in a few hours, and the jury sitting on the case recommended that all poisons should be placed in coloured fluted bottles and properly labelled poison. Such precautions are eminently desirable, but are not in themselves sufficient to prevent accidents in houses where liniments and medicines for internal use are indiscriminately stored together. The next case (Nottingham) is that of a woman of forty-five who died from the effects of carbolic acid, which had been kept in a ginger-beer bottle, and was apparently taken in mistake for beer. Comment is unnecessary here. Another ginger-beer bottle at Pentonville contained spirit of salt, and a boy of five took it from the cupboard in which it was kept, drank of the contents and died. At Madeley a young miner foolishly imbibed weed-killer from a bottle he found in a hedge and after lingering for some hours in great agony, the case terminated fatally. A somewhat similar instance is reported from Newhaven, where five men were accidentally poisoned by drinking the contents of a small bottle they had found whilst unloading a steamship. The bottle appears to have contained a liniment of which some preparation of aconite was a constituent, and though the lives of four of the men were saved with difficulty, that of the fifth was sacrificed to his carelessness. The last case on our list for the week is that of a Leeds brass moulder who swallowed an overdose of laudanum which he was using to relieve toothache.

The Sale of Spectacles is not always conducted with a due regard to the preservation of sight, owing to the lack of proper knowledge of the subject on the part of those who sell the glasses. It is satisfactory to learn, therefore, from the *Sunday Times*, that the Spectacle Makers' Company is about to take an active interest in the important trade with which it has hitherto been associated in a historical rather than a practical sense. It is stated that the company proposes to introduce a scheme by which special training shall be provided for those who sell spectacles to the public, "a business frequently carried on, it is to be feared, by people ill acquainted with the visual requirements of their customers." Many will agree with the statement that the haphazard way in which the business is now conducted must not infrequently lead to errors gravely imperilling the eyesight of a considerable number of people, and that common-sense and ordinary prudence suggest that those who sell "glasses" to the public should possess some expert knowledge upon the subject. Chemists should note this.

The Newcastle-on-Tyne and District Chemists' Association will hold its first annual excursion on Wednesday afternoon, July 7, the Committee having arranged a half-day excursion to Finchale Abbey for that date. In order that the outing may be successful and enjoyable, the Hon. Secretary, Mr. Geo. F. Merson, will be glad if a large number of chemists in the district can make it convenient to be present. Any friends whom they may desire to invite will also be cordially welcome. Special accommodation will be provided by the 2 p.m. Leamside train from the Central Station, Newcastle, returning at 7.48 in the evening.

The Newspaper Prescription, as the *Medical Press* points out, is the product of a reprehensible practice that has its origin in the desire of those who conduct newspapers to attract attention by supplying so-called medical advice gratis to their readers. As might be expected, all kinds of curious errors creep into print in this connection, and the possibility of accidental poisoning following the use of mixtures prepared in accordance with these "prescriptions" is far from remote. Fortunately, as our medical contemporary acknowledges, the public is safeguarded to a very great extent by the fact that chemists who are asked to dispense the preparations take care to point out the harm likely to attend their use. And even those economical individuals who seek to save the dispenser's fee by purchasing the various ingredients separately and compounding them at home, will be foiled should they attempt to purchase the two ounces of hydrocyanic acid said to have been ordered in a formula for skin lotion. The ingredients of a mixture for debility, consisting of one ounce of sulphate of quinine and eight ounces of aromatic spirit of ammonia, might be procured with greater ease, but anyone who swallowed in a single dose "one to three fluid ounces in water or sherry" would not be likely to repeat the experiment, and it is doubtful if the initial dose could be swallowed or retained. But it must be recognised that the special knowledge of the chemist and druggist is the only real safeguard the public at present possesses in this matter, and though on the whole, as the *Medical Press* suggests, the subject of prescribing in the columns of newspapers is worthy of full inquiry, we are not hopeful of any legal restriction being placed on the practice. And certainly for the present the public must continue to look to the

chemist and druggist for protection against accidental poisoning, and to the law courts for redress in case mischance should befall.

THE RÖNTGEN RAYS, it has been announced, are to be employed for the detection of contraband articles in the luggage of travellers coming on our shores, and statements have been published to the effect that Customs officers were being specially trained and provided with suitable outfits for the purpose. The idea seems to have suggested itself to the official mind that searchers would thus be rendered more expeditious as well as more certain in their results. Whilst the trials have proved satisfactory in other ways, however, it is now declared that the application of the X rays as a detective agency will necessitate doubling the staff of examiners required to get through a given amount of work in a limited time, and that the uncertainty left with regard to the quality, weight, etc., of the dutiable articles detected by this means is so great as to necessitate opening the packages after all. How the further difficulty of detecting such articles, if enclosed in material that does not admit of the passage of the rays, would be overcome does not appear, but it is perhaps safe to assume that the inspection of luggage *à la Röntgen* is not yet likely to become an accomplished fact.

AN INTERESTING MEDICAL ELECTION is just now taking place, observes the *Daily Telegraph*, the reference being to the election of the Council of the Royal College of Surgeons. According to the organ with the largest circulation, the contest may in its result help to reveal the real force of what may be described as the political side of the medical agitation. There are five vacancies, and each of the eleven candidates has had these questions put to him: "Are you in favour of granting to members a limited direct representation on the Council?" "Do you consider that the President should be elected by the Fellows generally?" Of the eleven candidates, only three are said to represent the provinces. The London Hospital, St. Thomas's, Westminster, and St. Bartholomew's are already represented on the Council, and do not add their quota to the list of nominations. But Guy's Hospital provides two candidates, King's College one, University Hospital one, St. George's one, St. Mary's one, and Charing Cross one. It is stated that Lord Lister was asked to become a candidate, but he refused the distinction.

THE BRITISH PHARMACEUTICAL CONFERENCE is now issuing the official programme for the meeting at Glasgow next month. On Monday, August 9, at 8 p.m., there will be the usual reception by the President and Mrs. Symes, and conversazione in the Corporation Art Galleries. On the following day, at 10 a.m., the sessions of conference commence in the Grand Hotel, and after the luncheon interval will continue until 3.30 p.m. Later in the afternoon there will be an excursion to the head of Loch Lomond. On Wednesday, August 11, the sessions of conference will be continued until the business is completed. At 3.45 p.m. tea will be served in the Grand Hotel, and that will be followed by a pleasure drive to the Glasgow Waterworks. On returning the smoking-concert and ladies' drawing-room will both be held in the Grand Hotel. The last day, Thursday, will de devoted to a day's cruise on the Firth of Clyde and western lochs, and through the Kyles of Bute, starting at 8.55 a.m. The books of tickets may be obtained of Mr. J. Anderson Russell, 212, New City Road, Glasgow. No. 1 book of tickets, price 10*s.* 6*d.*, will admit to the reception, luncheons, smoking-concert, afternoon teas, and excursions on the Tuesday and Wednesday. No. 2 book of tickets, with a chart of the steamer's route, price 10*s.* 6*d.*, will include first-class return to Greenock on Thursday, the day's cruise per "Glen Sannox," luncheon and dinner, and tea for ladies on board.

NOTICES OF BOOKS.

'RECENT MATERIA MEDICA,' by F. Harwood Lescher (London: J. and A. Churchill) fulfils for English readers a similar purpose to Mindes' 'Manuale der neuen Arzneimittel,' recently referred to in these pages, and possesses the great advantage over the latter of being printed in the one language which can now claim to be co-extensive with civilisation. The work is in its fifth edition, and has increased in bulk considerably since its immediate predecessor appeared six years ago. That contained one hundred and fifteen pages; this boasts two hundred and nineteen, without including the twelve supplementary pages, printed separately, which bring the subject-matter up to the present month. The book is arranged in the convenient dictionary form, and the text is prefaced with useful therapeutic tables, whilst concluding with a comprehensive index. As regards the contents, the newer monographs treat largely of such preparations as synthetic remedies, serum cultures, antitoxins, and animal extracts, whilst the old ones have been revised and extended. A very few of the errors noted in the fourth edition, however, re-appear in this, though these do not affect the special value of the work. They occur mainly in the names of plants yielding certain drugs, and of natural orders, etc. Menthol is still described as being one of the two isomeric "oils" of which Japan peppermint oil consists, the formula for emetine remains "$C_{20}H_{30}N_2O_5$ (?)," and a few literal errors remain uncorrected. But on the whole, the book is well done, and it should prove indispensable to every pharmacist who is puzzled at times to know what is required by medical practitioners who favour the newer materia medica.

'THE POCKET THERAPIST,' by Dr. T. S. Dowse (Bristol: John Wright and Co., 5*s.* net) is a concise manual of modern treatment for students and junior practitioners, arranged alphabetically for ready reference. It is a compact volume of some two hundred pages, and is rather smaller in size than an ordinary pocket-book Criticism of the information supplied would be out of place in these pages, though it ought to be stated the suggestions offered as to the treatment of disease are based upon the author's experience, and he has referred only to remedies he has found useful in practice. For our purpose, however, it must needs suffice to state briefly what the book contains. The bulk of the work is, of course, occupied by details regarding the treatment of diseases, but a mass of useful matter is squeezed into the last twenty pages, which treat of health resorts; poisons and their antidotes; foods; metric measures; urine, blood, and sputum; the staining of tubercle bacilli; vomit and fæces; and, finally, therapeutic serums. Pharmacists might do well to bring the book under the notice of their medical friends.

'FIRST STAGE SOUND, LIGHT AND HEAT,' by John Don, M.A., B.Sc. (London: W. B. Clive, 2*s.*), is as its name implies a preliminary text-book of the subjects mentioned. Like other works in "The Organised Science Series," it is intended primarily to present the matter embodied in the Science and Art Department Syllabus in a form that can readily be assimilated by elementary students, and in the second place as a simple guide to those preparing for examination in the subjects. The book is well illustrated, and the explanations are sufficiently exhaustive for the desired purpose. Arithmetical methods are fully exemplified, and the use of algebraic formulæ avoided, whilst the exercises set are very numerous. The book should specially commend itself to pharmaceutical students.

PHARMACEUTICAL SOCIETY.

SCHOOL OF PHARMACY EXAMINATIONS.

SESSION 1896-97.—ELEMENTARY COURSE.

PRACTICAL CHEMISTRY.

PROFESSOR J. NORMAN COLLIE.

Thursday, June 24.—11 a.m. to 1 p.m., and 2 to 5 p.m.

1. Determine quantitatively the amount of sodium carbonate present in 100 C.c. of the solution you are given.
2. Analyse qualitatively the solid substance in box A.
3. The substance in box B is impure; what is the impurity? Also, prepare a specimen of the substance free from the impurity.

BOTANY.

PROFESSOR REYNOLDS GREEN.

Friday, June 25.—10 a.m. to 1 p.m.

[*Not more than Four Questions to be answered.*]

1. Explain the difference between the mode of branching of the stem and that of the root. Tabulate the differences between roots and stems.
2. What is chlorophyll? Give an account of its function and of the conditions under which it discharges it.
3. Describe the development of some form of glandular tissue. What do yon understand by the process of secretion?
4. What is the structure of an albuminous seed? Explain how its different parts originate.
5. Compare the structure and arrangement of the tissue in the vascular bundles of the Dicotyledon, Monocotyledon, and Fern.

PRACTICAL BOTANY.

PROFESSOR REYNOLDS GREEN.

Friday, June 25.—2 to 5 p.m.

1. Make what microscopical preparations you think necessary to show the method by which a stem increases in thickness.
2. Identify and briefly describe the microscopical preparations A, B, C.
3. Comment on the morphology of D, E, F.

CHEMISTRY.

PROFESSOR J. NORMAN COLLIE.

Monday, June 28.—10 a.m. to 1 p.m.

1. Describe fully a method for determining the vapour density of a liquid that can easily be converted into a gas.
2. What are the chief points of difference in chemical behaviour, between a saturated and an unsaturated compound? Illustrate your answer by examples taken from the oxides of the non-metals, and from organic compounds.
3. From the analysis of acetic acid, the ratio of carbon, hydrogen, and oxygen, in acetic acid can be expressed by the formula CH_2O. What are the reasons that have led to the formulæ $C_2H_4O_2$, and CH_3COOH, being used instead?
4. If you were given some pure slaked lime, describe how you would prepare a specimen of oxygen from it; also, how could nitrogen be extracted from potassium nitrate?
5. Write a short account of the preparation of ferrocyanide of potassium; state also the chief reactions of this substance—especially describing those in which it may be used for the production of other useful substances.
6. Describe how you would determine the specific heat of a solid substance, giving a numerical example.

PHARMACY.

PRACTICAL DISPENSING.

PROFESSOR HENRY G. GREENISH.

Monday, June 28.—2 to 5 p.m.

Dispense the following prescriptions, labelling, wrapping, and addressing each, and writing your own name on both label and wrapper:—

1.—Ext. Bellad. ..... gr. i.
Ol. Theobrom. ..... *q. s.*
Ft. supposit. Mitte vi.

2.—Paraff. Moll. ..... ʒvi.
Tr. Guaiaci. Amm. ..... ʒiv.
Spt. Chlorof. ..... ʒiss.
Aq. ad ..... ʒiv.
M. ft. mist. Cap. coch. med. ter die ex aq.

3.—Acid Arsenios. ..... gr. $\frac{1}{10}$.
Ferri. Sulph. Exsicc. ..... gr. iii.
Ft. pil. i. Mitte xii. Silver. Cap. i. n. et m. p. cib.

4.—Spread a blister for the right ear.

PHARMACY.

PROFESSOR HENRY G. GREENISH.

Tuesday, June 29.—10 a.m. to 1 p.m.

1. Distinguish between evaporation, ebullition, and distillation. Discuss the advantages of each as a method of concentrating dilute infusions, and indicate any modification that may appear advantageous.
2. Discuss the processes given in the British Pharmacopœia for preparing Extractum Cascaræ Liquidum, Syrupus Ferri Phosphatis, Tinctura Myrrhæ, and Unguentum Staphisagriæ; and indicate how they may be improved.
3. Describe what you consider to be a suitable form of percolator for general pharmaceutical use. Illustrate your description by a sketch. Explain the manner in which the percolator is used, and indicate the circumstances under which the use of the percolator is not advisable.
4. What characters should a good emulsion possess? Describe methods for the emulsification of fixed oils, volatile oils, waxes, and resins.

PHARMACY.

PRACTICAL DISPENSING (B PAPER).

PROFESSOR HENRY G. GREENISH.

Tuesday, June 29.—2 to 5 p.m.

Dispense the following prescriptions, labelling, wrapping, and addressing each and writing your own name on both label and wrapper:—

1.—Ext. Hyoscyam ..... gr. i.
Ol. Theobrom. ..... *q.s.*
Ft. supposit. Mitte vi.

2.—Ol. Terebinth ..... ʒiv.
Spt. Eth. Nit. ..... ʒiv.
Tr. Cannab. Ind. ..... ʒii.
Aq. ad. ..... ʒiv.
M. Cap. coch. min. ex. aq. ter die.

3.—Bismuth Subnit. ..... gr. iv.
Strych. ..... gr. 1/40.
Ft. pil. Mitte xii. arg. Cap. i. ter die p. cib.

4.—Spread a blister for the left ear.

MATERIA MEDICA.

PROFESSOR HENRY G. GREENISH.

Wednesday, June 30.—10 a.m. till 1 p.m.

1. Give the botanical and geographical sources, the method of collection and preparation for the market of cinnamon and galbanum. Describe carefully the characters that would enable you to recognise these two drugs.
2. Write a short account of kamala and guarana.
3. What is the morphological nature, botanical and geographical source, and principal constituents of the following drugs:—Cherry laurel leaves, yellow sandal wood, buchu, cocculus indicus, strophanthus, coriander, linseed, red cinchona bark, alkanet, savin, rhubarb. Indicate as accurately as you can where in the drug the active constituents are localised.
4. Discuss the study of drugs from the point of view of the pharmacist; indicate the objects to be kept in view, and the means that may be adopted to attain them.

NORTH BRITISH BRANCH.

A meeting of the Executive of the North British Branch was held in the Society's House, 36, York Place, Edinburgh, on Friday, June 25, 1897, at 11 a.m., Mr. J. LAIDLAW EWING in the chair.

Present: Messrs. Bowman, Coull, Currie, Ewing, Fisher, Hardie, Henry, Johnston, Kermath, Kerr, Lunan, McAdam, McLaren, Mitchell, Moir, Paterson, Russell, and Storrar. An apology for absence was intimated from Mr. Strachan.

The minutes of last meeting having been read and approved,

Mr. STORRAR said he had pleasure in moving that Mr. Ewing be elected Chairman for the ensuing year. He knew that Mr. Ewing himself had a feeling that he should make way for someone else, but he hoped he would be induced to consent to occupy the position, which he had already so well filled, for another year. He had had a number of important matters to attend to during his term of office, and they were still in the midst of the question of alterations, and it was desirable that he should continue to superintend the work with which he was so thoroughly familiar. It was also important that during the visit of the British Pharmaceutical Conference to Glasgow the Chair of the Executive should be occupied by a gentleman who so well knew the work. It was the unanimous desire of the Executive that Mr. Ewing should be asked to give his services for another year, and he hoped he would accept.

Mr. BOWMAN seconded the motion, and it was unanimously agreed to.

Mr. EWING, in accepting, said he had a feeling that the honours should go round, but he yielded to the unanimous wish of his colleagues, and would do his best for another year, when he hoped he might be allowed to make way for another. It was a very agreeable duty he had to discharge in acting as chairman for colleagues who so heartily and unanimously supported him, and he had to thank Mr. Storrar for his kind words.

Mr. MCLAREN said he was also strongly of opinion that the honours should go round, but there was a special reason why they should re-elect Mr. Currie as Vice-Chairman, and that was the approaching Conference in Glasgow. Mr. Currie had done his

work carefully and well, and he had much pleasure in moving his re-election.

Mr. Kermath said he had just been hearing from a western pharmacist of the great amount of good work which Mr. Currie had done in Glasgow, and he had pleasure in seconding the motion which was unanimously agreed to.

Mr. Currie accepted and thanked the members for this renewed mark of confidence.

The Chairman then said he had much pleasure in welcoming Mr. Anderson Russell as a new member of the Executive.

On the motion of Mr. Fisher, seconded by Mr. Paterson, the Chairman and Vice-Chairman and resident members were appointed a General Purposes Committee to take charge of any business arising between meetings.

It was moved by Mr. McAdam, seconded by Mr. Mitchell and agreed that the Chairman and Vice-Chairman, and Messrs. Bowman, Kermath, Kerr, Storrar, and Strachan be appointed a committee for nomination of Examiners. On the motion of Mr. McLaren seconded by Mr. Fisher, it was remitted to the Committee to make inquiry and consider any names that might be submitted to them, and report to the meeting of Executive in November.

The Chairman reported that he had taken to London with him an estimate for fitting the present Board room as a library, in pursuance of the scheme for re-adjusting the Society's house. This estimate, amounting to £82 15*s.*, had received the sanction of the Council, and had been remitted to the Executive to be further dealt with. The above estimate, by Messrs. John Watherston and Sons, was accepted and remitted to the General Purposes Committee to be carried out. The housing of the newly-acquired museum collections and the purchase of a centre floor museum case were also remitted to the General Purposes Committee.

It was also remitted to the General Purposes Committee to make arrangements for evening meetings, and to consider as to the desirability of changing the night of meeting from Friday to Wednesday.

The following were appointed as delegates to the meeting of the British Pharmaceutical Conference in Glasgow :—The Chairman, Vice-Chairman, and Messrs. Bowman, Coull, Fisher, Henry, Kermath, Kerr, and Lunan.

The Chairman mentioned that there was a great desire on the part of Dr. Symes and other officers of the Conference to increase the membership, and he trusted members of Executive would endeavour to assist in inducing their friends in Scotland to join.

The Assistant Secretary read a letter from the Secretary intimating that the resolution of the Executive relative to the desirability of amending the Pharmacy Act, 1868, had been considered by the Council, and referred to the Law and Parliamentary Committee.

On the motion of the Chairman, it was remitted to the General Purposes Committee to consider the arrangements for the annual meeting.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

ANNUAL MEETING.

The annual meeting of this Association was held on Thursday, June 24, Professor Greenish, President, in the chair.—The minutes of previous meeting having been read and confirmed, and auditors appointed to examine the year's account, the Chairman called upon the Secretary (Mr. H. Wilson) to read

The Annual Report

of the Executive Committee for the session 1896-7. The report stated that the numerical strength of the Association showed an increase, there being sixteen life members and seventy-one ordinary members, giving a total membership of eighty-seven, which number had not been reached since 1879. Being largely in excess of the number of students working in the School, the increase might be taken as an indication of the loyalty of old "Square" men to their *alma mater*. A slight change from other years was made in opening the session. Professor Bretland Farmer, of South Kensington, giving a lecture on "Plants as Irritable Organisms," the lecture being followed by refreshments in the Hanbury Library, the change introduced giving general satisfaction. The number of meetings held was eleven, with a total attendance of 352, making an average of 32 as against 22 last year. The increase must be looked upon as a sign of renewed vigour, and the same was evidenced by the character of the meetings. Ten papers had been read, all of which showed great care in their preparation, and the discussions following them had been heartily taken up. Not the least successful features of the session had been the two social evenings. At the first, on December 18, 1896, Professor Collie entertained a large company with a description of a tour in the Himalayas, illustrated by lantern slides prepared by himself, and on June 4 Mr. E. J. Wall, editor of the *Photographic News*, gave an exhibition of beautiful lantern slides illustrating "Some Applications of Photography." After both meetings the "usual pharmaceutical refreshments" were served in the examination hall, kindly lent by the Pharmaceutical Society for the first time in the Association's history. The Treasurer's accounts showed that the receipts from members' subscriptions amounted to £9 6*s.*, and the half balance from the School of Pharmacy dinner to £1 2*s.* 9*d.*, making a total of £10 8*s.* 9*d.* The total expenditure had been £9 12*s.* 8½d., leaving a balance of 14*s.* 0½*d.* —Professor Greenish remarked that the report showed the Association to be in the most flourishing condition it has seen since 1879. There was a larger number of members, and the income had been sufficient to meet all expenses, which was an improvement on other years. This was largely due to the success of the School of Pharmacy Dinner. Several slight changes had been made which were very successful. The number of papers read had been more than usual, although no pressure had been brought to bear upon any student to prepare a paper for the Association. With a smaller number of students in the School of Pharmacy (about twenty less than last year) the attendance had increased to nearly half as much again, which was a very favourable indication.

Auditors' Report.

The Auditors reported that the accounts examined by them were correct.

Mr. H. Matthews, in moving the adoption of the report, commented on the gratifying character of the same. He regretted, however, that the funds of the Association were not more severely taxed by the students applying for grants to enable them to carry out various investigations under the auspices of the Association. It had power to make such grants, and he hoped in future there would be a greater call upon the funds for purposes of research. The changes made in the matter of social evenings had been most satisfactory to all. He congratulated the Executive Committee and the two Secretaries, Messrs. Wilson and Ashby, on their persevering endeavours to make the whole session successful, the members were all greatly indebted to them for their labours on behalf of the Association.—In answer to a question by Mr. Henderson respecting the fund from which grants were made for purposes of research, the Chairman explained that the balance left over from time to time in previous years had accumulated to a little over £22, forming a fund to be used for the benefit of the members generally.—Mr. Smorthwaite seconded the motion proposed by Mr. Matthews, which was carried unanimously. — Professor Greenish, in announcing the close of the session, asked those who were expecting to leave the School before another session always to bear the Association in mind, and if possible from time to time to attend the meetings, especially those of a social character. He thought it would be a good thing if they would all become life members. He wished them all every success in their future career.

Presentation to Professor Greenish.

Before the meeting dispersed Mr. Nelson rose and said that as there still remained a very interesting item to be performed, namely to make a small presentation to Professor Greenish in view of his approaching marriage, he would move that Mr. H. Wilson take the chair. This was seconded and carried.—Mr. Wilson, on taking the chair, remarked that as they were all aware of the contemplated presentation he would not detain them by a long speech, but would simply call upon Mr. Matthews, who was their chosen spokesman, to make the presentation.—Mr. H. Matthews said it was his very pleasing duty that evening to convey to Professor Greenish from the demonstrators and students of the School of Pharmacy their very sincere congratulations on his approaching marriage, and to ask him, at the same time, to be good enough to accept from them, as a slight token of their esteem and regard, the marble timepiece before him. Professor Greenish, more than anyone else in the School, they felt, was one of them. He had been a student there and had passed through all the various stages of student and demonstrator, and then after

wandering over half of Europe had returned to end his days in peace under the roof of the "Square," and now that he had been so fortunate as to secure a partner for life, it was a matter for very hearty congratulation. He believed all would agree with him when he expressed the hope that at some of their social meetings they would have the pleasure of meeting Professor Greenish's wife. He thought at the present time their feelings were rather those of congratulations to the lady, since they knew Professor Greenish so well. Perhaps when they had made her acquaintance they could also congratulate Professor Greenish even more heartily. They all hoped he would enjoy every blessing that could possibly fall upon him. They hoped he would long continue to be present at those meetings, and when they were "old" students and came to make the acquaintance of the "present" students, they would also be able to renew their acquaintance with Professor Greenish. He would wish him now all those good sentiments which they all felt most heartily. He thought Professor Greenish would feel that the function that evening was nothing more than an active phase of the attitude which they all preserved towards him on all occasions. He had much pleasure in asking him to accept the present.—Professor GREENISH on rising said he could hardly express the pleasure with which he had listened to the very flattering terms that had been used towards him. He must say that it had been a very pleasant and perfect surprise to him, and it was very gratifying to see such an expression of goodwill from the students with whom he had worked during the session. He thought on the whole they had worked very amicably together, although sometimes when occupying the position of teacher there were things to do and to say which it would be pleasanter not to say. He had been connected with the Society for a good many years, and he had come back because he felt that he could not give it up. During a good deal of wandering about, and especially during the past few years, he had always preserved towards the students a feeling of the warmest cordiality. He had been one of them, he had sat on the students' benches, and been secretary to the Students' Association, and had passed through most of the positions that could be occupied in the School, and it was most delightful to him to know that the feelings of cordiality towards them were reciprocated towards him. The present would remind him all the days of his life of the very cordial feeling they had exhibited towards him that night. On behalf of his *fiancée* and himself he thanked them most heartily for their good wishes and the extremely handsome present which accompanied them. After the loud and prolonged cheering which followed had subsided, Mr. WILSON called upon Mr. Perrédès to make a

PRESENTATION TO MR. ASHBY.

which consisted of twelve books on chemistry, electricity, and physics.—Mr. PERRÉDÈS, on behalf of the students and members of the Association, asked Mr. Ashby to accept the books as a small token of the affection and esteem with which he had been regarded during his career as a student and demonstrator in the School of Pharmacy. The memory of his personality would long remain in their minds. He had great pleasure in making the presentation. —Mr. ASHBY briefly acknowledged the present, and the meeting terminated amid the singing of "For He's a Jolly Good Fellow," followed by three ringing cheers.

NAPHTHALAN.—This compound is a preparation of naphtha distilled without the addition of acids or alkalis. It is a dark blackish-green fluid mass with a slight naphtha-like odour, neutral and melting at 70°, does not mix with water or glycerin, but emulsifies readily with fats. It is soluble in ether, chloroform, and benzol, but not in alcohol. Naphthalan has proved to be a perfectly harmless remedy, large quantities can be applied without injurious effects. It has given most satisfactory results with burns in alleviating the pain, and if applied early the formation of blisters is prevented. With various skin diseases equally good results have been obtained. Naphthalan acts beneficially on inflammations and ulcers, since it has strong antiseptic properties, and is also an anodyne for rheumatism, gout, etc. Mercurial ointment prepared with naphthalan is more easily and more equally rubbed into the skin. —*Pharm. Zeit. f. Russl.*, xxxvi., 139.

MEETINGS OF SCIENTIFIC SOCIETIES

Linnean Society of London, Thursday, June 17.—Dr. A. GÜNTHER, President, in the chair.—Messrs. Willoughby Gardner, and Walter S. Rowntree were admitted, and Mr. Arnold T. Watson was elected a Fellow of the Society.—The SECRETARY next read the text of an address of congratulation to the Queen on the attainment of the sixieth year of her reign. On the motion of the PRESIDENT it was unanimously resolved by the Fellows present, upstanding in their places, that the same be forthwith presented to Her Majesty.—Dr. D. H. Scott then exhibited original preparations by Professor Ikeno and Dr. Hirase of Tokio, Japan, illustrating their discovery of

SPERMATOZOIDS IN TWO GYMNOSPERMOUS PHANEROGAMS,

namely, *Ginkgo biloba* and *Cycas revoluta* (*cf.* 'Bot. Centralblatt,' Bd. lxix., nos. 1-2, 1897, and 'Annals of Botany,' June, 1897). The slides showed the spermatozoids while still in the pollen-tube, before the commencement of active movement. In the case of *Ginkgo* one section showed the two male generative cells, closely contiguous and enclosed in the pollen-tube. The general structure resembles that in many other Conifers at the same stage, *e.g.*, *Juniperus virginiana* and *Pinus silvestris* (Strasburger, 'Hist. Beiträge,' iv., pl. 2). In *Ginkgo*, however, each generative cell showed a distinct spiral coil, situated in each cell, on the side remote from its neighbour. Another preparation of *Ginkgo* showed a series of sections across the micropyle, passing through a pollen-tube and its generative cells, the plane of section being in this case approximately parallel to the surface of contact of these two cells, through which four of the sections passed. In the two terminal sections of this series the spiral coil was clearly shown, consisting of about three windings. The spiral is connected with the nucleus of the cell, but whether it is itself of nuclear or cytoplasmic origin is not certain. In the preparation from *Cycas revoluta*, several pairs of generative cells were shown; in some cases the pollen-tube enclosing them was intact. The spiral coils in some of the generative cells were surprisingly clear, consisting of about four windings. A distinct striation was visible in connection with the coil, probaby indicating the presence of the numerous cilia described by the Japanese discoverers. The facts admit of no other interpretation than that given by these authors, namely, that in both *Ginkgo* and *Cycas* each generative cell gives rise to a spiral spermatozoid; the latter by its own movements (actually observed by Dr. Hirase in the case of *Ginkgo*) no doubt travels from the end of the pollen-tube to the female cell.—Mr. T. B. Blow exhibited and described a curious case of

PROTECTIVE MIMICRY IN ASPARAGUS ALBUS,

which drew forth criticism by Mr. H. Groves and the President.—Mr. J. E. Harting exhibited and made remarks upon specimens of

NESTOR PRODUCTUS AND NESTOR NORFOLCENSIS

from the Derby Museum, Liverpool, kindly lent for exhibition by Dr. H. O. Forbes. The specimen of *Nestor norfolcensis* was of special interest, from the remark of Count Salvadori ('Brit. Mus. Cat. Parrots,' xx., p. 10) that this bird is now extinct, and is only known from Latham's description ('Gen. Hist. Birds,' 1822, ii., p. 171), and from the description and figure of the head published by von Pelzeln ('Sitzb. k. Akad. Wiss.,' 1860, xli., p. 322) from a drawing by Ferdinand Bauer, who had visited Norfolk Island, where the bird was found. The specimen referred to had originally a place in the Derby Museum. It was given some years ago, in exchange for other skins, to the Rev. Canon Tristram, D.D., F.R.S., and had been reacquired on the recent purchase of his entire collection of birds by the trustees of the Liverpool Museum. There was reason to believe that it was the type of Latham's description. With regard to *Nestor productus*, it appeared (1) that the species underwent a change of plumage analogous to that of the crossbills; (2) that the description given by Latham applied to a more adult bird than that now shown; (3) that the result of a comparison of the two skins exhibited and the dimensions of the wings, tarsi, and feet rendered it doubtful whether the two forms were specifically distinct, the slight variations observable in the coloration being such as might reasonably

be attributed to age or sex.—Mr. Miller Christy read a paper on—

Primula Elatior, Jacq., in Britain.

He remarked that this widely-distributed Continental plant, though figured accidentally in 'English Botany' in 1799, was not really detected in Britain till 1842, to which time the totally distinct hybrid oxlip (*P. acaulis* × *veris*) was, by British botanists, confused with, and mistaken for it, as is still frequently the case. In Britain *P. elatior* occupies a sharply defined area, divided by the valley of the Cam, with only two outlying localities, so far as Mr. Christy could ascertain. This area covers the two most elevated and unbroken portions of the Boulder Clay district, the loams and gravels of the river-valleys and the chalk being entirely avoided. The boundary-lines (some 175 miles in length) which had been traced by Mr. Christy with precision were, in consequence, very sinuous. They enclosed together about 470 square miles, over which area the oxlip flourishes in immense abundance in all old woods and some meadows, while the primrose (which grows all around) is entirely absent. Along the dividing line between the two, which is very sharply defined, hybrids are produced in great abundance. On the other hand, the cowslip (which grows both around and throughout the oxlip-area) very rarely hybridises with it. Mr. Christy believed that the primrose was in this country gradually hybridising the oxlip out of existence. He then noticed a rare single-flowered variety of *P. elatior*, which he proposed to call var. *acaulis*, and several aberrations, showing upon the screen photographic views of these and of the hybrids, as well as a map of the distribution of the oxlip in Britain. In a discussion which followed, Mr. C. B. Clarke and Sir John Lubbock confirmed the accuracy of Mr. Christy's observations.—On behalf of Mr. A. D. Michael the Zoological Secretary read a report on the

Acari Collected by Mr. H. Fisher,

Naturalist of the Jackson-Harmsworth Polar Expedition, at Cape Flora, Northbrooke Island, Franz Joseph Archipelago in 1896. The collection had been formed under great difficulties, and consisted of five species, two of which (*Erethræus Harmsworthi* and *Oribata Fisheri*) were regarded as new to science.—Sir John Lubbock communicated the substance of a paper entitled—

Further Observations on Stipules,

in continuation of a former paper communicated by him to the Society on March 18 last. The present paper, which was illustrated by diagrams, has reference, *inter alia*, to the ash, hop, and two species of pea (*Lathyrus grandiflora* and *L. pratensis*).—Mr. W. Carruthers, in commenting upon this paper, expressed the satisfaction which he was sure would be felt by botanists at the way in which the author was carefully working out details in the life-history of British plants, and in that respect conforming to the spirit of the Charter of the Society, which expressly defined the object of its formation to be "the cultivation of the science of natural history in all its branches, and more especially of the natural history of Great Britain and Ireland."—Professor Conway Macmillan, of the University of Minnesota, communicated the principal points of a paper "On Minor Tension-lines between Plant-formations."

OBITUARY.

Brooke.—On June 27, Minnie Exley, the beloved wife of Benjamin Brooke, Pharmaceutical Chemist, of York and Scarborough. Aged 29.

Bolt.—On June 7, John Pleace Bolt, Chemist and Druggist, late of Tavistock, Devon. Aged 68.

Stain.—On June 22, Thomas William Stain, Chemist and Druggist, Leicester. Aged 52.

Hurst.—On June 23, James Hurst, Chemist and Druggist (Mod.), Oldham. Aged 53.

Baker.—On June 24, Robert William Baker, Chemist and Druggist, Notting Hill, London, W. Aged 64.

Albright.—On June 25, Henry Albright, Pharmaceutical Chemist, Bootle, near Liverpool. Aged 82. Mr. Albright had been a member of the Pharmaceutical Society since 1849.

PARLIAMENTARY NOTES AND NEWS.

Viewing Bodies is a condition attaching to coroners' jury service which is particularly obnoxious to a large number of citizens who do not otherwise grudge the time spent in performing a public duty. Many persons share Mr. Mantelini's aversion to "dem'd, demp, unpleasant" bodies, and few inquests are now held without some or other of the jurors protesting against the ghoulish function of inspecting the corpse. Mr. Yoxall (West Nottingham) has been moved to pity the unfortunate victims to a statutory duty, and he will on Friday, July 2, ask the Home Secretary whether it is not possible to devise some alternative method to the ordinary "viewing," and of abolishing it altogether in cases where the medical evidence is pretty conclusive as to the cause of death. After all, what earthly good can be expected to accrue from an inspection by twelve half-terrified, half-disgusted jurymen, who, being laymen, have had no special experience of post-mortem appearances, and who cannot be expected to understand the bearing of what they see, even if they have the stomach to look at it.

Weights and Measures.—Mr. Daly (S. Monaghan) is evidently not a very observant person. He is a member of the House, and has access to all the printed matter issued by the House, but he has, nevertheless, attached his name to question asking whether the Metric System Bill (which Mr. Ritchie, in introducing, declared to be permissive), refers to Ireland, and if so, whether it will be compulsory on traders to buy and sell by the metric system if passed into law? Why do not the patriots take the trouble to read the Bill before they ask questions about it?

Merchandise Marks.—The Commons' Committee on the question of amending the law relating to marks has resumed its labours. On Monday Mr. Provand, M.P. (Glasgow, Blackfriars), was the principal witness. His evidence went to show that the examination of goods in transit had practically ruined the British carrying trade, as well as prejudicially affected the commercial operations allied thereto. The honourable gentleman described himself as being interested in a firm whose principal business was to purchase British, American, and Continental goods for shipment to China and Japan. The goods would in the ordinary course be brought to London and transhipped in British vessels. The liability to inference by the Customs on arrival in London had, however, induced shippers to obviate all risk of inconvenience and possible loss by "marking" by sending to the port of destination direct, without touching Great Britain. The effect of this new order of things has been to drive the carrying trade into the hands of German shipping companies, which had promptly taken advantage of the conditions created by the Merchandise Marks Act by establishing direct lines to China and Japan from continental ports. Mr. Provand's remedy is a simple one, viz., to amend the law so that the mere landing of goods for re-exportation should not come within the meaning of the word "importation."

Traders who desire to obtain sectional railway maps of the United Kingdom, marked with the different lines of railways, together with indications of the distances between stations, may now purchase the same through the ordinary channels. This boon is due to the efforts of Mr. Tomlinson (Preston) and the President of the Board of Trade, supplemented by the considerate attitude of the Railway Clearing House Committee.

The Sunday Society, of which Lord Hobhouse is chairman, and to which Professor Percy Frankland and his colleagues of Masons College lend their names and support, experienced a rude rebuff on Tuesday in the House of Lords—the Society's Bill for amending the Lord's Day Act of 1781 being thrown out by a large majority. The Bill was an extremely moderate measure and only aimed at the legalistion of Sunday lectures, sacred concerts, and other "improving distractions" which are at present run under risk of prosecution, but the Lords Spiritual would not hear of such an attempt to introduce what they are pleased to call "the Continental Sabbath," and the Lords Temporal followed in the same stric path of rectitude. The only consolation remaining, therefore, is th common sense of the judges, who, it is hoped, will not administer the Act of 1781 in a manner repugnant to modern ideas.

NEW REMEDIES.

[The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.]

MIGRANINE IN NEURALGIA.—Möller reports on several cases of trigeminous neuralgia where one to two doses of 1 gramme of migranine produced astonishing results. The patients were all chronic sufferers from neuralgia, and had tried all known remedies. As a rule, two doses of migranine sufficed to remove the pain, and after some perseverance with the remedy, long intervals (up to six months) were enjoyed free from attacks of neuralgia.—*Wiener Klin. Rundsch.*, xi., 257.

INJECTIONS OF ZINC CHLORIDE FOR HERNIA.—Demars, following the method of Lannelongue, reports on six cases of the radical cure of hernia by means of three simultaneous injections of ten or twelve drops of 10 per cent. solution of zinc chloride. In all cases a rapid and complete cure resulted; an eschar formed in a few cases from the use of a needle with too large an orifice; to prevent this only the very finest needles should be employed.—*Comptes rendus*, cxxiv., 909.

SODA LORETIN TABLETS FOR DISINFECTION.—Loretin is not only useful as an external remedy, but makes also an excellent disinfectant for surgical instruments, etc. It has already been proved that it possesses all the properties of iodoform in a superior degree. Loretin is readily dissolved in an aqueous fluid with carbonate of sodium. A mixture of soda and loretin is compressed into tablets. These are an excellent means of preparing a disinfectant bath for the hands, instruments, tables, etc. The tablets dissolve readily in hot water to a light yellowish fluid of strong bactericidal action.—*Zeit. d. allg. öst. Apoth. Ver.*, li., 232.

AMYLENE HYDRATE FOR DIABETES INSIPIDUS.—Two grammes of amylene hydrate per diem given in cases of diabetes insipidus ameliorated the feeling of thirst, and within eight days the daily quantity of urine was diminished from 8000 C.c. to 2400 C.c. On cessation of the remedy the amount of urine excreted rose again to 5000 C.c. after three weeks, but the good result obtained would at any rate entitle the matter to further observation.—*Pharm. Centralh.*, xxxviii., 260.

CANTHARIDES IN THE INFECTIOUS NEPHRITIS OF JUVENILES.—Mlle. Myszynski finds that tincture of cantharides in doses of 10 to 12 drops is very beneficial in the acute infectious nephritis, especially in early stages, with or without anasarca, occurring in young people. It is contra-indicated in the interstitial nephritis of arterio-sclerosis and in lead poisoning, and causes a rise in temperature in some cases of latent tuberculosis, but otherwise it is harmless.—*Brit. Med. Journ. Epit.*, 1/97/72.

INJECTION OF CARBOLIC ACID IN RELAPSING TONSILITIS.—Kramer finds that where ordinary methods of treatment are ineffectual in preventing frequent relapse, after an injection of a solution of carbolic acid into the tissue of the tonsil, no return of inflammation takes places even in cases in which previously relapse has been of frequent occurrence. He adopts the following method:—After an application of cocaine, about ½ C.c. of a 2 per cent. to 3 per cent. solution of carbolic acid is injected with an ordinary Pravaz's hypodermic syringe. This is repeated every second or third day till four to six injections have been given. The author has seen no sign of carbolic acid poisoning, nor any ill result from the injection.—*B. M. J. Epit.*

CARBOLISED RESIN AS A STYPTIC.—Van Pelt Vicks finds carbolised resin an unfailing styptic in hæmorrhage. He gives the following formula:—

Pulverised Resin (common)	ʒiv.
Carbolic Acid (95 per cent.)	ʒiii.
Chloroform	ʒii.

Make a short thick cotton rope larger than the wound to be treated, moisten the end well with the compound and plug the cavity tightly. The bleeding will cease as though by magic.—*Brit. Journ. Dent. Sci.*, xl., 425.

EXTRACTS FROM CONSULAR REPORTS.

PHOSPHATE FERTILISERS form by far the most important of the manufacturing industries of Charleston (U.S.A.). The total output for the year ending August 31, 1896, was 200,000 tons, including 70,000 tons on hand September 1, 1896, sold but not then delivered, which was an increase of about 60 per cent. over the previous year. The large sales, however, were more than set off by the lower prices prevailing, and the value of the total product was less by £24,000 than for the year before. Of this decrease in value, £18,000 was due to the falling off in prices of acid phosphites, and £6000 to ammoniated goods.

CHINESE OPIUM.—Consul Allen, reporting on the trade of Foochow during 1896, says that although the import of opium continues to decrease, the falling-off in the year is not so noticeable as it has been in recent years. The net import for the whole twelve months was 3435 chests, against 3563½ chests in 1895, a shrinkage of 128½ chests. The prices of Malwa ranged from $720 to $815; Patna, from $622 50c. to $810; Benares, $670 to $802 50c.; Persian from $480 to $790. Both at Foochow and at other treaty ports of China the native drug is driving the foreign out of consumption. The consumption of opium in Wuhu and suburbs has been estimated at more than £250,000 worth a year, which is smoked by a population of 100,000 people.

CHEMICAL FERTILISING AGENTS imported into Martinique, says Acting-Consul Borde, come chiefly from England. Chlorate of potash, nitrate of soda, superphosphate of lime and ammonia are all imported in large quantities, and statistics show a figure of 5000 tons in 1896. He points out, however, that there is a marked tendency to order superphosphate of lime from New York, it being found to be just as good, while costing less than that from England. The same thing is also said to exist with nitrate of soda, which is now got from Chili direct. The quantity of phosphates imported into Brest was 5800 tons, 3400 tons more than in 1895. 2400 tons came from the United Kingdom, and the rest from Antwerp. The demand for artificial fertilisers is increasing, and deserves the attention of British exporters.

THE IMPORTATION OF CHEMICAL PRODUCTS into Portugal during 1895 as compared with the value in 1894 was as follows, the percentages showing the increase: Pyroligneous acid, £1000 (107 per cent.); arsènious acid, £250 (70 per cent.); muriatic acid, £2800 (170 per cent.); nitrate of potash, £10,800 (23 per cent.); nitrate of soda, £5100 (40 per cent.); iodine, £580 (15 per cent.); phosphorus, £1300 (97 per cent.); refined carbonate of potash, £1580 (76 per cent.); unrefined carbonate of potash, £484 (53 per cent.); carbonate of soda, unrefined, £340 (44 per cent.); chloride of sodium, £1009 (79 per cent.); sulphate of soda, £1920 (45 per cent.); sulphate of potash, £520 (1826 per cent.); sulphate of iron, £1360 (870 per cent.); sundries unspecified, £55,600 (6 per cent.) Nitrate of silver, £620 is nearly the same as previous year, and the same in the case of the value of sulphate of copper imported, £36,920, although the quantity decreased by some 500 tons. The following show a decrease:—Sulphuric acid, £79 (41 per cent.); borate of soda, £355 (51 per cent.); carbonate of soda, dry, £11,900 (9 per cent.); chloride of lime, £4200 (27 per cent.); salts of quinine, £1700 (27 per cent.).

BRAZILIAN IMPORTS.—The duty on patent medicines, medicinal wines and syrups imported into the State of Rio Grande do Sul, Brazil, is extremely high. Pills, granules, and boluses, irrespective of ingredients and cost, pay 62 milreis per kilo.; thus a pill costing 5*s.* a kilo. would pay more than eight times its value in duty. Photographic chemicals, apparatus and plates are also imported into the State. The chemicals and sulphuric acid are procured from Germany on account of the lower rate of freight. The French makes of apparatus are chiefly used, while Britain supplies the plates and bromide papers. There is a fair demand for these goods, amateur photography being on the increase. All kinds of scents, fancy soaps, and toilet preparations are sold in Rio Grande do Sul in large quantities, but the almost total absence of British products of this nature is remarkable. French perfumery is preferred to any other, which is almost entirely owing to the artistic bottles, labels, and attractive get-up of the goods. The duty on perfumery includes weight of bottles and of cardboard box, but not of a wooden box.

LETTERS TO THE EDITOR.

MANUFACTURE OF MORPHINE.

Sir,—In your sketch of the "Industries Connected with Pharmacy" you have omitted the name of T. N. R. Morson in connection with the manufacture of morphine, and give Macfarlans the credit of being the first in the field. This is not quite correct; Mr. Morson was the first man who made morphine in this country, and also the first who made sulphate of quinine. He spent some years in Paris, and shortly after he came from there he took a shop in Farringdon Street and made both articles there. A gentleman, Mr. Hauxby, of Berners Street, with whom I lived as assistant, knew him well, and I think had been with him in Paris, used to tell me about this, and how Mr. Morson used at first to make them in the little parlour behind the shop. During the time I was in London, 1844–1850, I was well acquainted with the late Mr. John Williams, who was then the manager of his laboratory, and I have heard him speak of putting half a ton of opium to soak in one batch for making morphine, so they must have had a pretty considerable sale for it.

Cheetham Hill, June 26, 1897. W. WILKINSON.

PHARMACY THEN AND NOW.

Sir,—A perusal of your *résumé* of "Progress in Pharmacy" has stirred up within me many latent memories—some pleasant, others regretful. I, too, can look back upon a long period. Man and boy, I have been engaged in the business for more than fifty years, and during that time I have noted many, very many, changes, and not all of them for the better. We have not advanced in the line of brotherliness. Our fathers (mine amongst the rest) used often to meet; they called at one another's houses, compared notes, talked over prices, and stocked one another's specialties in the most friendly manner, and at fair and remunerative profits, too. They never thought of cutting the trade. Alas! how great the change to-day! Then our neighbour was a "brother chip" straight and true! Now he is the up-to-date man, and is determined to meet the stores and the store man upon their own ground, and he prates loudly upon the great increase of his returns; but he is dumb about the more essential part, his profits! How many a man has lost his head and broken his heart in this mad rush of folly, which has resulted in the "lunatic asylum" or the workhouse? Very few of us can live without some of these trade accessories. Pharmacy pure and simple to-day spells starvation; but in the handling of these things we should be honest and honourable, and not use them, after the manner of some is, as a "stalking horse" to injure our neighbour. We, at least, must learn to be above suspicion. The public are beginning to see through these tricks, and in process of time they will learn to know where it was that they were "had."

With your permission, sir, I should like to have a little say upon some of the causes which have led up to this change. What is it then? First and foremost want of loyalty to one another—strange but true. One of your correspondents reminded us in the Journal a short time since that we had another case in this matter of "history repeating itself." I remember—only too well—the time when we might have had a really good Pharmacy Act—beneficial alike to ourselves, and in the best interests of the public. It was lost through jealousy and dissensions, lack of foresight, and want of unity. Gave us what?—a bad Poison Bill and an uncertain status. After that we had "The Chemists' and Druggists' Trade Association," an association which was doing good work and would have done much better, for there were some good men at its head; but here again jealousy, lack of unity and support, and want of funds—it died, and I for one mourned its loss. Now we have another association taking up somewhat new ground and trying to force itself upon the trade by methods which are, to say the least, suspicious. I do not say this from any feelings of of bitterness or offensiveness; I honour any and every honest endeavour to band us together in unity and loyalty of purpose. At the same time I do fail to see how this end is to be accomplished by any attempt to "boycott" any member or members of our craft because he refuses to place his specialties upon the "protected list." Such tactics are unworthy of any body of intelligent and honourable men. Although I am not in a position to know, yet I can conceive a good and valid reason why they should not do so. Look at the matter in this light. Here are makers of proprietary articles and manufacturers of others placing some of their preparations upon the protected list, under the guarantee that they shall not be sold under a certain minimum value, and that value, observe not the advertised face value, but at a low cutting value.

Now, sir, I ask in all honesty, is this fair? is it justice? is it honourable? If this cannot be answered in the affirmative, how on earth can it be expected that any honourable firm will protect at one price and advertise at another? The thing is too ridiculous. I have often tried to argue this point out with representatives of some of the large makers of these things, and have as often been met with the reply, "We could not alter the advertised price because the retailer should be able to get the face-value when he can!" This is what I have always looked upon, and look upon it still, as double-dealing of the worst kind, and deceiving the public into the bargain, besides giving a false character to the honest man. For years I have been an advocate for reducing the so-called patents to 1*s.* and 2*s.* 6*d.*, etc., without interfering at all with the wholesale charge, requiring at the same time that it should be so advertised to the public. No good result from any other method of tampering with the subject will accrue. Given honesty of purpose all round, the moral question then comes to the fore; the thing falls into line and is done because it is right. I am not an optimist, neither am I a pessimist. I do not expect to see great results in my day, but if, by dropping a word or two now and again, I can succeed in calling a halt, and getting some to pause and reconsider their position, I shall feel glad that in the gloaming of life I have been able to accomplish that little, and that the attempt has not been vain. We do well to consider and reconsider, for the position of our craft, and not only ours, but all business, is in a critical position through laxity, lack of integrity, and want of honour. Of course I do not expect that all will agree, or sympathise with me, probably you, sir, may not endorse all that I have written—all I ask is that you and your readers will give me credit for honesty of purpose and the well-being of the craft to which (with all its defects) I have the honour to belong; and I do not intend to forget that I am still a living unit and may have some influence upon the mass if it be only in a very small degree. I had intended saying somewhat upon the apprenticeship and education question, but having trespassed already too much upon your space I must defer it to some future opportunity.

June 28, 1897. G. G. HORNSBY.

Sir,—In the year 1837 I was serving an apprenticeship to a chemist and druggist in the country town of one of our south-western shires. We opened shop at 7 a.m. and closed at 9 p.m., except on Saturday, which was market day, when the shutters were not put up till 11. The business was what may be correctly described as a good family and dispensing one, and the prices we obtained were such as to make the average poor latter-day pharmacist's mouth water:—Draughts (which at that time were very much in evidence), 9*s.* a dozen; pills, 9*d.*; an 8-oz. mixture, 2*s.*; 6-oz. ditto, 1*s.* 6*d.*; 16-oz. ditto, 3*s.* 6*d.*; a moderate sized plaster, 1*s.*; castor oil, 6*d.* per oz.; bicarbonate of soda, 3*d.* per oz.; tartaric acid, 6*d.* per oz.; arrowroot, 4*s.* per lb.; and everything else on an equally regal scale. I think we resembled our brethren in most small country towns, in being dependent on the wholesale druggist and chemist for the purity of our wares, since we knew little or nothing of pharmaceutical testing, although my father paid my master £200 to teach me the art and mystery of his trade. I am pleased to say we were comparatively guiltless of the practice of substitution, if I except making East Indian rhubarb personate Turkey and the custom of supplying carters and teamsters with some harmless drug, instead of the oils of "earthworms," "duty," "swallows," "elder," and the numerous other impossible and imaginary substances asked for. We were also occasional purveyors of a species of philter to some smitten rustic. This charm, known as "love powder," consisted of arrowroot and orris. I remember, one first of April, a boy entering the shop with a bottle in his hand and asking for a shilling's worth of "pigeon's milk." The demand was promptly met by supplying him with about an ounce of mist. ammoniaci, which was labelled "Pigeon's milk." Awaiting the boy after leaving the shop we saw a would-be wag, and from his administering a sound cuff on the head of the youth, we concluded the wag was both annoyed and surprised to find his order interpreted so literally. Needless to say, the money was subsequently returned. I do not think this can be regarded as a case of substitution. In 1837 there was free trade in poisons, and we sold a considerable quantity of arsenic for sheep washing and wheat steeping, and I may add I never knew an instance of any fatality ocurring in consequence. Shepherds, after being duly

warned, had no difficulty in obtaining corrosive sublimate in quantities of an ounce or more at a time, and I have frequently known them carry it in their pockets rolled up in a piece of paper. As 1837 was a pre-suppository era, so, at least with us, it was a pre-enema one, as regards the method of administration. I well remember a shop drawer containing bone clyster pipes, which, fitted to an ox-bladder, were used for rectal injections. Here by the way, we have an interesting illustration of evolution, showing the descent of the modern enema apparatus resembling that of the quaternary horse from his remote ancestor. In these my young days, the word "Boss" had not supplanted the appellation "Governor." Of the gentleman who was "my Governor," let me say, that he dressed in black, had a good banking account, was a churchwarden, and was withal of such undeniable respectability that he profusely feathered his comfortable nest, although as to knowledge of his craft, a very indifferent Minor man of to-day would be *toto cælo* above him.

June 28, 1897. SENEX.

Sir,—Although my connection with the chemist and druggist business commenced not long after 1837, and though my experience has been confined to a very limited range, it offers some points of contrast with the present. The impression upon my mind is that about the time of my apprenticeship there were, in and around London, only a few well-conducted and flourishing businesses whose proprietors were well educated and with scientific attainments up to date. The majority of shops were of a very poor description, slovenly in appearance, and the proprietors of by no means an intellectual character, but between the two extremes there was a middle class, who, if not wealthy, were at any rate respectable and useful public servants. Turning attention to our own time, we must be conscious of vast improvements in the appearance, cleanliness, neatness, and order of shops. The laboratory, however, is less frequently met with, and many things that were formerly made on the premises are now, with advantage to the proprietor, purchased of wholesale houses; but with disadvantage to the apprentices and assistants, who lose valuable opportunities of practical training in conducting manufacturing processes. The present order of things, however, produces able dispensers, more intelligent in their craft, with higher scientific and educational attainments, and in the aggregate better up to date, though perhaps the progress made has not been more than commensurate with the public requirements, or with that in other vocations or departments of knowledge.

In my early days chemists and druggists were little affected, either favourably or unfavourably, by legislation; now they are affected in both ways. Favourably in some respects, though not to the extent they would desire by the Pharmacy Acts; unfavourably in other respects, inasmuch as they are subject to restrictions that did not formerly exist. Perhaps on the whole beneficially, as compliance with the law calls forth an amount of energy and care that formerly lay dormant, and by which the public certainly profit.

Competition with co-operative stores and limited liability companies is a sore subject, grievous to all old members of the trade, ruinous to some, and to be coped with only by an entire change of tactics. Corporate trading, however, is the order of the day, and in my opinion can be successfully contended with only by corporate union amongst chemists themselves. This will reduce the number of independent proprietors; at the same time it would do away with many of the hardships and anxieties that afflict us now. The number of chemists required, and the standard of qualification will be no less, and though the incomes may be smaller, they may be more equal, more certain, and more satisfying. The hours of business during the period under consideration have been greatly reduced with advantage to all parties, and especially to assistants, who now enjoy greater privileges and obtain higher remuneration than formerly.

The Pharmaceutical Society and numerous schools of pharmacy that have followed its lead have been a great boon to rising members of the craft. The opportunities they afford are of incalculable value, and by availing themselves of their advantages only can the coming generation hope to maintain their ground. The power of this influential Society has made itself felt on many occasions, and if it had been backed up by a more general and hearty support throughout the trade it might have accomplished much greater things. Several favourable opportunities have been lost, others may occur and I would appeal to the trade not to let them pass unheeded, or worse still frustrated as others have been. One more point I will remark upon, I think there is less of the petty jealousy and rivalry amongst members of the trade than formerly, when every one seemed to look upon his next neighbour as a deadly enemy, and the improvement is most marked among the best educated and most highly qualified. May this better spirit increase and extend. This must be the prayer of every well-wisher to Pharmacy.

Acton, June 28, 1897. JOHN HORNCASTLE.

ANSWERS TO QUERIES.

GRASS.—*Phleum pratense.* [*Reply to* J. R.—100/6.]

BOTANICAL.—*Orobanche minor.* [*Reply to* A. P. S.—100/23.]

LEGAL STATUS.—Your query is not very definite, but you should claim a professional status. [*Reply to* H. G. P.—100/36.]

SHAVE-GRASS.—This name is appled to *Equisetum hyemale*, which is employed medicinally as a diurctic. [*Reply to* S. C. S.—100/9.]

VARICOCELE APPARATUS, ETC.—Write to Mr. Albert Browne, 3, Bowling Green Street, Leicester. [*Reply to* LYRA.—99/33.]

UNG. CROZALIA.—You will probably obtain this through the wholesale patent medicine houses. [*Reply to* G. F. S.—100/12.]

FINISH FOR SHOE SOLES.—This is, approximately, yellow ochre, 1; light umber, 1; yellow dextrin, 2; water, 5, with a trace of mirbane to give it an odour. [*Reply to* G. C. R.—99/10.]

HIRE OF COMBUSTION FURNACE.—Possibly you might be able to hire such apparatus as a combustion furnace from Gallenkamp, 6 to 10, Cross Street, Finsbury, E.C. [*Reply to* G. T. C.—99/30.]

JOSEPHUS CHIPS.—We do not know what these are, and have inquired of wholesale dealers without success; probably the name is a local one. Can they be guaiacum chips? Send a specimen if possible. [*Reply to* PHARMACIST.—99/14.]

CHEAP HEADACHE POWDER.—Most of the cheap headache powders are nothing but acetanilide. They are generally put up in 6 to 8 grain doses. Another popular form is: Caffeine, 10; sodium bicarbonate, 20; acetanilide, 70 parts. Dose, 10 grains. [*Reply to* PROVINCIAL.—99/34.]

GOLD PAINT FOR SHOP JARS.—For cheap paint use ordinary "Dutch bronze" powder suspended in a solution of sheet gutta percha, 4; benzole, 100 parts. For better quality work employ powdered gold leaf instead of bronze powder. When the paint is dry coat with some quick-drying white varnish. The yellow colocynth tint may be got with a solution of gamboge and a little pale shellac in methylated spirit. [*Reply to* S.P.S.I.—99/29.]

DISPENSING QUERY.—To dispense the following prescription—Ammon. ichthyol, ℥iij.; ext. opii, ℥j.; ext. belladonnæ, ℥j; vasclin, ad ℥iss.; ol. sanitas, *q.s.*—proceed as follows:—First soften the extracts with about 10 minims of glycerin and a little hot water, rubbing down on the slab until perfectly smooth, then gradually incorporate about 6 drachms of vaselin, then slowly add the ichthyol, and finally the rest of the vaselin and the sanitas. [*Reply to* B. L. B.—99/2.]

INFORMATION WANTED.

PULV. DISSIPABILIS.—Can any reader say what this powder is? [SODA.—99/6.]

LOZENGE MACHINE.—Where can small machines be obtained for cutting and stamping medicinal lozenges in quantities of seven to fourteen pounds? [PHARMACIST.—100/41.]

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Austen, Brooke, Brown, Butterworth, Cromwell, Flatters, Gunn, Harper, Hill, Hogg, Hopley, Horncastle, Hornsby, Howorth, Jones, Kirchner, MacEwan, Mair, Markham, Meats, Merson, Murdoch, Oliver, Parker, Ranchon, Rodgers, Sawer, Shakespear, Shapley, Smalley, Spencer, Sproat, Stephens, Stratton, Strutt, Westrup, Whittle, Wilkinson.

ON DESSERTSPOONS AND SOME OTHER MEASURES.

BY RICHARD REYNOLDS.

Unless some of our good friends of the North British Branch have anticipated me, I offer the following literary trifle upon the evolution of the dessertspoon.

The *Cornhill Magazine* publishes some interesting personal recollections by Sir Charles Murray, who had met Sir Walter Scott, Goethe, Sydney Smith, and many other eminent men. Referring to the early days of this century, he comments on the fact that the article which we call the dessertspoon was not then known in Scotland :—

> The two houses in which it was first introdueed were Hamilton and Dalkeith. Before that there was no spoon known between the tablespoon and the teaspoon. Bearing this in mind, we proceed to the following incident. A rough country squire, dining for the first time at Hamilton, had been served in the second course with a sweet dish containing cream or jelly, and with it the servant handed him a dessertspoon. The laird turned it round and round in his great fist, and said to the servant: "Wha do you gie me this for, ye d——d fule? Do ye think ma mooth has got any smaller since a' lappit up my soup?"

As a domestic measure for liquid medicines the dessertspoon has probably been recognised by the medical profession in England so far back as the memory of the oldest of us will carry. But it appears that this is not the case in France, although I can claim no personal knowledge of dispensing in that country. My reasons for the opinion are the following:—Very recently a French prescription containing a material quantity of arseniate of soda came under my care, the dose being defined as "une cuillerée à soupe." I wished for some authority before deciding that this was the equivalent of our tablespoon, and was surprised that a search in Dorvault's encyclopædic 'L'Officine' threw no light on the question. With but little hope of success I turned to the French 'Codex,' and found considerable prominence given to the following table, viz. :—

> "Evaluation en poids des cuillerées, verrées, poignées, pincées, etc.
> "Une cuillerée à café d'eau commune equivaut à 5 grammes.
> "Une cuillerée ordinaire à 4 cuillerées à café, ou 20 grammes, etc., etc."

This reference was quite satisfactory on the question of the capacity of a "soup-spoon." I trust that the editors of the 'Extra Pharmacopœia' will publish the whole of the table from which I have quoted in their next edition.

CHELIDONINE.*

BY THE LATE ARTHUR J. G. TYRER.

The material operated upon was obtained partly by E. Merck, of Darmstadt, and partly prepared from fresh chelidonium roots. In both cases the base crystallised from alcohol in transparent tables melting at 135° C. In its behaviour to reagents the base corresponded with the accounts given by Henschke and Selle (*Archiv Pharm.*, 1888 and 1890), and its composition was found to be the same as those authors state ($C_{20}H_{19}NO_5 + H_2O$).

Of the salts, the hydrochloride hydrobromide and phosphate were prepared and analysed.

From Henschke's account of the behaviour of chelidonine towards ethyl-iodide it may be inferred that the base is tertiary, and on attempting to prepare the corresponding methyl compound, it was found that methyl-iodide had as little action at 100° C. as ethyl-iodide. At 130° to 140° C. reaction took place, and a crystallisable compound was obtained, having a composition represented by the formula, $C_{20}H_{19}NO_5 \cdot CH_3I$.

Henschke's observations as to the behaviour of the base with acetic anhydride or benzoic anhydride did not lead to conclusive results as to the number of HO groups in the base, and further experiments were made in that direction, with the result of showing that only one of the five oxygen atoms is present in the base as an HO group.

The compounds obtained had the composition represented by the following formulæ :—

Mono-acetyl-chelidonine, $C_{20}H_{18}(C_2H_3O)NO_5$.

Mono-benzoyl-chelidonine, $C_{20}H_{18}(C_7H_5O)NO_5$.

The elimination of water mentioned by Henschke could not be observed. By treatment with hydroxylamine a crystalline oxim was obtained having the composition represented by the formula $C_{20}H_{19}NO_4 \cdot N \cdot OH$.

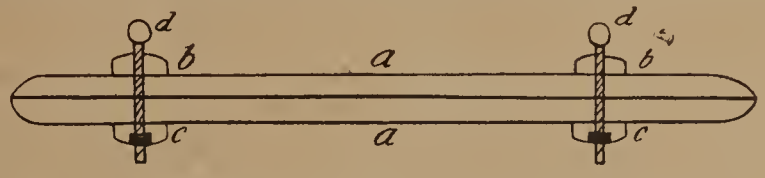
Some other reactions with phenylhydrazin, sodium amalgam, iodine and potassium ferricyanide had not been sufficiently studied to admit of the results being recorded.

* *Abstracted from the Apotheker Zeitung*, xii., 442.

A HANDY PRESS FOR BOTANICAL SPECIMENS.

BY HENRY ELMS.

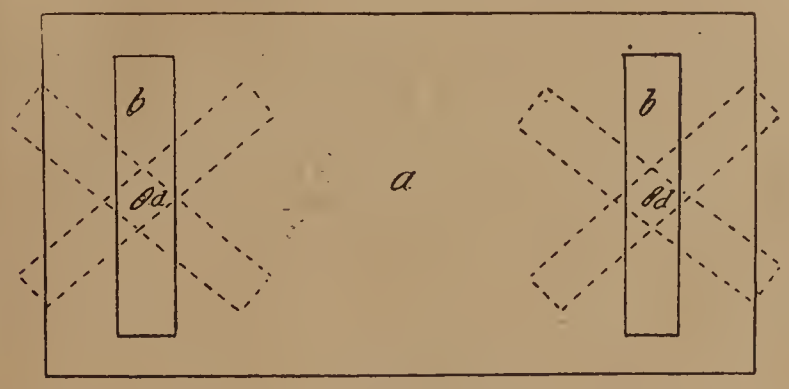
At this period of the year when lovers of plants and flowers, whether actual students or not, desire to make the most of their opportunities, a few hints with regard to a simple apparatus for the use of the field botanist may not come amiss. Some time ago it occurred to me that the ordinary method of pressing specimens between the leaves of heavy books was primitive,



Edge View of Press (Lengthways).

in many cases ineffectual, and in all cases detrimental to the appearance of the book's pages; so I made on my own plan a small press, which I hoped would do away with those objections, and at the same time be of such shape and size as to be easily carried, yet capable of exerting considerable pressure. As it has answered my purpose exceedingly well, I thought perhaps that others might care to know of it.

The accompanying sketches and description will, I hope, make the matter sufficiently plain to any desirous of manufacturing such a press for their own use. With the aid of a few tools and a supply



Top View of Press.

of coarse sand-paper, and at the cost of a shilling, a useful and very presentable piece of handiwork may be turned out with a little care and the same amount of patience.

(*a a*) Two pieces of wood with smooth surfaces, each 14 inches long, 8 inches wide, and ½ an inch thick.

(*b b*) Two strips of wood, each 6 inches long, 2½ inches wide, and half an inch thick, having let into them flush with the surface the two top plates of the thumb-screws.

(*c c*) Two strips of wood, each 6 inches long, 2½ inches wide, and half an inch thick, having let into them flush with the surface the wormed plates belonging to the thumb-screws.

(*d d*) Two brass thumb-screws, 2 inches by ⅛ inch, with plates complete, each screw passing through the entire thickness of *a a*, *b*, and *c*.

The dotted lines show how the cross-pieces (*b b*) above, and the cross-pieces (*c c*) below, may be moved about at will by loosening the screws slightly, and when in the required position held there by tightening the screws, in this manner exercising a more uniform pressure over the whole surface of the boards (*a a*). With this press I have prepared over two hundred specimens satisfactorily.

PHARMACEUTICAL SOCIETY.

ROYAL COLLEGE OF PHYSICIANS OF LONDON
-9 JUL 97
LIBRARY

MEETING OF THE COUNCIL.

WEDNESDAY, JULY 7, 1897.

Present :

MR. WALTER HILLS, PRESIDENT.
MR. C. T. W. NEWSHOLME, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Hampson, Harrison, Martindale, Park, Savory, Symes, Warren, and Young.

The minutes of the previous Council Meeting were read and confirmed.

RECEIPT OF LETTERS.

The PRESIDENT said that, arising out of the minutes, the first matter he had to refer to was a letter that had been received from Sir Matthew White Ridley acknowledging receipt of the address to the Queen on the occasion of her Diamond Jubilee. In acknowledging the receipt of the address, Sir M. W. Ridley said Her Majesty was pleased to receive it very graciously. A letter had also been received from Mr. Gostling, tendering his thanks for the very gratifying resolution passed at the last meeting of the Council in recognition of the services he had rendered to the Society while on the Council. Mr. Gostling wrote that it had been a pleasure, and was still a matter of considerable gratification to him, to be associated with so many men interested in the welfare of the Society. He concluded by wishing the Council continued success in their work. The President then drew attention to a portrait of Dr. Attfield by Professor Herkomer, which Mrs. Attfield had been kind enough to send to the Society.

THE LATE PROFESSOR PLUGGE.

The PRESIDENT said he had to mention with regret that the list of corresponding members had been diminished by the death of Professor Dr. Pieter Cornelis Plugge, who had been a corresponding member of the Society since 1893. He held the chair of Pharmacy and Toxicology at Gröningen, and was the author of a work, the title of which occupied three lines in Dutch, and he understood was on the chemical composition of the most important medicines and their pharmaco-dynamic action ; it had been translated into German by Professor Schaer. Dr. Plugge died at the Royal Botanic Gardens in Java, where he was fulfilling a scientific mission. They would all, he was sure, regret his death.

THE LATE MR. RIMMINGTON.

The PRESIDENT said he had also to call attention to the fact that during the last month a former member of the Council, Mr. F. Marsh Rimmington, of Bradford, had passed away. Mr. Rimmington was a member of the Council many years ago, before he (the President) had the honour of being a member, but he had had the pleasure of meeting him many years ago. Mr. Rimmington also held important offices in Yorkshire, and he was sure that the Council would wish him to send a letter expressing its sympathy to the family of the deceased.

Mr. CARTEIGHE, having known Mr. Rimmington many years ago, wished to add a word. He received great kindness at his hands in common with his colleagues when the British Association met at Bradford, and would describe Mr. Rimmington as a very genial, warm-hearted, lusty Yorkshireman. He had very distinct views, and did not hesitate to express them. but though he sometimes expressed them in a truly Yorkshire manner, he was perfectly free from all feelings of spite which could give pain to others. Mr. Rimmington belonged to the earlier pharmacists, who showed by their knowledge of chemistry and microscopy, and by their training after they had obtained their qualification, that they were capable, not only of being public analysts, but also men of science, respected in their respective districts. Mr. Rimmington, with Mr. Stoddart and others represented, with Daniel Hanbury, a group of men of which the Society might well be proud. If he remembered rightly, Mr. Rimmington was one of the earliest analysts appointed from the pharmaceutical body. He did not suppose there was any man who managed to get through his duties in that respect with less friction, and whose results were so rarely questioned. The feeling that Mr. Rimmington had with regard to the Pharmaceutical Society was that when the Food and Drugs Act was passed by Parliament, they should have got the necessary powers to enable them to make the Major examination such as would allow their Major men to be public analysts. There was a strong feeling at the time by certain men, among whom were the late Dr. Greenhough and himself, that this should be done, but the Council of that day thought otherwise. Of course there was the difficulty that the men who had passed the Major examination were the only men who could become full members of the Society under the existing state of the law, and there was a feeling that to make the Major examination a scientific examination *per se* would do damage to the Society. He was bound to say now that the Council was wise, although he thought differently at the time, because of course their first duty was with regard to pharmacy, and not to become public analysts. He mentioned these facts to show that Mr. Rimmington was much in advance of his time, and a great credit to the pharmaceutical body.

Mr. MARTINDALE said he well remembered being present at the Bradford meeting of the Conference, and felt sure, as Mr. Carteighe had said, that Mr. Rimmington's fine manly figure would be in the memory of all who were there. He was a frequent attendant at the Conference meetings in early years, especially in the north of England and Scotland.

Mr. HAMPSON said he had the pleasure of sitting with Mr. Rimmington on the Council, and what struck him chiefly about him was the great independence of character he always manifested. He held firmly to his opinions, which he was bound to say were generally sound. He was a distinguished pharmacist, as well as a distinguished chemist, and his death was a great loss to the Society.

ELECTION OF ASSOCIATES IN BUSINESS.

The following, having passed the Minor examination, being in business on their own account, and having tendered their subscriptions for the current year, were elected "Associates in Business" of the Society :—

Dawson, John Harper ; Fife Keith.
Reid, David ; Bathgate.
Smith, William ; Durham.

ELECTION OF ASSOCIATES.

The following, having passed the Minor examination and tendered their subscriptions for the current year, were elected "Associates" of the Society :—

Duncan, Hubert ; Glasgow.
Ferguson, John Alex. ; Milnathort.
Harper, William ; Turriff.
Kissell, John Victor ; St. Mewan.
Sharp, William Ashton ; Owston Ferry.

ELECTION OF STUDENTS.

The following, having passed the First examination and tendered their subscriptions for the current year, were elected "Students" of the Society :—

Brown, Joseph Robert ; Oakham.
Bustard, Francis Edwin ; Poole.
Hall, Walter Hutchinson ; Littleborough.
Jones, Samuel Wilfred Job ; Seacombe.
Laurie, James Alex. ; Montrose.
Lawson, George Crisp ; Darlington.
Roberts, Frederick Walter ; Bexhill.
Rodwell, Henry ; Glasgow.
Swinn, Charles Gosling ; Manchester.

Restorations to the Register and to Membership.

The name of the following person, who has made the required declarations, and paid a fine of one guinea, was restored to the Register of Chemists and Druggists :—

Thomas Ulock Price ; 1, King David Lane, Shadwell, E.

Several persons were restored to their former status in the Society upon payment of the current year's subscription and a nominal restoration fee of one shilling.

Finance Committee.

The report of this Committee was read, recommending various accounts for payment.

The President, in moving the adoption of the report and recommendations, said there was nothing to which he need call special attention. The amounts recommended for payment were rather large, but they included the examination expenses, and salaries, and annuities, which were usual at this time of year.

The proposition was at once agreed to.

Benevolent Fund.

The report of this Committee included a recommendation of grants to the amount of £18 in the following cases :—

An associate and member (74) from 1842 to 1883, who had a grant last year. (Liverpool.)

The widow (77) of a chemist and druggist, who died in 1888. (Durham.)

Two applications were adjourned for further information.

The Vice-President, in moving the adoption of the report and recommendations, said the first case on the list was that of a gentleman, seventy-four years of age, who had been connected with the Society for forty years, and was now trying to earn his living by *locum tenens* work, but one could imagine that in the great race at the present time men of that age were apt to be put on one side. He was glad that the Committee had recommended this grant. The other case, that of a widow, did not call for any special comment.

The report was unanimously received and adopted.

Benevolent Fund Dinner Committee.

The report of this Committee was read by the Secretary. It stated that 298 tickets were sold, and 49 persons had, since the dinner, sent remittances of one guinea each as stewards. The total receipts, therefore, were £364 7*s.*, leaving a balance, after paying all outstanding accounts, of £25 15*s.* 3*d.* The amount of donations in connection with the dinner was £2084 18*s.*, and of subscriptions £149 10*s.* 10*d.*, making, with the balance above-mentioned, a grand total of £2260 4*s.* 1*d.*, all of which had been received except a few sums outstanding to the amount of £5 8*s.* 9*d.* It was recommended that as soon as this sum had been received the Treasurer be requested to transfer £2084 18*s.* to the Benevolent Fund donation account, and the balance of £175 6*s.* 1*d.* to the current account.

The President moved that the report be received and adopted. They would all agree that it was very satisfactory to find that the result of the festival dinner was to benefit the Fund by over £2000, it was a record dinner in a record year. He might mention that since the last meeting, when he suggested that the list should be kept open for another month, through the exertions of the Vice-President and Mr. George Squire, over £44 had been collected in Sheffield, and their thanks were eminently due to those two gentlemen. They were also much indebted to Mr. King Hopkin, who had interested himself in securing a donation of ten guineas, and an annual subscription of five guineas, which would appear in this week's list. It was also very satisfactory to find that no deduction whatever had to be made from the donations to meet the expenses, there being on the contrary a balance of nearly £26 to the good.

The Vice-President said he was much obliged to the President for the kind reference he had made to himself. He must confess that in Sheffield they had rather overlooked this matter, and Mr. Squire and he, acting on a hint from Mr. Carteighe, went thoroughly into it, with the result which had been stated. He thought, judging by his experience in this matter, many of their friends in other places would benefit themselves as well as the Society if they would go a little more amongst their colleagues. They visited practically every chemist in Sheffield, whether connected with the Society or not, and were received most kindly everywhere. They did not hear one word of complaint or grievance against the Society, such as they sometimes heard of, nothing but expressions of goodwill. Of course, the matter they went upon was one which appealed to the good feeling of everyone, and wherever they went they found men ready to help. He believed a similar result would follow elsewhere, if their friends would try the same plan.

Mr. Cross, as an old local secretary, would like to say that the moral of the Vice-President's excursion was the advisability of the local secretary, when collecting money for the Benevolent Fund, associating with himself a second chemist. Some years ago, feeling that their subscriptions were not as they ought to be, he got a neighbouring pharmacist to go round with him and talk to his colleagues. The result of this was most happy. The more chemists saw of each other the better they would like each other and the more they would do for each other.

Mr. Hampson said they would all agree in thanking local secretaries and others who had done good work in connection with the Benevolent Fund, but in so doing they must not overlook the work done by the Secretary, Mr. Bremridge. He was so accustomed to work for the Benevolent Fund and kindred objects, without making any demonstrative sign, that perhaps his efforts were hardly appreciated at their true value, and he could not allow this opportunity to pass without formally asking him to accept the thanks of the Council for his constant efforts in connection with the late dinner and his subsequent efforts to increase the amount of the Fund.

Mr. Atkins had great pleasure in seconding Mr. Hampson's proposal. They were sometimes told by the members of Government and by the leading members of the opposition that after all they could not possibly do the work they did but for the permanent officials. He also wished to thank the President for his excellent presidency at the dinner. He thought the whole dinner, as far as he knew, was a supreme success. With regard to the speeches to which he had listened, if he dared venture to select one as worthy of mention, it would be that delivered by a gentleman connected with pharmacy from a distant part of the world. They were told that the financial result was a record in a record year, and he was glad that the much-needed resources of the Benevolent Fund would be materially increased, as it would put the members of the Committee of that Fund very much more at their ease.

Mr. Harrison did not propose to speak of the dinner, but as having been very closely connected for two years with the work of the Benevolent Fund Committee, he wished to support what had been said by the Treasurer and by Mr. Atkins as to the work of the Secretary on that Committee. He was struck with the intense personal interest which the Secretary took in the working of that Committee, and wished to say how deeply they were indebted to him for the pains which he took in placing the requisite information before the Committee. It could not be too widely known that Mr. Bremridge gave very largely indeed of his labour and time in supporting the work of the Benevolent Fund Committee.

The President called attention to the fact that the adoption of the report was then before the Committee. A vote of thanks to the Secretary could not be passed at that moment, and he believed he should be consulting the Secretary's feelings if he suggested that it should not be a formal vote. He was glad to hear the expression of opinion and to have the opportunity of expressing his personal thanks to the Secretary for the help he had given, especially with regard to the Benevolent Fund Dinner, for he felt that the success of the dinner was owing to his exertions.

The resolution for the adoption of the report having passed unanimously,

The Secretary thanked the Council for the reference to himself. He felt that he was receiving recognition for what had been done very much more by other people than by himself. He had a deep personal interest in the Fund, and it was always a great pleasure to him to do what he could to help it.

Library, Museum, School, and House Committee.

Library.

The report of this Committee stated that the report of the Librarian had been received, including the following particulars :

		Attendance.	Total.	Highest.	Lowest.	Average.
May	Day		437	28	8	17
	Evening		107	9	2	5

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
May	203	110	93	£1 3s. 3d.

Several donations had been received (*Ph. J.*, June 19, p. 531), and the Committee directed that the usual letters of thanks be sent to the respective donors

The Committee had recommended the purchase of the undermentioned works for the Library in London :—

King and Lloyd, American Dispensatory.
Green, Manual of Botany, new edition.
Thresh, Water Analysis.

Museum.

The Curator's report had also been received, and included the following particulars :—

		Attendance.	Total.	Highest.	Lowest.	Average.
May	Day		533	28	10	21
	Evening		77	7	2	3

Several donations had been received, and the Committee had directed that the usual letter of thanks be sent to the respective donors.

The Dean of the School had presented a draft prospectus for the ensuing session which it was recommended should be issued to every member, associate, and student. The Committee recommend that inventories of the apparatus, diagrams, etc., in use in the School should be prepared. Also that Mr. Thomas Tickle should be nominated to the Salters' Company Research Fellowship in the Research Laboratory for a second year.

The President, in moving the adoption of the report, said h need only call attention to two points. The first was as to the Salters' Research Fellowship. Mr. Tickle was doing good work, and on the recommendation of Profcssor Norman Collie, the Committee felt great confidence in nominating him for a second year. In the second place, he was glad to inform the Council that Professor Herbert Mcleod, a member of the Board of Examiners, had kindly consented to give the inaugural address to the students in October next. Most of them knew Professor Macléod personally, and they would be delighted to hear an address from one so well qualified to give it.

The report was unanimously adopted.

The Conference at Glasgow.

Dr. Symes said he hoped as many members as possible would make it convenient to attend the Glasgow meeting of the Conference. The Council had recently spent a good deal of money on the premises in Edinburgh, which had been much appreciated by the members in Scotland, and now that the Conference was meeting in the commercial capital of Scotland he hoped it would be well supported. He believed the Conference always did good work, and produced a good influence amongst chemists and druggists in favour of the Society. A few weeks ago he saw Mr. Anderson Russell, the Local Secretary of the Conference, who assured him that everything was working smoothly, and that every member who attended would receive a hearty welcome.

The President moved that the following be appointed delegates to the Conference: The President, Vice-President, and Messrs. Allen, Park, Young, Harrison, Cross, Atkins, Warren, Symes, Savory, Bateson, Martindale, Carteighe, Cross, Johnston, and Storrar, and that the Secretary also be requested to attend.

The Brussels Conference.

The appointment of delegates to the Brussels Conference was deferred to the August meeting.

The School of Pharmacy.

On the motion of the President, the following appointments were made for the ensuing year :—

Professor of Botany.—Professor J. R. Green, F.R.S.

Professor of Chemistry.—Professor J. Norman Collie, F.R.S.

Professor of Materia Medica and Pharmacy.—Professor H. G. Greenish.

Assistant Lecturer in Chemistry.—Dr. A. Lapworth.

Demonstrator in Botany.—Mr. W. Lloyd Williams.

Demonstrator in Materia Medica and Pharmacy.—Mr. Harold Wilson.

The Hanbury Medal.

The President said that the award of the Hanbury Gold Medal had to be made this year, and in accordance with the terms of the trust deed, it had been awarded by Professor Gunther, President of the Linnean Society; Professor James Dewar, President of the Chemical Society; Walter Hills, President of the Pharmaceutical Society; Charles Symes, President of the British Pharmaceutical Conference, and Michael Carteighe, a pharmaceutical chemist nominated by the last two mentioned presidents, to John E. De Vrij, Ph.D., C.I.E., of the Hague, their report being dated that day, July 7. He was sure that this award would be received with general satisfaction. This was not the time for any lengthened reference to Dr. De Vrij's lifelong work, but he should, perhaps, have the opportunity later of speaking in greater detail, for he hoped, in spite of Dr. De Vrij's advanced age, that he would be able to attend the meeting in October, when the award would be publicly made. He should, however, like to say that it was interesting to note that in this year of the Diamond Jubilee the award was to be made to a gentleman who, although not an Englishman, had an order conferred by Her Majesty, he being a Companion of the Order of the Indian Empire, that distinction having been given him for work done in connection with cinchona cultivation in India. It was also interesting to remark that the first paper published by Dr. De Vrij was written about four years before Her Majesty came to the throne. Since that time he had been an indefatigable worker in original research connected with the chemistry and natural history of drugs, partly in connection with cinchona. He might add that he began life as a pharmacist, and had been connected with pharmacy ever since.

Law and Parliamentary Committee.

The Secretary read the report of this Committee, which simply stated that the question of introducing a Bill for the amendment of the Pharmacy Act next session had been considered, and was deferred until the autumn.

The President, in moving the adoption of the report, said one of the questions before the Society was that of the eligibility of associates in business for membership, and he would like to recall the fact that since 1890 the Council had considered this question, and was more or less pledged to promote the amendment of the Pharmacy Act, so that every person who possessed a qualification to practise pharmacy under the Act might be eligible to join the Society as a member. A clause to that effect was included in the Bills drafted by the Council in 1890 and 1891, but those measures never had a chance of passing, notwithstanding the untiring efforts of his distinguished predecessor, who went up and down the country from Dan to Beersheba asking for support. No further attempt to consolidate the Society by widening the scope of membership was made until 1894, when a Bill was prepared by the Council of that year, and was purposely made non-contentious, in order that it might have a better chance of passing into law. It contained clauses for the consolidation of the Society only —for the provision of the more convenient regulation of Council elections; in fact, there was little objection to what the Bill contained, the opposition really coming from those who felt that it did not contain all that it should. It was, therefore, considered futile to further proceed with a Bill for which there appeared to be no real support. The Council had, thus, on more than one occasion shown its willingness to meet the desire of associates in business to be admitted to membership. The Law and Parliamentary Committee had before it at the present time a resolution from the Executive of the North British Branch affirming the desirability of again dealing with this question, and he wished to state that the matter was still under very careful consideration. He had only made this little *résumé* so that in the approaching holiday time, when many of their friends would be meeting in

different parts of the country, the question might be talked over. It was very important that if they did approach Parliament in the coming session they should have something like the active support of their friends throughout the country. It was impossible to get up any sort of public interest in a question which merely involved the consolidation of their own Society, and he saw great difficulty in moving to any advantage unless they impressed on their friends throughout the country the advisability of getting members of Parliament and others to take some little interest in this particular subject. He hoped there would be evidence in the course of the next few months that members and associates generally were in earnest about this matter, and that they would help the Council—if it were thought desirable in October and November to put the matter forward—to bring it to a more satisfactory conclusion.

New Bye-Laws.

The President said that since the last meeting of the Council he had been in communication with the Privy Council with reference to the proposed amended Bye-laws, and he had to report that their Lordships had made a suggestion that Clause 17, which dealt with the question of the increase of the fee for the qualifying examination, should not come into operation within three years of the date of the approval of the Bye-laws by their Lordships. The effect of this would be to alter the date from the end of 1898 to September, 1900. This did not involve any alteration in principle, therefore he felt sure it would be agreed to. It was also considered advisable that the date in Clause 11 should be altered to September, 1900. This was really to bring Clause 11 into line with Clause 17. He would move that the proposed new Bye-laws be read a first time in accordance with the provisions of the Charter.

Mr. Carteighe seconded the proposition, which passed unanimously.

Mr. Allen moved that the proposed new Bye-laws be taken as read.

Mr. Corder seconded the motion, which was agreed to unanimously.

Mr. Carteighe moved "That a special meeting of the Council be called for twelve o'clock on Wednesday, July 14, for the purpose of confirming the Bye-laws," and this was also agreed to.

Weights and Measures (Metric System) Bill.

Mr. Martindale said it had been discovered in the City of London that goods could not be exported weighed by the metric weights, and that it was necessary that the quantities should be stated in English weights, and that only English weights could be used in advices for exported goods. Some of the South American Republics particularly requested that the weights stated on the invoices should be in quantities on the metric system, and some trouble was caused to members of their craft in the wholesale trade that they were not able to fulfil the conditions of their customers, who gave orders that the weights should be in metric quantities. A short Bill was now before the House of Commons which provided that the metric system of weights and measures might be used for conducting sales. The Bill contained no contentious matter, and was most likely to be carried through without any difficulty. It was important that it should pass this year because in all probability, before another year elapsed, a new pharmacopœia would be published, which would have its formulæ stated according to both systems. Dispensing was not a trade, but a scientific operation; but still, if they had the system of metric weights by the Pharmacopœia, they would want to use it in retail trade as well. He proposed—

> "That the President be requested to send, on behalf of the Council, a petition to the House of Commons in favour of the Weights and Measures Metric System Bill, and that the petition be sealed with the seal of the Society."

The Vice-President seconded the proposition. No doubt the suggested petition was somewhat late in the day, but still he thought it was desirable to do all they could to support the Bill. One reason of its importance was the Pharmacopœia.

Mr. Carteighe said it was still further important because a great many of Her Majesty's loyal subjects were breaking the law.

The President said, bearing in mind that the Bill was merely a permissive one, it did not necessitate any argument as to the comparative merits of our present system with the metric system.

The resolution passed unanimously.

Correspondence.

The President referred to a letter which he had received from the Registrar of the Pharmacy Board of Victoria, which referred to the correspondence which took place in 1881 in reference to the recognition by the Pharmaceutical Society of Great Britain of certificates granted by the Pharmacy Board of Victoria under the Pharmacy Act, 1876. The letter suggested that as fifteen years had now elapsed since the application was first made, and as the Imperial Government was so desirous of knitting closer the bonds that united the various parts of the Empire, it would be a fitting opportunity for such an amendment of the Imperial Pharmacy Laws to be made as would enable the parent Society to accept the graduates of colonial colleges whose education and examinations were such as to fulfil the required conditions. The Pharmaceutical Societies of New South Wales, South Australia, Queensland, Tasmania, and Western Australia concurred in this view. The question was one of the very highest importance, and would no doubt have to be considered in some way or other, not only by themselves, but by other licensing and examining bodies, during the next few years. He was sure the Council would wish the matter to be carefully considered, therefore he proposed that it should be referred to the Law and Parliamentary Committee. This was agreed to.

The Nottingham and Notts. Chemists' Association.

At the annual meeting of this Association a vote of thanks was passed to the Pharmaceutical Society for the donation of the *Pharmaceutical Journal* and the Calendar of the Society.

General Purposes Committee.

The report of this Committee included reports from the professors of the School of Pharmacy on the Prize examinations at the close of the session. Acting on these reports the Committee recommended that the following awards be made:—

Practical Chemistry.

Bronze Medal	Harold Marston Morgan.
Certificates of Honour	Evan Jones Jenkins. Wm. Brown Nelson.

Theoretical Chemistry.

Bronze Medal	Harold E. Matthews.
Certificates of Honour	Evan Jones Jenkins. Edgar M. Chapman.

Materia Medica.

Bronze Medal	Pierre E. F. Perrédès.
Certificates of Honour	Harold E Matthews. William Brown Nelson.

Pharmacy.

Silver Medal	Harold E. Matthews.

Botany.

Bronze Medal	Harold E. Matthews.
Certificates of Honour	Pierre E. F. Perrédès. F. Upsher Smith.

The President in moving that this portion of the report be received and adopted, reminded the Council that Mr. Perrédès, whose name appeared amongst the successful candidates, was the gentleman who recently presented the Society with a splendid collection of plants which he had sent in with a view to obtaining the Herbarium prize. Unfortunately according to the regulations then in force, which had since been altered, he was not eligible to take the prize, being a resident in the Channel Islands. It was very satisfactory, however, to find his name figuring so well in the present prize list. He was also glad to see that the Bell scholars were so well up in the competition.

This portion of the report having been adopted,

The Council went into Committee to consider the legal portion of the report, including the usual letter from the Solicitors as to the progress of cases placed in their hands.

On resuming, the report and recommendations of the Committee were adopted, and special resolutions were passed authorising the Registrar to take proceedings against certain persons named.

MAJOR EXAMINATION QUESTIONS.*

JULY 1 AND 2, 1897.

CHEMISTRY.

[*Not more than six questions to be attempted.*]

1. The atomic weights of calcium, strontium, and barium were formerly held to be equal to their equivalents. What reasons can you give in favour of the view now generally adopted?

2. On analysis a compound of mercury was found to contain—

Mercury	80·4	per cent.
Sulphur	6·5	,,
Oxygen	13·0	,,
	99·9	,,

This composition corresponds to two distinct compounds. What are they, and how would you distinguish between them?

3. Give examples of the use of electrolytic methods in the preparation of substances elementary and compound.

4. A specimen of tartaric acid contains oxalic acid in notable quantity, describe in detail how you would detect its presence and determine its amount.

5. What is ammonium carbamate? Can it exist in aqueous solution? If so, how would you prove its presence?

6. What changes does urea undergo when it is heated (*a*) alone, (*b*) with water, (*c*) with caustic potash?

7. Explain fully why dextrose (glucose) is regarded as an aldehydic and lævulose as a ketonic sugar.

8. How could the following substances be prepared from aniline:—(*a*) phenyl cyanide (normal), (*b*) phenyl isocyanide, (*c*) benzene, (*d*) monochlorbenzene, (*e*) glucosazone?

9. What reaction takes place when resorcinol is heated with phthalic anhydride, and how is the body formed related to phenolphthaleïn?

PHYSICS.

[*Not more than six questions to be attempted.*]

1. What is meant by the "physical constitution of the three states of matter"? How can a substance be changed from one state to another?

2. How is the boiling point of a liquid determined? and how is a thermometer tested to ascertain its accuracy?

3. Discuss the dissociation of ammonium chloride in relation to (*a*) temperature, (*b*) pressure, (*c*) the presence of an excess of either of the two products of dissociation.

4. Describe and explain the phenomena observed when a soap bubble is blown.

5. What is double refraction? Are the properties of light altered when it has undergone double refraction?

6. Describe a quadrant electrometer and the mode of using it.

7. What is a thermopile? Describe its construction and uses.

8. What is osmotic pressure? How may it be determined (*a*) directly, (*b*) indirectly.

9. In what way is evaporation affected by pressure? Describe the action of the cryophorus.

PRACTICAL BOTANY AND MATERIA MEDICA.

1. Write a concise account of the structure of A. Leave not more than two sections with explanatory sketches for examination.

2. Refer each of the flowers B and C to its natural order, giving your reasons.

(A detailed description of the specimens is not required.)

3. Identify the drug submitted. Prepare a section. Sketch and describe the preparation, pointing out its histological characteristics. Leave the slide for inspection.

4. Investigate and report upon the powder.

BOTANY AND MATERIA MEDICA.

1. Contrast the Bark of the following trees as regards Structure and External appearance:—Birch, Beech, Oak, Plane.

What are the functions of Cork, and under what conditions is Cork formed in plants?

2. What is the botanical nature of the following articles of food:—Pineapple, Rice, Figs, Brussel-sprouts, Asparagus, Capers, Truffles?

3. Contrast a Mushroom and a Moss, as regards (1) the physiological division of labour as illustrated by the structure of the plant-body; (2) the nature of their food and the manner of obtaining it; (3) reproduction.

4. What is the active principle of Aconitum Napellus? Describe the best method of extracting it, and mention the tests which should be applied to ascertain its purity.

5. What plants belonging to the natural order Solanaceæ are official? Mention the active constituents of each.

* Time allowed for each paper—three hours.

FURTHER
LIST OF DONATIONS & SUBSCRIPTIONS
IN AID OF THE
BENEVOLENT FUND.

The following additional donations and new or increased annual subscriptions have been received or promised:—

	Dons.	Subs.
Alcock, A.; 318, Shalesmoor, Sheffield	1 1 0	
Blackbourne, A.; 570, Moseley Road, Birmingham	1 1 0	
Blackwell, Hayes, and Spilsbury; 53, Moor Street, Birmingham		1 1 0
Burnell, J. S.; 319, Glossop Road, Sheffield	1 1 0	
Canning and Co.; Gt. Hampton Street, Birmingham	1 1 0	
Carr, P.; 85, Ecclesall Road, Sheffield	1 1 0	
Eardley, J. F.; 265, Glossop Road, Sheffield	2 2 0	
Fox, A. R.; 56, Snig Hill, Sheffield	2 2 0	
Furness, J. M.; 137, Fitzwilliam Street, Sheffield	1 1 0	
Gardner, J.; Broomhill, Sheffield	1 1 0	
George, J. A.; 70, Fargate, Sheffield	1 1 0	
Graham, A. W.; Westbar, Sheffield	1 1 0	
Guest, T.; Carruthers Street, Manchester	1 1 0	
Holmes, George; Cemetery Road, Sheffield	1 1 0	
Hopkin and Williams; Cross St., Hatton Garden, E.C.		5 5 0
Ibbitt, H. E.; Meadow Street, Sheffield	1 1 0	
Kerr, C.; 56, Nethergate, Dundee	1 1 0	
Lloyd, Walter; 12, Lammas Street, Carmarthen	1 1 0	
Lowe, S. P.; 42, London Road, Sheffield	1 1 0	
Minor, M. T.; 248, London Road, Sheffield	1 1 0	
Morrison, C. O.; 137, West Street, Sheffield	2 2 0	
Naish, A. E.; 17, Bull Street, Birmingham		1 1 0
Owen, G.; 58, Broad Street Park, Sheffield	1 1 0	
Pater, J. B.; 265, Fulwood Road, Broomhill, Sheffield	1 1 0	
Smith, E. W.; 4, Netheredge Road, Sheffield	1 1 0	
Sutton, F.; Bank Plain, Norwich	5 5 0	
Thompson, C.; 159, Stratford Road, Birmingham		1 1 0
Ward, W.; 136, South Street, Moor, Sheffield	1 1 0	
Watson, R. W.; 22, Angel Street, Sheffield	1 1 0	
White, A., and Sons, Castle Street, Saffron Hill, E.C.	10 10 0	
Woolf, E.; St. George's Crescent, Birmingham	1 1 0	
Other contributions of smaller sums amounting to	22 9 6	

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY *v.* REDHEAD.

Before His Honour Judge Bacon at the Bloomsbury County Court, on Tuesday last, Frank Redhead, of 6, Weymouth Street, W., was sued by the Council of the Pharmaceutical Society of Great Britain for a penalty of £5 for selling poison, viz., laudanum, contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society. Defendant appeared in person.

In opening the case Mr. Grey stated that the defendant was an assistant to a chemist at 6, Weymouth Street, and, although he was not a qualified chemist and druggist, had sold poison without at the time being under the supervision or control of a qualified man. The case was entirely governed by the decision in the case of the Pharmaceutical Society *v.* Wheeldon, which decided that an unqualified assistant selling poison was liable for penalties under Section 15.

Mr. J. Partridge proved that he went to 6, Weymouth Street, on April 2 last. Defendant was in the shop. He asked him for twopennyworth of laudanum and twopennyworth of soap liniment. Defendant put the two articles into a bottle in his presence and sold them to him.

Defendant: I simply say that on every day there is a qualified man in the shop.

Mr. E. J. Eastes, analyst, proved having analysed the contents of the bottle; it contained laudanum and soap liniment. He

determined the quantity of morphine present to be 1·6 grain, equivalent to 16 grains of opium.

Defendant: All I can say is that the quantity put into the bottle was 2 drachms. My defence is that I was there only as an assistant, and either Mr. Adlington was in the room at the back of the shop or a qualified man was present.

Replying to His Honour, Mr. Partridge said: There was a doorway leading out of the shop. Defendant put the laudanum into the bottle in his presence. He did not go into a back room. He never left the shop. He got the laudanum out of a bottle from off the shelf.

Defendant: I remember the occasion of this sale. The laudanum was put in by Mr. Adlington in the room behind the shop. I say there is not a drop of laudanum in the shop.

Cross-examined by Mr. Grey: Mr. Adlington was in the back room; Mr. Carter came in and was leaning on the desk talking to me. Mr. Carter is a chemist at Kendal. He measured the stuff.

His Honour: In this case there must be judgment for the penalty claimed. There is contradiction in defendant's own evidence, and I do not entertain any doubt that he sold the poison. There must be judgment for the plaintiffs for the amount claimed—£5 and costs.

NOTES AND FORMULÆ.

(Specially abstracted for the Pharmaceutical Journal.)

Salubrol: An Antiseptic Powder.

Schuftan finds that dimethylene-antipyrine bromide or salubrol is an excellent general antiseptic. Bacteriological experiments show that it is more active in germicidal power than iodoform, free from the least toxicity, and, in addition to its germicidal action, acts as a siccative. It produces a slight sensation of smarting when first applied, but that soon disappears.—*Revue Medico Pharm.*, iv., 100.

Method of Staining Flagella.

McCrorie recommends the following formula for staining flagella: "Night blue" should be used, as it shows as well in artificial light as it does in sunlight. Ten per cent. solution of alum, 10 C.c.; concentrated alcoholic solution of "night blue," 10 C.c.; 10 per cent. solution of tannic acid, 10 C.c. The addition of 0·1 to 0·2 Gm. of gallic acid may add to the value of the stain, but excellent results can be obtained without this addition. The method is this:—A drop of sterilised water is placed on an absolutely clean cover-glass, held in a Cornet's clip, and carefully inoculated with the smallest particle of a twenty-four hours' agar culture. The cover-glass is moved in such a way that the drop of water is distributed over nearly its whole surface, or a suspension may be made in a watch-glass and a thin film spread upon a cover-glass. It is then placed in the incubator until thoroughly dried (about two minutes). After pouring a small quantity of the stain upon the cover-glass, it is again placed in the incubator for two minutes, or held for that time two feet above the flame of a Bunsen burner. Having washed off the stain with running water, the cover-glass is again dried in the incubator and mounted in Canada balsam. The stain need not be made fresh every time, and can be used either filtered or unfiltered; the matter is one of a few minutes only.—*Brit. Med. Journ.*, 1/97/974.

Preservation of Meat by Means of Iodine.

Revel and Campagne immerse the meat for about ten minutes in an iodine or iodine potash solution and then let it dry in the open air. Meat of all kinds, thus treated, is said to keep fresh for four or five days, after which time it commences to dry up, and then keeps for an unlimited period.—*Pharm. Centr.*, xxxviii., 230.

Antidote for Phosphorus.

Velter recommends the application of oil of turpentine in the following form:—℞ olei terebinth., 10 grammes; misturæ gummos., 250 grammes; syrupi aurant., 80 grammes. M.D.S. Shake, and take in three portions.—*Pharm. Centralh.*, xxxviii., 172.

Bay Rum.

Bay oil, 3·75; ol. pimentæ, 3·75; acetic ether, 7·5; alcohol, 13,500; aq. destill., 11,750; to be coloured yellowish-brown. —*Pharm. Zeit.*, xlii., 175.

PARLIAMENTARY NOTES AND NEWS.

Exeunt Omnes.—When private members are seized with black despair, and abandon in very heart-sickness the measures they have nursed through the whole of a trying session, one may safely interpret such signs and portents as indicating the beginning of the end. The abandonment has already commenced. "Boiler Inspection and Regulation" need no longer disturb the peace of mind of users of steam power, for the Bill has disappeared from the Order Paper. Mr. Tatton Egerton has also thrown over his doubly-blocked Midwives Registration Bill, to the great delight, no doubt, of many members of the medical profession. Among other notable exits during the week were "Prison-Made Goods (Importation)," "Sale of Food and Drugs (Kearley)," the three Early-Closing and Half-Holiday Bills, and, most regretted of all, perhaps, by the harassed Londoner, the Bill for the Suppression of Street Noises.

Wholesale Reciprocity.—Mr. Hazell, the Liberal member for Leicester, has had a Jubilee stroke of genius—has, in fact, been dreaming dreams and seeing visions of imperial this, federated that, and universal everything. On Monday he asked the Secretary for the Colonies to consider the practicability of making the conditions of admission into the various professions uniform throughout the empire, so that a person entering, say, pharmacy in any part of the British Empire (say Nyasa or Borneo) might practise it without more difficulty in London than in the distinguished province which granted him his diploma! The first step in the scheme for the attainment of this end so much desired—by the practitioner in Greater Britain, was obviously to get the Colonial Secretary to convene a meeting of the Colonial Premiers now in England, with a view to urging them to bring the question before their respective Governments. This was what Mr. Hazell tried to persuade Mr. Chamberlain into doing on Monday, but the Colonial Secretary could not be persuaded to give any definite assurance that the millennium of reciprocity could be inaugurated this session. He was, however, in sympathy with the idea, and hoped to see the Colonial Solicitors Bill pass into law shortly, and so pave the way for progress in this direction. We may yet see universal Registration, and the project for an International Pharmacopœia, propounded at the International Pharmaceutical Conferences, will then seem to have been rather a great idea born before its time than the chimerical expression of a hyper-academic conception!

At Last.—After two years some unseen power has managed to move a member of Parliament to draw the attention of the House to the "watering" of qualification which has been effected by the Local Government Board in the case of the appointment of Poor Law Dispensers. The question, which stands in the name of the Honourable A. Lyttelton (Leamington and Warwick), and is dated for Thursday, the 8th inst., is to the following effect:—Why has the standard of qualification for appointment as dispenser to a poor law union been reduced, so that persons other than those possessing a statutory qualification in pharmacy are now eligible for such appointments; and will the Board, having regard to the special technical training required in dispensers, take steps to obtain for the sick poor in the various unions under its jurisdiction the security of having dispensers who possess a statutory qualification to dispense medicines. It is to be hoped that Mr. Lyttelton will elicit a satisfactory answer, or repeat his effort to remedy this retrograde tendency in a public department to belittle the pharmaceutical status of the qualified dispenser.

Metric System.—The Government Bill legalising the use of metric weights and measures in this country has passed through the ordeal of Standing Committee, and has been reported without amendment to the House. Its third reading was tabled for Tuesday, but the Bill was not reached and the reading now stands deferred. This delay has given the Council of the Pharmaceutical Society an opportunity of demonstrating its sympathy with the Bill by sending a petition in favour thereof to the House of Commons (*vide* "Proceedings of Council" on page 25).

PROPOSED ALTERATIONS IN THE BYE-LAWS.

Present Bye-Laws.	Proposed Bye-Laws.
Stat. 1852, sec. viii. 11. All persons who shall tender themselves to the Examiners for examination in accordance with the Charter and the Statute, 1852, or the Act, 1868, shall be examined in their knowledge of the Latin language, in English Grammar and Composition, and Arithmetic, which Examination shall be called the First Examination. Such of the said persons as shall desire Certificates of competent skill and qualification to be registered as Chemists and Druggists under the Act, 1868, shall be examined in or produce certificates of having previously passed in the First Examination, and having been registered as Apprentices or Students, and shall be examined in the translation and dispensing of Prescriptions, in Botany, in Materia Medica, in Pharmaceutical and General Chemistry, Physics and Posology, and in their knowledge of the law relating to the sale of Poisons, which examination shall be called the Minor Examination ; and such of the said persons as shall desire Certificates of competent skill and qualification to exercise the business or calling of Pharmaceutical Chemists shall produce Certificates of having been previously registered as Chemists and Druggists, and shall be examined in more extended knowledge of Botany, Materia Medica, Chemistry, and Physics, or any two of them, which examination shall be called the Major Examination.	11. Prior to September, 1900, persons desiring certificates of competent skill and qualification to be registered as Chemists and Druggists under the Act 1868, shall be examined in their knowledge of the Latin language, in English Grammar and Composition, and Arithmetic, which Examination shall be called the First Examination. Persons intending to present themselves for this Examination shall give to the Registrar notice in that behalf and pay to him a fee of Two Guineas not less than 14 days prior to the day which has been appointed for the holding of the said Examination. All persons who pass the said Examination shall be registered as "Apprentices or Students." After August, 1900, persons desiring certificates of competent skill and qualification to be registered as Chemists and Druggists under the Act, 1868, shall deliver to the Registrar on behalf of the Board of Examiners a certificate of having passed an Examination in English Grammar and Composition, in the Latin language, and in one Modern Foreign language, and also in Algebra, Arithmetic and Euclid, conducted by any or either of the examining bodies which shall have been previously approved for the purpose by such regulations as are specified by the last preceding Bye Law, and shall pay to him a fee of Two Guineas, whereupon, if the Board of Examiners shall so see fit, they shall be registered as "Apprentices or Students."
Act 1868, sec. vi. 12. All persons who shall tender themselves to the Examiners for examination, under the provisions of the Act, 1868, excepting only those specified in the next following Bye-law, shall be examined in the Minor Examination.	12. Persons intending to present themselves to the Examiners for examination in accordance with the Charter and the Statute, 1852, or the Act, 1868, and having been registered as "Apprentices or Students," shall be examined in the translation and dispensing of Prescriptions, in Botany, in Materia Medica, in Pharmaceutical and General Chemistry, Physics, and Posology, and in their knowledge of the Law relating to the Sale of Poisons, which Examination shall be called the Minor Examination.
Act 1868, sec. iv. 13. All persons entitled to be registered as Chemists and Druggists on passing a modified examination, who shall tender themselves to the Examiners for examination under the provisions of the Act, 1868, shall pass the Modified Examination, which the Council of the Pharmaceutical Society, with the consent of the Privy Council, have declared to be in their case sufficient evidence of skill and competency to conduct the business of a Chemist and Druggist, as the same is set out in the Schedule hereto, or such other modified examination as may in like manner be declared such sufficient evidence.	13. Persons desiring certificates of competent skill and qualification to exercise the business, or calling, of Pharmaceutical Chemists shall produce to the Registrar evidence of having been previously registered as Chemists and Druggists, and shall be examined in more extended knowledge of Botany, Materia Medica, Chemistry, and Physics, or any two of them, which Examination shall be called the Major Examination.
Act 1868, sec. vi. 14. The Examiners may grant or refuse to such persons as have tendered themselves for the First Examination, the Minor Examination, and the Major Examination respectively, as in their discretion may seem fit, Certificates of competent skill and knowledge and qualification ; and lists of such persons shall be delivered by the Examiners to the Registrar.	14. Persons who shall tender themselves to the Examiners for Examination, under the provisions of the Act, 1868, excepting only those specified in the next following Bye-Law, shall be examined in the Minor Examination.
Charter, line 268 ; Act 1868, sec. vii. 15. All persons shall, before registration as Apprentices or Students, pay a fee of Two Guineas, and pass the First Examination, whereupon they shall be registered as Apprentices or Students.	15. Persons entitled to be registered as Chemists and Druggists on passing a modified Examination, who shall tender themselves to the Examiners for examination under the provisions of the Act, 1868, shall be required to pass the Modified Examination, which the Council of the Pharmaceutical Society, with the consent of the Privy Council, have declared to be in their case sufficient evidence of skill and competency to conduct the business of a Chemist and Druggist, as the same is set out in the Schedule hereto, or such other modified Examination as may in like manner be declared such sufficient evidence.
Stat. 1852, secs. viii. ; Act 1868, sec. vii. 16. All persons desiring registration as Assistants under the Statute, 1852, or as Chemists and Druggists under the Act, 1868, excepting those named in the next following Bye-law, shall pay a fee of Five Guineas if previously registered as Apprentices or Students, or otherwise a fee of Seven Guineas, and pass the Minor Examination, whereupon they shall be registered accordingly.	16. The Examiners may grant or refuse to such persons as have tendered themselves for the Minor Examination and the Major Examination respectively, Certificates of competent skill and knowledge and qualification ; and lists of such persons shall be delivered by the Examiners to the Registrar.
Stat. 1852, secs. x. ; Act 1868, sec. vii. 17. All persons entitled to be registered as Chemists and Druggists on passing a modified examination, and desiring so to be registered, shall pay a fee of One Guinea and pass the modified Examination, whereupon they shall be registered accordingly.	17. All persons desiring registration as Chemists and Druggists shall in respect of an examination, to take place prior to September, 1900, pay a fee of Five Guineas, and shall in respect of an examination, to take place after August, 1900, pay a fee of Ten Guineas, and shall in either case pass the Minor Examination or the Modified Examination, whereupon they shall be registered accordingly.

PROPOSED ALTERATIONS IN THE BYE-LAWS.—*continued.*

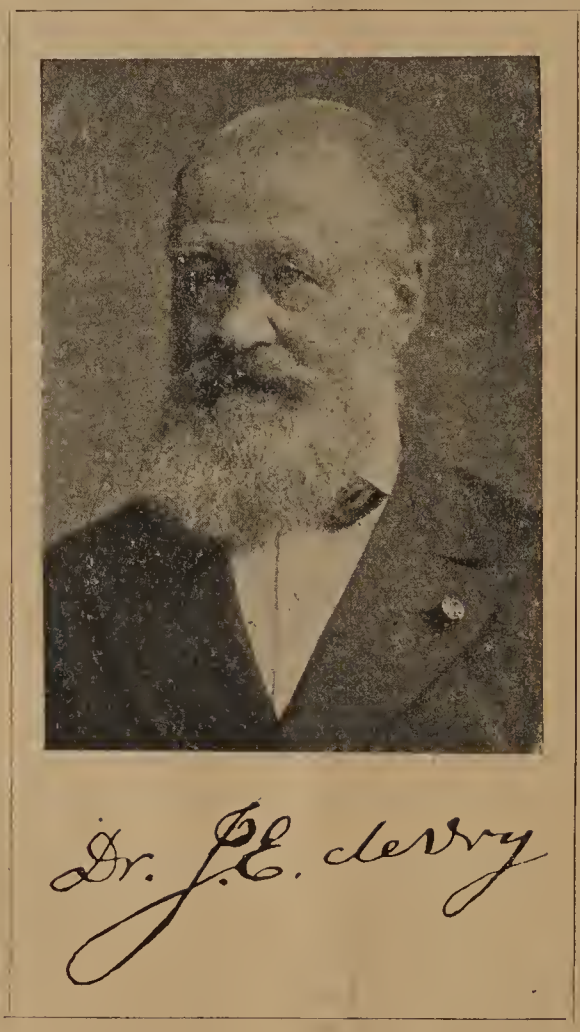
Present Bye-Laws.	Proposed Bye-Laws.
Stat. 1852, sec. x.; Act 1868, sec. vii. 18. All persons desiring registration as Pharmaceutical Chemists under the Statute, 1852, shall pay a fee of Three Guineas if previously registered as Chemists and Druggists by virtue of having passed the Minor Examination, or otherwise a fee of Ten Guineas and pass the Major Examination, whereupon they shall be registered accordingly.	18. Persons desiring registration as Pharmaceutical Chemists under the Statute, 1852, shall pay a fee of Three Guineas and pass the Major Examination, whereupon they shall be registered accordingly.
Charter, line 253. 19. All persons intending to present themselves for examination in the First Examination shall give to the Registrar notice in writing of their intention in that behalf not less than fourteen clear days prior to the day which has been appointed for the holding of the said examination.	
Charter, line 253. 20. All persons intending to present themselves for examination in the Major, the Minor, or the Modified Examination, shall give to the Registrar notice in writing of their intention in that behalf on or before the fifteenth day of the month immediately preceding that in which the Examination is to take place.	19. Persons intending to present themselves for examination in the Major, the Minor, or the Modified Examination shall give to the Registrar notice in writing of their intention in that behalf on or before the fifteenth day of the month immediately preceding that in which the Examination is to take place.
Act 1868. sec. vii. 21. All notices of intention to attend for examination shall be to attend on the next occasion of the Examination being held, and all fees in respect of examination and registration shall be payable on the giving of notice of intention to attend for examination, and in no case shall any fee paid in accordance with the Bye-Laws be remitted or returned.	20. All notices of intention to attend for examination shall be to attend on the next occasion of the Examination being held, and all fees in respect of examination and registration shall be payable on the giving of notice of intention to attend for examination, and in no case shall any fee paid in accordance with the Bye-Laws be remitted or returned.
Charter, line 253. 22. No person shall be admitted to the Major or the Minor Examination who shall not have attained the full age of twenty-one years, nor unless he shall satisfy the Examiners that for three years he has been registered and employed as an apprentice or student, or has otherwise for three years been practically engaged in the translation and dispensing of prescriptions. Persons who have passed the Minor Examination at least three months previously may be admitted to the Major Examination, and all other persons desirous of passing the Major Examination may make application to the Board of Examiners for special leave in that behalf.	21. All persons shall, at the time of giving notice of intention to present themselves for the Minor Examination, satisfy the Registrar that they have attained the full age of twenty-one years, and have been registered as "Apprentices or Students," and that they have for three years been practically engaged in the translation and dispensing of prescriptions.
Act 1868, sec. vii. 23. Persons who have attended and failed to pass an examination shall not be entitled to attend on any future occasion within an interval of three months therefrom, nor unless and until they shall have given renewed notice of intention to attend an examination, and shall have paid fees as follows :— *(a) In respect of a Major Examination, Two Guineas ;* *(b) In respect of a Minor Examination, Three Guineas ;* *(c) In respect of a First Examination, One Guinea ;—* *in cases of renewed notices for examinations to be held before the expiration of one year*, computed from the first day of the month wherein the Examination was held in respect of which the original fee was paid. In all other cases fees of amounts corresponding with the fees paid on the original notice shall be paid.	22. Persons who have attended and failed to pass an examination shall not be entitled to attend on any future occasion unless and until they shall have given renewed notice of intention to attend an examination, and shall have paid fees as follows :— *(a) In respect of a Major Examination, Two Guineas ;* *(b) In respect of a Minor Examination, or a Modified Examination, Three Guineas ;* *(c) In respect of a First Examination, One Guinea.*
Act 1868, sec. vii. 24. Persons who have given original or renewed notices of intention to attend an examination and have failed duly to attend at the time appointed for the same, shall not be entitled to attend on any future occasion unless and until they shall have given renewed notice of intention to attend an examination, and shall have paid fees as follows, viz.:—*In cases of renewed notices for examinations to be held before the expiration of one year*, computed from the first day of the month wherein the Examination was held in respect whereof the original fee was paid,—One Guinea,—or if the persons shall have proved to the satisfaction of the Council or the Board of Examiners (by production of medical certificates or otherwise) that the said failure was occasioned by unavoidable and proper causes, —One Shilling,—and in all other cases, fees of amounts corresponding with the fees paid on the original notice.	23. Persons who have given notice of intention to attend an examination and have failed duly to attend at the time appointed for the same, shall not be entitled to attend on a future occasion unless, and until they shall have given renewed notice of intention to attend an examination, and shall in each case have paid a fee of One Guinea,—or if the persons shall have proved to the satisfaction of the Council or the Board of Examiners (by production of medical certificates or otherwise) that the said failure was occasioned by unavoidable and proper causes,—One Shilling.

THE HANBURY MEDALLIST.

JOHN ELISHEE DE VRIJ, PH.D., C.I.E.

THE latest recipient of the Hanbury Medal was born at Rotterdam, in 1813. His father was a pharmacist and trained his son for the same profession, but as in so many other notable instances, young De Vrij's early acquaintance with chemistry soon led him to seek a deeper knowledge of the science. He was perforce bound to pharmacy, however, for some years longer, as his father's death left him charged, whilst yet under age, with the care of the rest of the family. Having, therefore, obtained official sanction to qualify as a practising pharmacist though yet under the legal age, he continued as principal, for some eighteen years, to conduct the pharmacy that had been his father's.

Meanwhile, his scientific bent found outlets in various directions. About 1833, he translated Rose's 'Handbook of Analytical Chemistry' into Dutch. An important result of this work was the translator's introduction to the notice of many of the leading chemists of that day. Amongst others he made the acquaintance of Pelletier and Caventou, the discoverers of quinine, and as early as 1835 his attention became directed to the alkaloids of cinchona. Three years later he became a Ph.D., of Leyden University, and subsequently he taught chemistry and pharmacy for a time at a college in Rotterdam. Before 1850, when he finally disposed of his pharmacy, De Vrij had conducted an investigation with solutions of sugar to disprove the doctrine of spontaneous generation, and he had also written on the presence of iodine and phosphorus in cod-liver oil, whilst electro-gilding and coppering, aqua lauro-cerasi, the chemistry of urine and other important subjects engaged his attention in turn.



The record of his work during the next seven years is equally varied, but at the time he was sent to Java by the Dutch government (1857) he had already entered upon his career as a cinchona specialist, and almost up to the present year he has continued actively engaged in the study of the alkaloids of cinchona, though other subjects of chemical interest have engaged his attention at intervals. He first prepared quinine sulphate from bark produced in Java in 1859-60, and in 1871 we find him writing to the *Pharmaceutical Journal* (ser. 3, vol. ii., p. 945) on the first public sale of cinchona barks from that island. Meanwhile, however, he had left Java (1863), after performing valuable work in connection with the development of the cinchona plantations, and taken up his residence permanently at the Hague.

During 1871, Dr. De Vrij was nominated as an "Officier de l'Instruction Publique" by the then President of the French Republic, and two years later he was nominated as a corresponding foreign member of the Académie Médicale at Paris, whilst his public services were recognised in Holland by an appointment in connection with the order of the Dutch Lion, the insignia of which he is wearing in the accompanying portrait, and in this country (1880) by his appointment as a Companion of the Order of the Indian Empire. He had been an Honorary Member of the Pharmaceutical Society of Great Britain since 1856, and now he receives the crowning honour in connection with British pharmacy, by being appointed the ninth Hanbury Medallist.

Investigations Conducted by Dr. De Vrij.

Several communications by Dr. De Vrij appear in the second series of the *Pharmaceutical Journal*, but the following list of papers contributed by him to the third series should serve, better than any words can express, to show the grounds on which his claim is based to rank with the former distinguished recipients of the Hanbury Medal :—

The Names of the Cinchona Alkaloids (i., 544).

The Presence of Manganese in Beech Nuts (i., 583).

The application of Molecular Rotation to the Determination of Cinchona Barks (ii., 1,521).

Cinchona Caloptera, Miq. (ii., 723).

Sale of Java Bark at Amsterdam (ii., 945).

Samadera Indica, Gærtn. (ii., 644).

The Separation and Quantitative Determination of the Cinchona Alkaloids (ii., 642).

Amorphous Alkaloids in Cinchona Barks (iv., 589).

Analyses of Some Barks of Cinchona Officinalis and its Varieties cultivated at Ootacamund (iv., 181).

Analyses of Some Cinchona Barks cultivated at Ootacamund (iv., 869).

Analyses of Some Cinchona Barks grown in Jamaica (iv., 121).

On Quinamine (iv., 609).

The Separation of the Mixed Alkaloids from Cinchona Barks (iv., 241).

Remarks on Javanese Calisaya Bark and on Quinidine (v., 501).

Pharmaceutical Tests for Cinchona Bark (v., 134).

East India Cinchona Barks (vi., 381).

Note on Pomegranate Root Bark (v., 145).

On Iodo-Sulphate of Chinioidine as a Test for Quinine (vi., 461).

A Fast-Growing Cinchona which Produces Much Quinine (viii., 805).

Sulphate of Quinidine (viii., 745).

The Detection of Amorphous Quinine in Ferri et Quiniæ Citras, B.P. (xi., 239).

Method for the Estimation of Total Alkaloids in Bark (xii., 765)

Quantitative Estimation of Quinine (xii., 601).

Contribution to the Knowledge of Thevetia Nereifolia (xii., 457).

Note on the Examination of a Sample of Commercial Quinine Sulphate (xviii., 133).

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LONDON: SATURDAY, JULY 10, 1897.

THE COUNCIL MEETING.

At the opening of the business proceedings the President mentioned that he had received from Sir Matthew White Ridley a letter acknowledging the receipt of the congratulatory address sent by him on behalf of the Council to the Queen on the occasion of Her Majesty's diamond jubilee, and informing him that Her Majesty was pleased to receive the address very graciously. He also mentioned the receipt of a letter from Mr. Gostling thanking the Council for the very gratifying resolution passed at the last meeting in recognition of his services while acting as a member of Council. He then drew attention to a portrait of Dr. Attfield by Professor Herkomer, which had been presented to the Society by Mrs. Attfield. Reference was also made to the recent death of a corresponding member of the Society, Dr. Plugge, who was at the time engaged in carrying out a scientific commission with which he had been entrusted by the Dutch Government at the Botanic Gardens at Buitenzorg in Java.

The death of an old member of the Society and a former member of Council, Mr. F. Marsh Rimmington, of Bradford, was also mentioned by the President, and after making complimentary reference to him as a representative pharmacist, and to the important position long held by Mr. Rimmington in connection with the Food and Drugs Act, he asked the Council to authorise him to send a letter of condolence to the family of the deceased. That proposition was supported by Mr. Carteighe, who spoke of the personal characteristics of Mr. Rimmington and his acquirements as giving him a claim to be ranked among those older adherents of which the Society may well be proud.

Mr. Martindale and the Treasurer also spoke to the same effect.

The additions to the Society comprised eight associates and nine students, besides several restorations.

The report of the Finance Committee did not contain any matter of exceptional interest beyond the ordinary routine details of receipts and expenditure.

On the recommendation of the Benevolent Fund Committee, two grants, amounting together to £18, were ordered to be paid, and two applications were adjourned for further information.

The report of the Dinner Committee gave particulars of the receipts and expenses, in connection with the decennial festival, showing that there was a surplus of more than twenty-five pounds. The total amount of the donations, etc., was upwards of £2260, almost all of which has been received, and as the President said, the dinner was a record one in a record year. He also mentioned that since the last meeting the Vice-President and Mr. George Squire, of Sheffield, have collected an additional sum of over forty-four pounds, for which they were entitled to hearty thanks (see p. 26). In acknowledging this compliment, Mr. Newsholme suggested that benefit would result from going more amongst their colleagues. He and Mr. Squire had visited every chemist in Sheffield, and while they were most kindly received by all, they did not hear any complaints against the Society, such as are sometimes made, but only expressions of goodwill. Mr. Cross, speaking from his experience as a Local Secretary, said that he believed in the advisability of local secretaries associating with themselves a second chemist when collecting for the Benevolent Fund. He had found that plan most successful.

Mr. Hampson drew attention to the work done in connection with the Benevolent Fund by the Secretary, and especially in arranging for the late dinner, suggesting that it would be appropriate to pass a formal vote of thanks. This was supported by Mr. Atkins and Mr. Harrison, but on Mr. Bottle pointing out that they were departing from the business before the Council, and the President intimating that a vote of thanks could not be passed at that moment, the matter was not carried further, except by an expression of thanks from the Secretary for the recognition of what had been done.

The report of the Library, etc., Committee recommended the issue of a prospectus which had been drawn up by the Dean of the School, and that Mr. Tickle should be nominated for a second year as the Salters' Research Fellow. In moving the adoption of the report the President also mentioned that Professor Herbert McLeod has consented to deliver the inaugural address at the opening of the Session in October next.

On the motion of the President, delegates to the Pharmaceutical Conference meeting at Glasgow were appointed, and the Secretary was requested to attend the meeting (see p. 24).

The appointment of delegates to the eighth International Pharmaceutical Conference in Brussels, was deferred until the next meeting of the Council in August.

After the appointment of the professors, assistant lecturer in chemistry, and the demonstrators in botany, materia medica, and pharmacy in the School of Pharmacy (see p. 24), the President announced that the Hanbury Medal had been awarded to Dr. De Vrij, Ph.D., C.I.E., of the Hague.

The report of the Law and Parliamentary Committee merely stated that the question of introducing a Bill for amendment of the Pharmacy Acts, which had been under consideration, had been deferred until the autumn, but the President, in moving the adoption of the report, mentioned the subject of eligibility for membership of the Society as one which the Council considered itself pledged to promote in pursuance of the proposals contained in the Bills of 1890-91 and 1894, so that everyone legally qualified to practise pharmacy could join the Society as a member. Those attempts to widen the scope of membership of the Society, notwithstanding the efforts made by his distinguished prede-

cessor, had not been successful, and he recalled that circumstance in order to show that, if any further attempt were to be made in the coming session, the Council should have some active support from friends throughout the country who are directly interested in having such a measure carried.

In reference to the proposed new Bye-laws, the PRESIDENT stated that he had been in communication with the Privy Council, and their Lordships had suggested that the increased fee for qualification should not come into operation until three years after the date of their approval of the Bye-laws; that, in fact, the date fixed should be 1900 instead of 1898. The adoption of that suggestion would involve no alteration of principle, though it would leave all who have already entered upon a pharmaceutical career unaffected by the increase in the fee for qualification, and he therefore moved that the new Bye-laws, so altered, should then be read for the first time. The motion was seconded by Mr. CARTEIGHE and passed unanimously. It was then resolved that the altered Bye-laws be taken as read, and that a special meeting of the Council should be held on Wednesday next for the purpose of confirming the Bye-laws, in accordance with the provisions of the Charter.

Mr. MARTINDALE drew attention to the inconvenience arising from the inability to use metric weights and measures without committing a breach of the law as it now stands. and in reference to the Bill now before Parliament (see p. 27) he moved that a petition supporting that Bill should be sent to the House of Commons on behalf of the Council. The Vice-President seconded the motion, and it was passed unanimously.

Among the correspondence read was a letter from the Registrar of the Pharmacy Board of Victoria relating to the important subject of recognition of its certificates of qualification by the Pharmaceutical Society of Great Britain. That subject has already been before the Council some fifteen years ago, and the letter suggested that since the Imperial Government is now desirous to knit more closely the bonds of union between various parts of the Empire, fitting opportunity is afforded for such amendment of Imperial pharmaceutical legislation as would enable the parent Society to accept the graduates of colonial colleges whose education and examination were such as to fulfil the requisite conditions. The subject is one of very great importance, and before long it will no doubt have to be carefully considered by many other examining and licensing bodies, as well as the Pharmaceutical Society, and it was referred to the Law and Parliamentary Committee for consideration.

The report of the General Purposes Committee gave the results of the prize examinations as reported by the Professors, and acting on their recommendation the various prizes were awarded (see p. 25). The PRESIDENT drew attention to the fact that Mr. PERRÉDÈS, who is one of the successful candidates, had presented the Society with a fine collection of plants, for which the Herbarium prize could not at the time be awarded to him, owing to a regulation which has now been altered, and satisfaction was expressed that he and the Bell scholars figured so well in the list of successful candidates.

After considering the legal portion of the report in committee, the Council adopted the recommendations made in it and passed special resolutions authorising the Registrar to take proceedings in several cases of alleged infringement of the Pharmacy Act.

ANNOTATIONS.

THE PROPOSED NEW BYE-LAWS may be regarded as being approved in principle by the Privy Council, but it is proposed that the increased registration fee should not come into force until a later date, so that all who have already chosen pharmacy for a profession should have an opportunity of qualifying under the conditions now prevailing. That idea is a reasonable one, and between now and September, 1900, such an opportunity will be afforded by the change now made. This further modification of the draft Bye-laws, however, necessitates the whole of the formalities being gone through once more. Hence, as amended, they were read for the first time at the Council Meeting on Wednesday, and are now published in full in the Journal. The second and third readings will take place at subsequent meetings of the Council, and it will then be necessary once more to have them confirmed at a Special General Meeting of the Society. That done, Her Majesty's Privy Council will again be requested to sanction the proposed alterations, and in a comparatively brief time they may be expected to become effective.

THE GLASGOW CHAIR OF MATERIA MEDICA has attracted another candidate whose name is familiar to pharmacists, in the person of Dr. Ralph Stockman, of Edinburgh. Dr. Stockman is a distinguished graduate of Edinburgh University, where he obtained the gold medal for his thesis on the tannins. He has also studied and worked in the laboratories at Vienna and Strasburg. Of his numerous scientific contributions, perhaps the most important are the investigations on the active principle of senna, on the action of morphine derivatives, on cocaine, on the camphors, and on anæmia. Dr. Stockman acted as demonstrator of pharmacology in Edinburgh University for some years, and has latterly lectured on materia medica in the extra-mural School of Medicine. He is one of the honorary assistant-physicians to the Royal Infirmary, and has discharged the duties of examiner in the Glasgow, Victoria, and Oxford Universities.

THE TRUTHFUL GAS METER is under a cloud, and even if its accuracy be vouched for by a London County Council gas examiner, its evidence need no longer be regarded as necessarily conclusive. So, at least, the Richmond magistrates appear to think. A private gas consumer was summoned at the Richmond Police Court for non-payment of the sum of £16 14*s.* for gas supplied by the local gas company from Christmas to Lady Day. Defendant pleaded that the gas bill in the corresponding quarter of last year was only £2 11*s.* 11*d.*, and it was shown that the only difference in the conditions prevailing during the two periods was that there is now a gas stove in the dining-room, which is only alight during breakfast and dinner. A certificate from a London County Council gas examiner stated that the meter was correct, but one of the magistrates pointed out that the Act of Parliament made the state of the meter only *primâ facie*, and not conclusive, evidence of the quantity of gas consumed. Ultimately the Bench made an order for the payment of £2 11*s.* 11*d.*, the amount of the charge for the corresponding period of last year, and allowed £3 15*s.* for the consumption of 25,000 feet by the stove, making a total of £6 6*s.* 11*d.*

THE WAYS OF THE SMUGGLER are, it appears, actually being revealed to some extent by the aid of the Röntgen rays in France, an apparatus devised by M. Gaston Seguy being utilised for the purpose. This is an adaptation of the fluorescent screen in the form of an opera-glass, the lenses being replaced by discs

coated with uranium salts, and it has been called "La Lorgnette Humaine." The results of a demonstration at the Bercy Customs Warehouse, which was witnessed by two members of the Academy of Sciences and other notabilities, are thus summarised by the Paris correspondent of the *Daily News*:—"A case labelled china was first examined. The opera glass showed it contained an oval dish. Another parcel, invoiced as boots, revealed a pair of ladies' boots, but along with them were two round balls. 'Open,' ordered M. Pallain. The two balls were found to be apricots sent from Algeria. A box returned as 'samples' aroused the suspicion of M. Pallain, who remarked that this word was often a euphemism for tobacco. The opera glass was directed upon it, when three tin boxes were seen, each of which contained a hundred Egyptian cigarettes. Two boxes of English matches were packed up with them. These experiments were continued for an hour and excited great enthusiasm." The M. Pallain referred to above is the Director-General of Customs, and the packages examined appear to have been sent by parcel post. It is quite evident that the authorities will have plenty of work on their hands if they intend to examine all such parcels by radiographic methods, and delay in delivery, it may be presumed, is regarded in Paris as of quite secondary importance.

Accidental Poisoning Cases resulting in death have been less numerous during the past week than the preceding week. At Homerton a child of six died after the administration of a Fennings' powder, and the medical man in attendance at the coroner's court called the attention of the jury to the fact that this was the third case in the same street in which he had recently been called in after those powders had been given. In the verdict of the jury reference was made to a statement that the powders contain antimony, but the maker writes to say that they do not contain that or any other poisonous ingredient, and never have done so. However, this is a point that can easily be decided, if necessary, by an analysis. In the next case to be recorded, a child of three strayed into a neighbour's house and drank a fatal dose of eye lotion, containing atropine, from a bottle she found in a drawer; then a coachman's wife has died near Hyde Park as the result of irritation set up by taking at one dose ten pills containing aloes, capsicum, ferrous sulphate and pennyroyal; the wife of an engine-driver at Albert Docks has died from suffocation following paralysis, after taking an overdose of podophyllin used by her husband as an amateur pill-maker; whilst the wife of a collier swallowed some "non-poisonous" disinfectant termed "phenyle," at Tadcaster workhouse, which belied its description by causing death. The last was actually a case of suicide, and is only referred to because of the effects produced by a so-called "non-poisonous" disinfectant. The cases of suicide and attempted suicide by poisoning are much too numerous to record, and except in rare instances the publication of reports of such cases is to be deprecated, as the imitative faculty in mankind is too prone to exercise itself in a suicidal direction. The fact of that peculiarly unpleasant poison, carbolic acid, maintaining and improving its position at the head of the list of suicidal agents is probably as much due to the tendency to copy others as to the ease with which it can be procured.

The "Manufacture" of Joint-Stock Companies was the object of some scathing remarks by Judge Addison on Tuesday, at Southwark County Court. A company had been promoted by a youth under age, and some of the directors and shareholders were infants-at-law, with one share each. An execution having been levied under a judgment summons upon goods on the company's premises, some of the individuals constituting the corporation promptly claimed that the articles were their individual property. On the hearing of the interpleader issues, however, a verdict was given for the judgment creditors, and the judge said he wished to state publicly that it was a perfect scandal that the law allowed an infant to trade and constitute himself a company with a sister under age, a sister-in-law who was a married woman with no liability whatever, a brother, and a father. They could trade, make money, bring and defend actions, and yet they had no liability. The law ought to provide that some official inquiry should be made into the "manufacture" of these companies before they were allowed to be formed, so as to prevent such scandals. A complaint by the promoter of the company, that the action of the creditors had put an entire stop to his business, met with the unsympathetic response that, if such were the case, the creditors had done a valuable service to the public.

The Influence of Low Temperature on Chemical Action is further described in the memoir on the liquefaction of fluorine communicated to the Paris Académie des Sciences by Moissan and Dewar. They state that silicon, boron, carbon, sulphur, phosphorus, and reduced iron do not become incandescent when cooled by liquid oxygen and then introduced into an atmosphere of fluorine. At the same low temperature fluorine does not displace iodine from iodides. When the temperature is raised to – 180° C., its chemical energy is, however, still sufficient to decompose benzene or turpentine with inflammation. When gaseous fluorine is passed into liquid oxygen there is a rapid formation of a white flocculent precipitate, which collects at the bottom of the vessel, and on separating the liquid by filtration the precipitate deflagrates with violence as soon as the temperature rises.

A Novel Botanical Competition is described in the current issue of *Science Gossip*, and the editor of that paper is of opinion that it will provide valuable scientific records of the growth and habits of plants not generally recognised, as well as amusement. Three photographs, not exceeding half-plate size, are to be taken of uncommon, local, or rare plants: (*a*) best showing the habit of growth when flowering, fruit, or otherwise; (*b*) of the growing plant and its immediate surroundings; (*c*) of the near landscape to show the character of the plant's station. Two prizes (books to the value of 50*s*. and 30*s*. respectively) are offered, and the chief points to be considered in making the awards will be (*a*) the variety of the species photographed; (*b*) the grasp of detail, such as the natural position, the flowering parts, and other surroundings, in case any appear; (*c*) the excellence of the photography. Any kinds of plants are available for the purpose of the competition, including ferns, mosses, fungi, marine algæ, etc. Pharmaceutical students should be to the fore in this matter.

The Answers to Queries published in daily and weekly newspapers under the head of "General Information" are frequently as fearful and wonderful in their misty profundity as the newspaper prescriptions referred to last week. When processes or formulæ are given, money is apparently regarded as being all plentiful, and if individuals in search of a cheap substitute for something they could buy for a few pence do not have to expend as many shillings or pounds in wasteful experiments, it is certainly not the fault of the enterprising and omniscient journalists who fill up so many columns with the veriest rubbish. For example the *Weekly Sun* informs "Apprentice" that white gutta-percha is prepared by dissolving four ounces of the crude material in six pints of methylated chloroform, and precipitating with

six pints of spirit of wine. This can hardly be described as an economical process. In the same paper, "Pater" is told to destroy ants by placing "some arsenic, mixed with sugar and water, in a saucer, which cover with a slate, leaving room for the insects to pass between the slate and the saucer." Nothing is said regarding directions to the ants how to gain admittance, but it is perhaps assumed that they will instinctively go out of their way to investigate the contents of a saucer covered with a slate. But T. P.'s crowning effort is the following:—"SMOKEY.—Meerschaum (German, sea-foam) is a compound of silbia (*sic*), magnesia, lime, water, and carbolic acid. When first dug it lathers like soap, and is used as soap by the Tartar. At first it was supposed to be petrified sea-foam; hence its name." Comment is needless, but it may be asked, if such correspondents as "Smokey" really exist, what can be their mental condition after a prolonged course of such mental pabulum as this?

SEA-SICKNESS IS OF CEREBRAL ORIGIN, according to some of the best authorities, and putting the head flat down tends to prevent it to a great extent. But there may be much bile in the stomach, (*sic*), and this should be removed as a preliminary by inducing vomiting by means of a large draught of hot water. So says Dr. Lauder Brunton, who also recommends the use, on a sea voyage, of a long silk scarf wound tightly round the body so as to keep the stomach pretty firmly in its place. Further, he points out that potassium bromide and chloral, especially the former, are excellent preventives of sea-sickness. Speaking of his own experience, he says he takes half a drachm or a drachm of the bromide aboard in a small packet, and asks the steward for a bottle of soda-water and a large tumbler. "Then," he says, "I throw in the bromide of potassium, shake it up, and drink it. This keeps one quiet and comfortable—at any rate, while crossing the Channel. You need not be at all afraid of bromide of potassium (!!!), and you can keep up its action during a long voyage across the Atlantic, and you can push it so far that the patient becomes quite drowsy without doing him any harm whatever." This expression of opinion may be of interest to our readers in view of the approaching holiday season, but they are not advised to act upon it or to recommend others to do so. The matter quoted appears in Dr. Brunton's new book on the action of medicines, and the reference to potassium bromide and chloral is probably intended as a suggestion for other medical men, rather than advice to sufferers.

DR. PIETER CORNELIS PLUGGE, Director of the Pharmaceutical Laboratory of the University of Gröningen, and Professor of Pharmacy and Toxicology in the same University, died on Wednesday, June 30, at Buitenzorg. He had been sent to the Royal Gardens there, on a scientific mission, by the Dutch Government. The deceased professor held the degrees of M.D. and Ph.D., and had been a corresponding member of the Pharmaceutical Society since 1893.

THE ATTFIELD TESTIMONIAL is to be formally presented at Dr. Attfield's residence, Watford, on Saturday afternoon at 5 o'clock, according to a circular dated June 18, which, however, did not reach the office of the *Pharmaceutical Journal* until Friday, July 2. The presentation will consist of a service of plate and an album containing an illuminated address and over twelve hundred signatures. Mrs. Attfield will hold a garden party on the occasion, at which the Hungarian Band will be in attendance from 4 to 7 p.m., and the Committee hopes that as many as possible of Dr. Attfield's old students and friends will be able to attend.

REAGENTS, REACTIONS, METHODS AND FORMULÆ, KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 9.)

Fiebig's sugar determination by means of the fermentation-glucoseometer. See Einhorn.

Filsinger's test for cacao oil (modified ether test). 2 Gm. of the oil is shaken in a graduated tube with 6 C.c. of a mixture of 4 parts of ether (sp. gr. 0·725) and 1 part of alcohol (sp. gr. 0·810), and then set aside. Pure oil yields a clear solution which does not become turbid at 0° C.

Finkelnburg's reagent for excrements. This is used in the examination of soil and water. It is an alkaline solution of silver oxide in sodium thiosulphate. If substances containing excrements are boiled with hydrochloric acid for several minutes, then made alkaline with soda and again heated to the boiling-point with the reagent, a dark reddish-brown precipitate is formed, whilst the solution remains light brown in colour.

Finkener's test for impurities in castor oil. Shake 10 C.c. of oil with 50 C.c. of alcohol, sp. gr. 0·829, at 17°·5. If a turbidity is produced which does not disappear when the mixture is heated to 20°, at least 10 per cent. of foreign oils has been added.

Fischer's reagent. With aldehydes, ketones, and carbohydrates phenylhydrazine yields condensation products which are soluble with difficulty. In order to test for sugar in urine, 50 C.c. of the latter is heated with 2 Gm. of phenylhydrazine hydrochlorate and 4 Gm. of sodium acetate for ½ to 1 hour, on a water-bath. If sugar is present phenyl-glycosazone is precipitated. This is dissolved in alcohol, water added, and the alcohol evaporated. The resulting needles of glycosazone melt at 204° to 205°.

Fischer's soap imbedding mass. Dissolve 15 parts of transparent soap in 17·5 parts of 96 per cent. alcohol.

Fleischl's test for biliary colouring matter. See Gmelin's test.

Fleitmann's arsenic test. See Marsh's arsenic test.

Flemming's fixing solutions. Chromo-acetic acid is an aqueous solution of chromic acid, 0·2 to 0·25 per cent., and acetic acid, 0·1 per cent. Weaker chromo-aceto-osmic acid is an aqueous solution of chromic acid, 0·25 per cent.; osmic acid, 0·1 per cent.; glacial acetic acid, 0·1 per cent. The strong solution consists of 1 per cent. chromic acid solution, 15 parts; 2 per cent. osmic acid, 4 parts; glacial acetic acid, 1 part. Picric acid has sometimes been substituted for chromic acid. Squire gives the following exact formula:—Osmic acid (1 per cent. solution), 80 C.c.; chromic acid (10 per cent.), 15 C.c.; glacial acetic acid, 10 C.c.; distilled water, 75 C.c.

Flemming's gentian violet method. Use an alcoholic solution, diluted with about one half its bulk of water. Differentiate the stained objects in alcohol acidulated with about 0·5 per cent. of hydrochloric acid, followed by pure alcohol and clove oil.

Flemming's glycerin preservative. Mix equal parts of alcohol, glycerin, and water. Lee recommends the addition of 0·5 to 0·75 per cent. of acetic acid.

Flemming's orange method. Stain for days or weeks in strong alcoholic safranine solution diluted with half its bulk of aniline water (saturated); then rinse in distilled water, differentiate in absolute alcohol containing 0·1 per cent. of hydrochloric acid, stain for 1 to 3 hours in strong aqueous gentian violet solution, again wash in distilled water, and finally treat with concentrated aqueous solution of orange G. After a few minutes transfer sections to absolute alcohol, then clear in clove or bergamot oil, and mount in dammar or balsam.

Flemming's safranine solution. A concentrated solution in absolute alcohol, diluted with about one half its bulk of water as above. Follow the same after treatment.

Flesch's chromo-osmic acid. Osmic acid, 0·10 Gm.; chromic acid, 0·25 Gm.; water, 100·0 Gm.

Flueckiger's arsenic test. Solution of mercuric chloride is employed in place of the silver nitrate used according to Gutzeit (*q. v.*). With this modification arsenuretted hydrogen produces a yellow spot, which is darkened by water, but is permanent toward alcohol. Very dilute antimony hydride does not affect the mercuric chloride. Somewhat less diluted it produces a brown spot, which disappears upon the addition of alcohol if sufficient mercuric chloride was on the test-paper.

Flueckiger's reaction for quinine. If bromine water and an excess of ammonia be added to a solution of quinine, an emerald-

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* After Schneider, Altschul, Lee Squire, Crookshank, and others.

green colour is produced (thalleioquin reaction). Compare Brand's reaction.

Flueckiger's test to distinguish between naphthols. If 0·2 Gm. of naphthol be shaken with 0·2 Gm. of mercuric chloride, 0·1 Gm. of nitric acid, and 10 C.c. of water at 100°, *a*-naphthal is indicated by a slight scarlet-red precipitate, whereas *β*-naphthol yields a voluminous reddish-brown precipitate.

Flueckiger-Behren's test for sesame oil. If 5 drops of sesame oil be treated with 5 drops of a cold mixture of equal parts of concentrated sulphuric acid, nitric acid and water, a green zone is produced. If 5 drops of carbon disulphide be immediately added an upper greenish layer is produced, which becomes discoloured more slowly than the original colour.

Foà's fixing liquid. Mix equal parts of saturated solution of mercuric chloride in normal salt solution (0·75 per cent.) and of Müller's solution or 5 per cent. bichromate solution.

Foà's hæmatoxylin and safranine stain. Mix distilled water, 100 parts; Böhmer's hæmatoxylin solution, 25 parts; and 1 per cent. solution of safranine in water and alcohol, 20 parts.

Focke's test for grape sugar. See Trommer's reaction.

Foettinger's narcotisation method. Crystals of chloral hydrate are dropped into the water containing the organisms, 25 to 80 Cgm. to each 100 Gm. of water.

Fokker's reaction for the detection of uric acid. If solution of ammonium chloride be added to urine containing uric acid, previously made alkaline with soda, the difficultly soluble urate of ammonium is formed. This test is also used, especially according to Salkowsky's modification, for quantitative determinations.

Fol's albumin fixative. Filter whipped white of egg through a Bunsen filter, then add an equal bulk of glycerin and a little camphor or carbolic acid.

Fol's Berlin blue gelatin mass. Mix (1) 120 C.c. of cold saturated solution of ferrous sulphate with 300 C.c. of warm gelatin solution, and (2) 600 C.c. of gelatin solution with 240 C.c. of a saturated solution of oxalic acid and 240 C.c. of a cold saturated solution of potassium ferricyanide. Pour (1) into (2) gradually, with vigorous shaking, and warm the whole for a quarter of an hour over a boiling water-bath. Then allow the mass to set, press out into strings through tulle or fine netting, wash the strings and spread out to dry on paraffined parchment paper. When required for use, soak in cold water for a few minutes, and then warm with enough oxalic acid to allow of complete solution.

Fol's carmine-gelatin mass. Gelatin in sheets is macerated for 2 days in concentrated ammoniacal solution of carmine (strong solution of ammonia, 1 part; water, 3 or 4 parts; carmine, to saturation. Filter.), then rinsed and put for a few hours into water acidulated with acetic acid. It is then well washed on a sieve with running water for several hours to remove excess of acid or ammonia, melted, and poured on to large sheets of parchment paper soaked with paraffin, which are hung up to dry in an airy place. When dry separate the gelatin, cut into long strips, and protect from dust and damp. When required for use soak for a few minutes in water and melt over a water-bath.

Fol's decalcification liquid. Mix 70 volumes of 1 per cent. chromic acid, 3 of nitric acid, and 200 of water.

Fol's ferric chloride fixing and staining process. Preparations are treated with tincture of ferric chloride diluted with 5 to 10 times its bulk of 70 per cent. alcohol, and then transferred for 24 hours to alcohol containing a trace of gallic acid.

Fol's fixing solution. Mix osmic acid (1 per cent. solution), 4 C.c.; chromic acid (10 per cent.), 5 C.c.; glacial acetic acid, 10 C.c.; distilled water, 181 C.c.

Fol's gelatin fixative. Dissolve 4 Gm. of gelatin in 20 C.c. of glacial acetic acid on a water bath, and to each 5 C.c. of the solution add 70 C.c. of 70 per cent. alcohol, and 1 to 2 C.c. of 5 per cent. aqueous chrome alum solution.

Fol's glycerin jellies. (1) Melt together one volume of Beale's glycerin jelly and half to one volume of water, then add 2 to 5 per cent. of salicylic acid solution, or carbolic acid or camphor. (2) Gelatin, 30 parts; water, 70 parts; glycerin, 100 parts; alcoholic solution of camphor, 5 parts. (3) Gelatin, 20 parts; water, 150 parts; glycerin, 100 parts; alcoholic solution of camphor, 15 parts.

Fol's metagelatin vehicle. Metagelatin is prepared by adding a slight proportion of ammonia to a solution of gelatin, and heating the solution for several hours. Colouring matters are then added as required, and the vehicle thinned if necessary by the addition of weak alcohol. After injection preparations are thrown into strong alcohol or chromic acid solution to set the mass.

Fol's narcotisation method. Saturate the water containing the organisms with carbon dioxide gas.

Fol's picro-chromic acid method. Mix saturated aqueous solution of picric acid, 10 vols., with 1 per cent. chromic acid solution, 25 vols., and water 65 vols. At the moment of using add 0·005 vol. of osmic acid solution, wash preparations with nearly boiling water, and then with alcohol.

Fol's slide-cleaning solution. Dissolve potassium bichromate, 3 parts, and sulphuric acid, 3 parts, in water 40 parts.

Formanek's reaction for alkaloids. Various alkaloids, after the evaporation of their solutions in nitric acid (see Vitali), yield characteristic colour reactions when treated with ammonia and other alkalies.

Fraude's reagent for alkaloids. An aqueous solution of perchloric acid, sp. gr. 1·13 to 1·14. Upon boiling a trace of alkaloid with several cubic centimetres of the reagent, aspidospermine is coloured bright red, brucine madeira red, strychnine reddish-yellow.

Freeborn's picro-nigrosin method. Mix 5 C.c. of 1 per cent. aqueous solution of nigrosin with 45 C.c. of aqueous picric acid solution. Stain for 3 to 5 minutes, wash with water, and mount in balsam.

Frenkel's fixing mixture. Mix 15 parts of 1 per cent. palladium chloride solution with 5 parts of 2 per cent. osmic acid and a few drops of acetic acid.

Frenzel's sublimate solution. Add 1 drop of nitric acid to each cubic centimetre of 5 per cent. aqueous sublimate solution.

Fresenius' phenol reaction. If phenol be boiled with a solution of mercurous nitrate containing traces of free acid, metallic mercury is precipitated and the odour of salicylic aldehyde produced. Compare Plugge's phenol reaction.

Fresenius' detection of nitrous acid by distillation. The water to be examined is acidulated with acetic acid and distilled. On collecting the distillate in potassium iodide starch solution acidulated with sulphuric acid, the presence of nitrous acid is indicated by the formation of a blue colour.

Frey's ammonia carmine. Dissolved carmine, 0·015 to 0·30 Gm., in ammonia, a sufficiency, and water, 30 Gm., then filter and add glycerin, 30 Gm., and strong alcohol, 8 to 12 Gm.

Frey's artificial iodised serum. Mix distilled water, 135 Gm., egg albumin, 15 Gm., and sodium chloride, 0·20 Gm. After filtration add tincture of iodine, 3 Gm. Any precipitate is removed by filtering through flannel, and a little iodine is then added to the filtrate.

Frey's fuchsine solution for staining microscopic preparations. A solution of 0·01 Gm. of crystallised fuchsine, 20 to 25 drops absolute alcohol, and 15 C.c. of water.

Friedlaender's fixing mixture. Dissolve copper and zinc sulphates, 125 parts each, in 1000 parts of water.

Friedlaender's staining methods. Cover-glass preparations are treated for 3 minutes with a 1 per cent. solution of acetic acid, and allowed to dry after removal of excess of liquid by filter-paper. Next place them in gentian violet aniline water (aniline water, 100 C.c., concentrated alcoholic solution of gentian violet, 11 C.c.; absolute alcohol, 10 C.c.) for half a minute, wash in water, dry and mount in balsam. Sections are kept for 24 hours in a warm place, in the following solution:—Concentrated alcoholic solution of gentian violet, 50 C.c.; distilled water, 100 C.c.; glacial acetic acid, 10 C.c. Then treat for 1 or 2 minutes with 0·1 per cent. acetic acid, dehydrate, clear and mount in balsam.

Fritsche's reagent. Dinitroanthraquinone yields crystalline compounds with many hydrocarbons.

Froehde's hydrocyanic acid reaction. If a cyanide be fused with sodium thiosulphate, the fused mass dissolved in water, and some ferric chloride added, a blood-red colour results.

Froehde's reagent for alkaloids. A freshly prepared solution of 0·01 Gm. of sodium molybdate in 1 C.c. of concentrated sulphuric acid (according to others 0·01 Gm. : 10 C.c., also 1 Gm. : 10 C.c.). With alkaloids and glucosides it produces characteristic colour reactions. Proteïnes produce a dark blue colour.

Frohn's reagent for albuminous substances and alkaloids. Boil 1·5 Gm. of freshly precipitated bismuth subnitrate with a solution of 7 Gm. of potassium iodide in 20 C.c. of water, and then add 20 drops of hydrochloric acid. The orange-yellow solution produces precipitates in the acid solutions of albumin and alkaloids.

Frommherz's solution for the detection of glucose. Dissolve 41·76 Gm. of crystallised copper sulphate, 20·88 Gm. of potassium

bitartrate, and 10·44 Gm. of caustic potash in sufficient water to make one litre. See Fehling's solution.

Fuerbringer's reagent for albumin. A mixture of double mercuric and sodium chlorides with citric acid and sodium chloride. In albuminous urine the reagent produces turbidity or a flocculent precipitate. Inasmuch as uric acid is likewise precipitated the urine must first be diluted. See Stuetz's albumin capsules.

Gabbet's dye for tubercle bacilli. This consists of 2 Gm. of methylene blue, 25 Gm. of concentrated sulphuric acid, and 75 Gm. of water.

Gaffky's staining methods. Sections of material hardened in alcohol are left for 20 to 24 hours in a deep blue opaque solution, freshly made by adding saturated alcoholic solution of methylene blue to distilled water. Then wash in distilled water, dehydrate in absolute alcohol, clear in turpentine oil, and mount in balsam.

Gage's clearing mixture. Mix 40 C.c. of melted carbolic acid crystals with 60 C.c. of turpentine oil.

Gage's decalcification fluid. Dilute a saturated aqueous solution of alum with an equal volume of water, and to each 100 C.c. of the dilute solution add 5 C.c. of strong nitric acid. Change every 2 or 3 days until decalcification is complete.

Gage's formaldehyde mixture. Add two parts of 40 per cent. formaldehyde solution to 1000 parts of normal salt solution (0·75 per cent. in water).

Gage's picric alcohol. Mix 250 parts of 95 per cent. alcohol with 750 parts of water and 1 part of picric acid.

Gage's preservative fluid. Mix egg albumin, 15 C.c. ; water, 200 C.c. ; mercuric chloride, 0·5 Gm. ; sodium chloride, 4 Gm. Filter and preserve in a cool place.

Gage's preservative for potash and soda preparations. The tissues having been treated with strong potash or soda solution, are mounted in 60 per cent. potassium acetate solution (with or without the addition of 1 per cent. of acetic acid), or simply treated with the same and then mounted in glycerin or glycerin jelly. They may be stained if the acetate be first washed out by treatment with alum solution for 24 hours.

Gaglio's test for mercury vapours in the atmosphere. The air to be tested is passed through a solution of palladium chloride in 500 parts of water. The palladium chloride is previously dissolved in hydrochloric acid with the aid of nitric acid and repeatedly evaporated to dryness with hydrochloric acid. If mercury be present the solution is reduced as shown by the formation of black spots.

Gallois' test for inosite in urine. After the glucose is removed by fermentation and the albumin by boiling, the urine is evaporated to a small bulk and a few drops of mereurous nitrate solution added. If inosite be present the residue left upon complete evaporation is yellow. Albumin colours the residue rose-red, and sugar colours it black, hence those substances must be removed completely.

Gannal's mounting medium. Dissolve 1 part of aluminum acetate in 10 parts of water.

Ganther's blood-reaction. Minute traces of blood liberate oxygen from hydrogen peroxide, with the production of foam. Other animal substances cause the same phenomenon.

Gardiner's reagent for tannic acid. A solution of ammonium molybdate, which produces a yellow precipitate with the acid.

Gassend's modification of Baudouin's reaction (*q.v.*) for sesame oil. Sodium bisulphite is added, and removes the colour occasionally produced with genuine olive oil, but does not affect that produced by sesame oil. To 15 C.c. of oil and 10 C.c. of sugar solution in hydrochloric acid add 2 to 3 C.c. of a 10 per cent. bisulphite solution, shake the mixture, and set aside for 5 minutes. If the red colour remain, the oil is probably adulterated with sesame oil.

Gaule's fixing liquid. Dissolve mercuric chloride, 5 Gm., and sodium chloride, 0·5 Gm., in 100 C.c. of water.

Gautier's reagent. Mix 250 C.c. of soda solution, 50 C.c. of 3 per cent. copper sulphate solution, and 700 C.c. of glacial acetic acid. This mixture precipitates serum albumin from its solutions, but not egg albumin.

Gautier's tannin reaction. Precipitation is effected by shaking with cuprous carbonate and the addition of alcohol, or by the addition of aqueous copper acetate (1:30).

(*To be continued.*)

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

At the meeting held on June 18, Mr. F. A. U. Smith in the chair, Mr. F. W. Bidie read a paper entitled

Forms of Plants Considered in Relation to Insects.

The form of the flower was first considered, and its various adaptations for the attraction of insects, such as the secretion of honey, of odour, and of excessive production of pollen to serve as food for the welcome guests. The modifications of the perianth as the presence of lines, hairs, and bright colours to aid the insect in its search were also described. The intelligence or instinct of insects as shown in their selection of and preference for certain plants, and their methods of procedure in different cases was not forgotten, nor were the adaptations found in plants, which serve to protect them from undesirable visitors like snails and ants. Methods for the ensurance of cross-pollination were also lightly touched on. The flower of the spotted arum, violet, and pea were treated in more detail, and the honey and humming birds of Australia and America were described, together with the plants they visit and inhabit. Insectivorous plants, with their wonderful mechanisms, came in for a fair share of treatment. In conclusion, the theories advanced to explain the variations met with were brought forward, and the laws of Darwin explained.—The next paper was by Mr. E. C. Spurge, on—

French Pharmacy.

This was a highly interesting account of what the French student has to do before qualifying and what advantages he enjoys after he has obtained the qualification.—Both papers were followed by discussions, and the authors having replied, the meeting adjourned.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS.

The members of this Society and their friends held their annual outing to Edzell and Lochlee, on Wednesday June 30. Leaving Aderdeen by the 6.45 a.m. Caledonian train in saloon carriages, they reached Edzell at 8.50 a.m., and had breakfast at the "Panmure Arms" Hotel. After breakfast the party entered brakes and eommenced a three hours' drive through magnificent scenery, and in ideal picnic weather. Snap shots of Gannochy Bridge and other picturesque spots were taken on the way. After returning to Edzell the party sat down to dinner at the "Panmure Arms." Among those present were Messrs. Johnston, Paterson, Simpson, Craig, G. P. Cruickshank, John Cruickshank, Stephen (Aberdeen), Kerr, Cumming, Thompson (Dundee), Davidson (Montrose), Ferrier (Brechin), Thomas (London), Gowan (Ceylon), etc. The last but certainly not the least item on the programme was a run through the Policies of Lord Dalhousie at Brechin Castle. The party arrived at Aberdeen at 9.5 p.m.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The second botanical excursion of the season took place on the evening of Friday, July 2, and was conducted by Mr. W. B. Cowie. About twenty members travelled by train to Inveresk, and walked along the banks of the river Esk to Musselburgh, returning to Edinburgh by last train. The weather was good, and the following plants were collected :—*Papaver rhœas*, *Capsella bursa-pastoris*, *Nasturtium officinale*, *Lychnis diurna*, *L. flos-cuculi*, *Silene inflata*, *Stellaria holostea*, *Malva sylvestris*, *Acer pseudo-platanus*, *Ulex europæus*, *Trifolium repens*, *Spiræa ulmaria*, *Potentilla anserina*, *Rosa canina*, *Ægopodium podagraria*, *Chærophyllum temulum*, *Myrrhis odorata*, *Sambucus nigra*, *Gallium cruciatum*, *G. verum*, *G. aperine*, *Petasites vulgaris*, *Senecio jacobæa*, *Convolvulus arvensis*, *Chrysanthemum leucanthemum*, *Veronica chamædrys*, *Lamium album*, and *Stachys sylvatica*.

EXTRACTS FROM CONSULAR REPORTS.

British Exporters of Drugs to the Brazilian States are asked by Consul Bernal to bear in mind that Brazilian doctors are accustomed to Continental (*i.e.*, French and German) methods of prescribing, consequently many British preparations are often unfit for use there, sometimes on account of their strength being different from that of similar productions imported from the Continent. British fluid extracts are said to be especially unsuitable on account of being rarely miscible with alcohol or water. French fluid extracts, on the contrary, are said to be perfectly miscible. The packing of chemicals and medicines is another point on which he thinks British exporters might learn a little from their German and French competitors, the small details of superior packing and finish of bottles doing much to increase the sale of the articles. British manufacturers of drug and medicine bottles might with advantage take note of the superior make and finish of the bottles in which all preparations from Germany and France are sent to Rio Grande do Sul.

An Albumin Factory is being started at Wuhu, China, by a resident German firm, which will employ some sixty workpeople. Premises are being erected for machinery, fermenting, and drying rooms. From 7000 eggs between 500 and 600 lbs. of yolk may be extracted, and 100 lbs. of albumin.

The Olive Oil Export from Malaga, Spain, during 1897 will be practically *nil*, the whole yield being wanted for home consumption, as the crop of 1896 was the smallest known for years past, though the quality was never better.

The Import of Chemicals at Ghent Docks during 1896 amounted to 45,510 tons, as compared with 28,073 tons in 1895, an increase of 17,437 tons, made up of about 7000 tons of nitrate of soda from Chile, and 10,000 tons of rock phosphate from Florida. Guano from Africa was imported to the amount of 3800 tons, whereas in 1895 the quantity was only 405 tons.

Customs Difficulties sometimes occur at Rouen owing to contentions as to the places of origin of certain goods, and this leads Consul O'Neill to offer a word of caution to British exporters to France. It often happens that certain articles of British origin are placed in cases or bags that have been made out of the United Kingdom, and recently a case arose of muriate of ammonia being shipped at Bristol by a London firm, in casks made in Italy and bearing plain marks showing where they were made. The customs agents contended that the contents as well as the casks were made in Italy, a point of some importance to the consignee, seeing that, had it been so, duty would have been levied upon the muriate of ammonia under the maximum tariff to which Italy is still subjected, and not under the minimum applied to British goods. The customs abandoned that view, however, as the agent of the consignee was able satisfactorily to prove that the casks were old and that their contents were truly made in England. Products of British origin which benefit by the minimum tariff, and are subject to no surtax, should not be packed in cases, casks, or bags that bear plain evidence of having been made abroad.

German Wholesale Chemists, according to Consul O'Neill, do all they can to encourage and help the managers of the technical school at Elbœut in training chemists for the dyeing industries, by supplying gratuitously all the colours required in the chemical laboratory and dyeing sheds.

Saltpetre at one time was imported into Oporto exclusively from England, and for a long time after Germany began to compete preference was given, even at a higher price, to the British article. Germany, however, has considerably improved her manufacture, and owing to lower prices is now supplanting English saltpetre.

Citric Acid.—A factory for the manufacture of citric acid and oil of lemon has been established in San Diego, California, during 1896. The factory employs seven hands, has steam works, and a capacity for 40,000 lemons a week. It takes from four to six weeks to condense the juice of sixty to seventy lemons into one pound of acid.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Advertisements and orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

Correspondents should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

LETTERS TO THE EDITOR.

A Question of Policy.

Sir,—Unless the chemist and druggist is prepared to forfeit the position of respect and honour in which he is even now held by the British public, for whose peculiar benefit his calling is professionally recognised, and in some small measure protected by the Legislature, he must at once make a decisive stand against the wild ravages of quack medicine trade. Again and again in the history of modern pharmacy has the note of alarm been sounded by men who a little more than others seemed alive to this disgrace. But again has the commotion subsided; they have gone, one to his farm, another to his merchandise, and the evil has tripped along more gaily than ever. Eighteen years ago, for instance, letters were written on this subject, one of which, entitled "The Question of Policy" (*Pharm. Journ.*, vol. x., p. 398), puts the matter so forcibly that a part of it is well worth quoting here. After stating that there never was a time nor could be one so pregnant as that with questions of the deepest interest to us as a body, and that amongst them all the "patent" medicine question stood out pre-eminent, the writer divides his compeers into three classes: First, many already lost in the whirl; secondly, others standing hesitating on the brink, knowing too well what awaits them when they have made the plunge; and a third, prepared to look the matter straight in the face and ask questions resonant with ominous words, such as "quackery, fiction, ignorance, gullibility, and social degradation," and then he concludes thus: "Are we . . . . prepared to give support or otherwise to a trade which cannot stand in the glare of this latter half of the nineteenth century?—a trade founded upon the credulity of the illiterate; at war with almost every intellectual instinct, and in many phases of it, to say the most, of only questionable morality. . . . Must not this be a question of the very first importance to the Parliamentary Committee of the Pharmaceutical Society?"

These words I quote with a sort of loving gratitude, for they determined my own attitude from that time to this, they are those of one who is on the Council now, and strange to say, he is a member of the P.A.T.A. When those words were first written, an association of chemists was in full swing with the professed object of doing something good for the "Trade," which it was said the Pharmaceutical Society could not do. Floated with this ostensible aim its membership soon boasted of twice as many adherents as does the P.A.T.A. at the present moment, but it soon afterwards collapsed, as they said, for want of funds. I must say the members of the Council seemed to me then as being, to say the least, very unwise for encouraging, as they did, the growth of a society which they knew to be rotten at the core, and one that could flourish only in the proportion that it ran counter to the best work our Society was endeavouring to do for us. But so it was, a few worthy men were beguiled into keeping it a-going till the full amount of injury it was capable of doing was done, and then came the inevitable crash. A similar meteoric career had been the fate of another bogus affair about a dozen years before, and now at the end of the century we are beginning to be plagued with efforts of the like nature, but this time we have two enemies to fight instead of one, and if the spirits of the loyal members do not rise to the occasion and present one united front free from the hypocrisy of policy or any kindness of cant, the difficulty will soon become serious, and the pharmacist,

having sown the wind, will reap the whirlwind. Sir, we have on the one hand the P.A.T.A. offering to the noble army of grunters what it can never bestow—the reversion of the "patent" medicine trade to the chemist as an accredited agent for the same, and on the other we have the London Chemists' Club demoralising our new comers into the business. A club, of course, is a nice idea enough, and a chemists' club, if worked on noble, *i.e.*, independent, lines, would be nicer still, but a club subsidised by quack medicine agency, and mostly of the disgusting kind which comes across the Atlantic, is an abomination that makes desolate; and our Alma Mater, whose aim it has been for sixty years to provide for the British Empire an unending succession of men qualified, capable, and true, should let no mock modesty nor undue clemency veil her expressions of abhorrence and indignation at such unrighteousness.

The onerous nature of a pharmacist's business gives him little chance of

"Wasting his time in strenuous idleness."

The goodwill and kindly feeling of one pharmacist to another does not require any forcing-pump to keep it in action; it is his native air. He lives and moves in a serener atmosphere than any sort of trade agency can afford to exist in or trade associations give. If he descends to these, not the fish out of water, but the drowning bird, will represent his true condition. The sharks are waiting to gobble him up as the sweetest tit-bit of their voracious lives. "How Chemists Lose Business," *vide Anti-Cutting Record* for June, page 138; then look at page 152 and note the last addition "this month" to the protected list; then, once more, do read the advertisement of this same article in the *Echo* of June 28, or in the penny Sunday papers, asserting that this article, before the British public for a month only, has cured hundreds of people of all sorts of diseases for 1*s.* a phial (although, of course, each phial bears a 1½*d.* stamp), and say if this does not suggest to any calculating mind a part of the speech by Mr. Glyn-Jones at the first annual meeting of the P.A.T.A., not given in the report published in the *Anti-cutting Record*, but previously reproduced in the *Pharmaceutical Journal*, April 10, page 321, in these words:—"If the present methods of procedure did not cause manufacturers to join the P.A.T.A., stronger measures would have to be adopted, and instead of simply retailing (*sic*) proprietary articles the Association must commence to manufacture similar articles. This step, Mr. Glyn-Jones thought, would bring manufacturers to a different state of feeling towards the Association." Behold the way to lose business! Join the P.A.T.A., stock the latest novelties, keep a friend if you cannot afford an assistant to look after your shop (anyone can sell those goods), and enjoy yourself at Stonecutter Street as much as you can. Members of the sister craft of medicine having any influence with the neighbours will soon "spot" you as little to be trusted, young women and servants scandalise your pharmacy, and you mourn at length when all is consumed. Plenty of room for the industrious to rise whilst triflers are sinking every day.

Marylebone, N.W., July 4, 1897. J. C. HYSLOP.

THE P.A.T.A. AND THE COUNCIL ELECTION.

Sir,—Mr. Glyn-Jones' letter and the rejection of it by the Journal, his speech at the annual meeting, and the correspondence in your columns have brought out some points that are rather puzzling. Can Mr. Glyn-Jones clear them up or explain them away? Mr. Glyn-Jones told us at the annual meeting that the rejected letter was not from Glyn-Jones, but from a chemist and druggist who represented two thousand chemists and druggists in business. I can find no proof of that. The resolution embodied in the letter referred to was passed at a meeting, not of the Association, but of ten members of the retail section of the Council. Mr. Glyn-Jones' words implied that the letter was written at the instance of the members of the P.A.T.A., and that those two thousand members were practically unanimous in adopting the resolution; while the resolution itself states that the members "be urged to support those candidates whose replies were considered satisfactory." The members were not even supposed to judge for themselves concerning the satisfactoriness or otherwise of the replies, but were asked not to allow any "consideration to outweigh their obvious duty in the matter." Obviously their "obvious duty" was to vote according to instructions from Stonecutter Street. I know several members who ignored the letter; Mr. E. F. Young (*vide Ph. J.*, June 19), says he somewhat resented it. It would appear, however, from the result of the election that some of the members supported their Council, but not the two thousand. Mr. Glyn-Jones said "it is necessary that we as chemists and druggists should be exceedingly loyal to our Society, and I appeal to those who know anything about my own views, publicly expressed in meetings of the trade throughout the country, when I say that no one is more anxious that the Pharmaceutical Society should receive the unanimous support of the trade than I am myself. But if that is to be done then freedom of criticism and freedom of opinion must be allowed." (What Mr. Glyn-Jones claims for himself he will not deny to others.) When did Mr. Glyn-Jones make public profession of his anxiety for and exceeding loyalty to the Pharmaceutical Society by associating himself with it? Did Mr. Glyn-Jones publicly express those views at meetings of the trade prior to August last year? Did Mr. Glyn-Jones, at any meeting of the trade convened for P.A.T.A. purposes, seek to influence the Society's Council election by soliciting votes for candidates who were members of the P.A.T.A., while he himself had no connection with the Society?

Again, "It has been recognised all round that the Pharmaceutical Society as such cannot deal with certain trade matters; . . . tied as the hands of the Society are by the Pharmacy Act, it is impossible for them to do that." Then in the Journal of June 19, p. 542: "I maintain that when we ask the Society to take an interest in pharmaceutical commerce we are only asking them to carry out the object for which the law says they exist." Mr. Glyn-Jones has stated that if we did not take action (*i.e.* join the P.A.T.A.) the stores would not stop at cutting proprietary articles but would cut prices in the dispensing department also. Assuming for the sake of argument that the stores had not then invaded the dispensing department ("company pharmacy" was parading and making more of its boasted 30 to 50 per cent. reductions on prescriptions than of the comparatively small reductions on proprietaries), and meanwhile the P.A.T.A. flourished and was able to deprive the stores of the proprietary bait. How in the world does Mr. Glyn-Jones imagine that the stores would thereby be excluded from the dispensing department? Unquestionably the result would be the very opposite.

In closing I would note that, concerning "unprotected" articles, the policy of at least some of the members is not the policy obtaining at Stonecutter Street. Mr. Young, in the letter already referred to, says: "I have a very fair sale for Dinneford's Fluid, which I sell at actual cost. There is no choice. It is that or keep it. . . . . Our only plan seems to be to sell at lowest competitive prices and meanwhile concert with others . . . . with a view to raising prices. Such an aim as this animates the members of the P.A.T.A." The Assistant-Secretary does not say: "There is no choice; sell without profit or keep it." He has a second alternative: "Substitute on every available occasion" is his motto. The *Anti-Cutting Record* for May is jubilant over the addition of an article to the "protected" list. The article has had many imitations, which have been stocked and pushed chiefly on account of extra profit. The proprietor having removed this inducement to substitute, it is hoped that no attempt will be made to induce a customer to take a rival preparation when this article is asked for, and "for the best of reasons—it will not pay to do so." What reasons are there for substituting other than "extra profit"? "Extra profit" being the best, is it the argument usually adopted at the counter? Mr. Glyn-Jones told his Edinburgh audience that substitution was practised to a very large extent all over the country; that he himself had an assistant who he believed could sell "Glyn-Jones' Saline" in lieu of "Eno's Fruit Salt," even though the latter were asked for by Mr. Eno himself! Yet Mr. Glyn-Jones was here for the specific purpose of soliciting our sympathy or support, and our subscriptions on behalf of an association the chief object of which he stated to be the prevention of cutting and substitution!

Edinburgh, June 29, 1897. J. A. FORRET.

THE EDUCATION OF APPRENTICES.

Sir,—One of the most difficult questions to treat of (within the domains of pharmacy) is that of the education of apprentices under the existing state of affairs. The necessity for thoroughness in education was never greater than now. In general education great advances have been made and good results achieved, but too much is attempted to insure that amount of solidity which is so essential in the building up and attainment of sound knowledge. There is too great an anxiety to cover a very wide area of knowledge in a space of time too short to be successful; it leads to

cram and, especially in matters pharmaceutical, ends in faulty assimilation which is not serviceable to the individual or the craft. At one time I (like many others) was opposed to any barriers being placed in the way of aspirants to our calling. But, sir, I have lived to learn that this was a narrow and false view, detrimental to the best interests of the individual, as all study—especially when it embraces so wide a range as pharmacy—requires systematic direction and guidance, in order that it may prove effective in the future. That object cannot be attained without a compulsory curriculum, a more extended Preliminary, as well as a judicious division of the examinations, and until this be accomplished, recruits will not be drawn from a better educated class than at present, neither shall we get fuller or freer recognition for services rendered from governments, profession, or the public; it is the height of folly to expect it. This brings me to the question of "apprenticeship," and here let me say this is often undertaken by the parties concerned under false impressions and grave misconceptions. A false impression is too common in the minds of parents and guardians that a mine of wealth is to be found in the large profits made by chemists and druggists in their business, and that to apprentice a youth to such will turn out a good investment in the end. This is a fallacy which ought to be nipped in the bud, and the pharmacist who takes an apprentice should see to it, that such false impressions are removed at the outset. The difficultics, the expensiveness and the application necessarily involved, should be plainly and honestly stated, so that misunderstandings and regrets may be avoided. There should be perfect frankness as to the relationship between master and apprentice, and the former should insist upon the latter having passed the Preliminary prior to the execution of indentures, whilst both should be satisfied as to the respective capacity and desire to learn and the ability and willingness to teach.

The pharmacist should also insist upon a fair and proper premium being paid to remunerate him for his extra outlay, anxiety, and care. This should be commensurate with professional skill and ability. So long as the Preliminary remains as it is and a curriculum is simply voluntary, the status of the future pharmacist will not be improved, neither can he expect to occupy a position higher than any other trading class. I am quite aware that the business is not what it once was, neither is it what it ought to be. We should not, however, forget that the business has become what we have made it. The fault to a large extent lies with ourselves, and the future of pharmacy, for weal or for woe, lies with the pharmacist himself. In my letter to the Journal the other day I remarked "I am neither optimist nor pessimist," yet I believe that pharmacy has a future before it, and will eventually come out boldly to the front and render greater service in the future, if only we are united and judiciously use the legitimate means within our power in the present. How is it that others have usurped our privileges, and to a large extent trampled upon our rights? Why have we allowed others to reap whereon we have sown? Are we any of us guiltless in the matter? Does it not arise from the fact that we have been disloyal to our better interests and to our better selves? Unity is strength to-day, as it ever was, and if there is a real desire to ameliorate our condition it is only through unity that it can be accomplished. We have lost much which can never be recovered, but we may gather more which hitherto has not been within our grasp, and if we only act in unison, instead of being a "vanishing quantity," we may yet become a power in the land. There must be loyal support to the Society all along the line, upon the principles laid down by its founders and embodied in the recent proposals of the Council. In the advocacy of these views I am fully cognisant that I stand to some extent on the minority side; at the same time I do not forget that all great truths and principles were once in the minority, but by persistent and judicious advocacy the minority has been converted into the majority. In whatever cause we work, and that cause be a righteous one, if we will work and wait, the right will surely prevail in the end.

Rotherfield, July 5, 1897. G. G. Hornsby.

The North British Executive and the Scotch Examiners.

Sir,—In November last you did me the honour to publish a letter of mine criticising the appointing of Examiners by the Scotch Executive. That it has borne fruit is evident from the report of the meeting given in this week's Journal: "It was remitted to the Committee to make inquiry and consider any names that might be submitted to them and report to the meeting of Executive in November." To my mind this does not go far enough. The appointments should be advertised in the *Pharmaceutical Journal* and the selection made from the applications sent in, as is the case with most learned bodies. Further, no member of the judging body, *i.e.*, the Executive, should be eligible. This would give a fair field and no favour, no territorial representation by Examiners as lately attempted, but every Major man in Scotland who has kept up his knowledge would have his chance with the others. Curiosity has led me to look up the qualifications and dates of the certificates of members of the above-mentioned Committee. They are interesting:—Two pharmaceutical chemists, 1868 and 1870; two chemists and druggists, 1870 and 1880; two Modified, 1869 and 1870; one in business before the passing of the Pharmacy Act, 1868.

July 5, 1897. Natu Minimus (101/15).

*** It is much to be regretted that "Natu Minimus" does not sign his letter with his real name. Though his wish to mask his identity is once more deferred to, we quite fail to recognise the validity of his reason for assuming anonymity to be necessary.—[Ed. *P. J.*]

The Manufacture of Morphine.

Sir,—I have again read your sketch of "Industries Connected with Pharmacy," and think that Mr. Wilkinson has very little justification for his statement that you "give Macfarlan credit for being the first in the field." If Mr. Wilkinson also re-reads and takes particular notice of the word "probably," which will be found in the last sentence of the second paragraph, he may possibly find it necessary to change his opinion. I have neither time nor inclination to go into a worthless controversy regarding the merits of any particular candidate for the honour, but I think Mr. Wilkinson should support the one he has put forward with something better than second-hand stories gathered between 1844 and 1850. Actual dates would be much more to the point.

Edinburgh, July 6, 1897. David Brown.

Syrupus Rhœados.

Sir,—If the above preparation is to be retained in the coming B.P., I would suggest a slight reduction in the quantity of water ordered. Making three times the B.P. formula, I obtained 11 lbs. 10 ozs.—that is, 12 ozs. over the weight mentioned—and the syrup is rather thin. Its specific gravity is 1·29. It thus appears that the B.P. formula would be improved by alteration of the quantity of distilled water to 16 ozs. or a sufficiency.

Northampton, July 5, 1897. J. Clower.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

Antibilious Powder.—We are making inquiries locally about this. [*Reply to* S. H.—100/27.]

Notice to Leave.—A month's notice is usually expected in such cases. [*Reply to* Junior.—100/38.]

Botanical.—*Melilotus cærulea* and *Artemisia vulgaris*. The 'Treasury of Botany' will give you full particulars concerning both. [*Reply to* Legume.—100/43.]

Linen Glaze.—Yes, paraffin wax is preferable to spermaceti. Stearin is also better than spermaceti. The glaze is further improved by the addition of dextrin. [*Reply to* E. B. F.—101/4.]

Keeping Properties of Ointments.—Ung. iodoformi and ung. chrysarobin are not difficult to keep in well-covered pots. Of course, a steel knife should never be used for them. These two ointments are directed to be made by heat so as to dissolve the medicament in the melted fat. [*Reply to* S. H.—100/28.]

LONDON PHARMACOPŒIA, 1851.—The Latin edition of this work can be borrowed from the Society's Library in London. [*Reply to* CYMRO —101/20.]

SOLVENT FOR AMBER.—Amber is soluble in chloroform. You might incorporate it with indiarubber by mixing the solution with rubber which has previously been softened with chloroform. [*Reply to* R. A.—101/33.]

OINTMENT JARS WITH TINNED LIDS.—Send a pattern of what you require and ask for quotations from Maw's, Aldersgate Street, E.C., or from Toogood, Heddon Street, Regent Street, W. [*Reply to* J. A.—100/2.]

RUBIDIUM IODIDE.—This is recommended as a substitute for potassium iodide, since it is said to be better tolerated. (See *Pharm. Journ.* [3], xxiv., 341.) The dose is 5 to 20 grains. [*Reply to* ANEURISM.—100/10.]

THE SOCIETY'S LIBRARY.—No possible good can result from the publication of anonymous letters on points such as you raise. Moreover, no animadversion of the official referred to was either intended or conveyed. [*Reply to* A LIBRARY READER.—100/8.]

STRONTIUM IODIDE.—This is recommended as a substitute for the other iodides in all cases in which treatment by iodides is indicated. The dose is 5 to 20 grains. It is very important that the salt should be quite pure and free from traces of barium. [*Reply to* ANEURISM.—100/10.]

INDIARUBBER.—Pure rubber is dark brown or greyish. You can obtain this from Warne and Co., 29, Gresham Street, E.C. Crude rubber is purified by kneading and tearing in special machinery with a stream of running water passing through it, and then rolling between iron drums. [*Reply to* R. A.—101/32.]

ADMINISTERING LARGE DOSES OF POTASSIUM IODIDE.—We cannot advise you as to giving massive doses of potassium iodide such as you name. If for yourself, you should consult a physician, and not experiment with so potent a dose. It is quite outside our province, and yours, to treat such a case as you mention, even if you are yourself the patient. [*Reply to* ANEURISM.—100/10.]

EASTON'S PILL.—This is a pill containing the equivalent of a dose of Easton's syrup. Martindale gives the following formula:—Phosphate of iron, 16 grs.; pure quinine (=phosphate, 16 grs.), 12 grs.; strychnine, ½ gr.; sugar, 8 grs.; concentrated phosphoric acid, 20 drops or *q.s.* Mix quickly, having first triturated the strychnine with the phosphate, and divide into 16 pills. Also made one-half this strength. [*Reply to* S. H. H.—101/18.]

INTERMEDIATE SCIENTIFIC EXAMINATION.—A Major man ought easily to be able, with twelve months before him, to manage the Honours Intermediate in Botany. Although the honours is much stiffer than the pass examination, the latter is very simple. To anyone having the slightest pretensions to a knowledge of botany the Honours is only stiff by comparison, and does not represent a very advanced standard. [*Reply to* M.P.S.—98/40.]

BARIUM SALTS INTERNALLY.—Barium chloride has been given as a cardiac tonic and diuretic, and it is said that it can be taken for a long time without ill effects. The dose is from $\frac{1}{6}$ to $\frac{2}{3}$ of a grain, taken three times a day, dissolved in a large quantity of water. A case of aneurism of the aorta, which was apparently cured by this treatment, is described by Flint (*Practitioner*, xxiii., 37). The iodide is given in doses of $\frac{1}{10}$ grain in scrofulous affections. [*Reply to* ANEURISM.—100/10.]

IMMEDIATE SOFTENING OF CORNS.—We cannot possibly tell what the "milk-white fluid used by a quack" for the immediate softening of corns may have been. Very likely it was a strong solution of caustic potash. The subsequent painless removal with a blunt knife was doubtless aided by the operator's manual dexterity. Some of these peripatetic corn curers are really skilful operators in this particular branch. A 10 per cent. ointment of salicylic acid with lanolin for a basis is a good remedy, but it does not operate "instantly." [*Reply to* PROVINCIAL.—99/36.]

PREPARATION OF GLYCEROPHOSPHATES.—See Delage's method (*Ph. J.*, May 15 last, p. 413). That process is very simple, and is said to work well. Yes, the formulæ given are correct. [*Reply to* R. W.—101/8.]

INTERPRETATION OF RECIPE.—The composition of the powder—I. ½ gr.; S. V. R., 20♏; Z. S., P. Sc., Pt. A., aa ℥ss.—is probably what you suggest—iodine, ½ grain; spt. vini rect., 20♏; zinci sulphat., pulv. sacchar., potass. acetatis, aa ℥ss. The powder will be very hygroscopic, and the zinc sulphate should first be dried to drive off water of crystallisation. Dissolve the iodine in the spirit, and incorporate with the sugar; continue to rub until dry, then add the acetate with the zinc sulphate. [*Reply to* A. P. S.—100/24.]

SUCCUS PAPAV EXSICCAT.—Are you sure you are correct in copying this succus papav. exsicc.? It is more likely to be succus papaw exsicc., dried papaw juice, seeing that the prescription is for a digestive dinner pill. Unless we could see the original prescription, we cannot express a definite opinion, but succus papav. does not harmonise with the other ingredients, and is not generally given as an ingredient in a dinner pill. If papaw juice (crude papain) is meant, it would have been plainer to write succ. caricæ papay. exsicc., gr. 1½. [*Reply to* H. H.—100/16.]

GINGER WINE ESSENCE.—The formula given on p. 483 of the *P. J.* for May 29 is preferable to the one you send. Your formula would be improved by substituting double the quantity of soluble essence of ginger for the tincture, and adding 2 drachms of soluble essence of lemon with only 1 drachm of tincture of capsicum. Your amended formula will then read—soluble essence of ginger, 10 drachms; soluble essence of lemon, 2 drachms; tincture of capsicum, 1 drachm; burnt sugar, *q.s.*; water to produce 4 fl. ozs. In this dissolve tartaric acid, ¾ oz. But our recipe is to be preferred. [*Reply to* LINENOPOLIS.—100/7.]

SULPHATE OF SODA FROM AËRATED WATER BY-PRODUCT.—If you evaporate your sulphate of soda liquor until it crystallises, the greater part of the impurities will drain away in the mother liquor. You can re-crystallise it if you wish, but if carefully done the first crop of crystals should be quite pure enough for Glaubers salt for veterinary purposes. If you have the space you will find you can evaporate a lot spontaneously during the summer, when your soda-water plant is busiest; if the liquid be placed in a shallow trough protected from rain it will soon evaporate sufficiently to crystallise. It would not pay you to purify the salt except by re-crystallisation. [*Reply to* SODA.—99/1.]

HYACINTHINE, CARYOPHYLLINE, ETC.—As far as we are aware nothing has been published on the composition of these bodies. The adjective "synthetic" may or may not be correct as applied to them. The nomenclature of such substances, too, is scarcely likely to be scientifically correct. The case is on all fours with that of "saccharin" and many other bodies, which have assumed names already given by chemists to totally different bodies. We agree that such looseness of nomenclature is to be regretted, but fear that business men will not readily abandon a "taking" and descriptive name merely because it is scientifically incorrect. Those bodies are largely used under the names employed. We have no alternative in correspondence and in giving formulæ but to use them, since in perfumery all who know anything of the subject know what is meant. They are trade names and nothing more, just as heliotropine is the trade name of piperonal. We are inquiring in the direction you name, and will reply further as soon as the information comes to hand. [*Reply to* J. C. S.—100/31.]

OBITUARY.

BENNETT.—On July 3, at Clifton, Joseph Bennett, Chemist and Druggist (Mod.), Clarence Road, Bristol. Aged 53. Mr. Bennett was an Associate of the Pharmaceutical Society.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Attfield, Barker, Campkin, Child, Cox, Currie, Dott, Ellington, England, Eustace, Fennings, Ford, Glew, Gregory, Hadfield, Haigh, Hallberg, Harrison, Hetherington, Hills, Hogg, Holmes, Horsfield, Hyslop, Ince, Knight, Laidman, Lee, Moss, Ough, Owen, Reeve, Reynolds, Stephens, Thomas, Thompson, Thorburn, Walkington, and Young.

16 JUL 97

THE ALKALOIDS OF HYOSCYAMUS AND SCOPOLA.*

BY DR. LOUIS MERCK.

From the mixture of bases obtained from hyoscyamus seeds, and known as amorphous hyoscyamine, Ladenburg isolated a substance to which he gave the name of hyoscine, and he described it as having the formula $C_{17}H_{23}NO_3$, isomeric with atropine and hyoscyamine. Hesse, on the other hand, contended that the composition of the base was represented by the formula $C_{17}H_{21}NO_4$. He also stated that it was identical with the base obtained from *Scopola atropoides*, to which E. Schmidt had applied the name scopolamine. Subsequently E. Schmidt stated that the hyoscine hydrobromide met with in trade consisted almost entirely of scopolamine salt, but he did not consider that the possible existence of a base corresponding to Ladenburg's description, and having the formula $C_{17}H_{23}NO_3$, was thereby disproved.

However that may be, Dr. Merck states that the base produced by his firm has certainly been identical with Schmidt's scopolamine, and it was only to prevent confusion by the alteration of names that the base obtained from hyoscyamus was called hyoscine, while that obtained from scopola was ealled scopolamine. Many attempts have been made by Merck's firm, in working up large quantities of solanaceous drugs, including belladonna, duboisia, datura, stramonium, hyoscyamus, and scopola, to identify a base having the properties of hyoscine and a composition corresponding with the formula $C_{17}H_{23}NO_3$, but up to the present time without any successful result.

In the course of the inquiry a base having the composition $C_{17}H_{23}NO_3$ was obtained from *Duboisia myoporoides*, but in its properties it differs essentially from hyoscine. It is a solid, melting at 132°-134° C., instead of an oily liquid. To that base the name of pseudo-hyoscyamine was applied. The base isolated from *Duboisia* by J. Gadamer is, according to his description, equally unlike Ladenburg's hyoscine, as it appears to contain only fifteen atoms of carbon.

Even the examination of very large quantities of the residuary bases obtained in the manufacture of atropine has failed to furnish any indications of a substance that could be approximately identified with hyoscine, having the formula $C_{17}H_{23}NO_3$. The only bases that could be isolated from *Duboisia* were hyoscyamine, a base having the formula $C_{17}H_{21}NO_4$—hyoscine or scopolamine—considerable quantities of amorphous bases, and pseudo-hyoscyamine. In no instance was any base obtained having the properties and formula of the base described by Ladenburg under the name of hyoscine, although the possibility of overlooking such a base would be very improbable. The same negative result was obtained in the ease of stramonium seeds.

In reference to the statement frequently met with that hyoscine (or scopolamine) has been isolated from the residual bases obtained in the manufaeture of atropine, Dr. Merck points out that, though it might thence be inferred that hyoscine is associated with hyoscyamine or atropine in belladonna, it has never been possible at the works of his firm to detect hyoscine (or scopolamine) among the residual bases obtained in working many hundred thousand kilos of belladonna roots. Dr. Merck considers that the contrary experience of others, suggested by the statement referred to, has been due either to defective sorting of the belladonna roots and to the presence of roots of other solanaceous plants, or to the mixing of the residues obtained in operations upon different materials. The assumption that the presencc of hyoscine (or scopolamine) might have been overlooked by rcason of its minute amount is negatived by the result observed on splitting up the mixturcs of residual bases, in which case the presence of the base in question would have been indicated by the appearance of scopoline among the produets of splitting, but though in one instance the quantity of residual bases operated upon was sufficient to yield one hundred kilos of tropine, the presence of a base having a higher boiling point could not be detected.

The final result of the inquiry is that, operating on these large quantities of material, no base answering to Ladenburg's description of hyoscine has been obtained. Therefore the question between O. Hesse and E. Schmidt as to the base represented by the formula $C_{17}H_{21}NO_4$, has been reduced almost entirely to whether it should be named hyoseine or scopolamine.

The controversy between these two investigators has, however, been more recently developed in another direction. Hesse has found that commercial scopolamine hydrobromide frequently contains notable quantities of a base differing from scopolamine by the absence of rotatory power. As a consequence of the presence of that base in the commercial scopolamine salt, it shows a smaller arc of rotation than that caused by a salt of pure scopolamine. Hesse isolated the optically inactive base, and gave it the name of "atroscine," and he holds that it is not identical with the base found by Schmidt and named "inactive scopolamine," which he describes as being a result of the action of alkalies upon scopolamine, and not as being the sub- reasonsstance. which Hesse regards as a distinct base. The Hesse gives for the opinion that inactive scopolamine is not identical with atroscine are, first, that by treating hyoscine with alkalies he did not succeed in obtaining an inactive base of equal eomposition—secondly that the decrease in optical activity caused by the action of alkalies upon hyoscine is due to the presence of oscine—the product of alteration formed under the influence of alkalies—and tropic or atropic acid. Schmidt on the contrary states that, according to the greater or less amount of alkali used in treating the liquors from scopola roots, in making scopolamine, the base obtained will have either a normal rotatory power (24° to 25°) or a smaller rotatory power.

It is therefore still a question whether Hesse's "atroscinc" is or is not identical with E. Schmidt's "inactive scopolamine." In regard to that question the evidence given by medical authorities is contradictory but not conclusive. Dr. Königshöfer says that atroscine acts identically with atropine and scopolamine so far as mydriatic effect is concerned ; but that in paralysing the accommodation it considerably surpasses both those substances in promptness of action, as well as in duration of effect.

Dr. Uhthoff and Dr. Axenfeld state, on the other hand, that in comparative trials of a strongly rotating scopolamine salt (25°·43) and a feebly rotating salt (6°·62) they could not find any difference whatever in the effects produced.

Dr. Merck adds to these statements the results of the numerous observations that have been regularly made by his firm in preparing the bases from hyoscyamus seeds, ever since attention was directed to the rotatory power of hyoscine. In the course of a long series of observations it was found that the hyoscine obtained always had a rotatory power varying very slightly from the normal, and ranging between 24° and 25°.

The observation of rotatory power in the manufacture of scopolamine from scopola roots has been commenced only recently, but so far as could be ascertained from the working of about ten thousand kilos of the roots the pure scopolamine salt obtained had a lævo-rotatory power of only 13°·47.

In these operations exactly the same methods of treatment were adopted, and the most punctilious care taken to make the condi-

* Abstract of a paper read before the New York section of the Society of Chemical Industry.

tions exactly alike in both cases. Dr. Merck infers, therefore, from the observed results that the alkali used in the working cannot have caused the observed difference in the rotatory power of the base obtained from scopola. He thinks that this experience is very much in favour of Hesse's view, that in ordinary scopolamine hydrobromide (and probably also in scopola root) there are two isomeric bases, which cannot be distinguished chemically but only by their relative optical activity.

PRACTICAL PHARMACOGRAPHY.

BELÆ FRUCTUS.

Bael Fruit, Indian Bael, Bengal Quince.—Fr. Coing du Bengale.—Ger. Mannelosfrucht, Bengalische Quitte.

Macroscopic Characters.—The drug as met with in commerce consists of the dried fruit cut into transverse or longitudinal sections, or more rarely of entire immature fruits about the size of a small orange. The rind is hard and tough, of a light reddish-brown colour, and under a lens can be seen to be studded on its outer surface with numerous small oil cells. The inner portion is hard also, and in the transverse slices often presents a varnished appearance, probably due to the gum exuded by the seeds. The entire fruit is more or less globular, but sometimes oblong-oval, or almost pyriform. It varies from two to four inches in diameter. The structure is similar to that of the orange, the part inside the rind being divided into about twelve segments, indicated by the rows of (six to ten) seeds, which are present in each. The seeds are covered with white woolly hairs, which are usually almost hidden, in the dried fruit, by the gum which the surface of the seeds and the hairs secrete. The gum consists of a small portion soluble in water, and a larger portion swelling up like tragacanth, but forming a more glutinous and transparent mucilage. When fresh, or when the dried fruit is soaked in water, the interior of the fruit is seen to be soft and spongy. It has a sweetish taste, slight but agreeable flavour, and leaves a slight sense of astringency in the fauces.

FIG. I.—BELÆ FRUCTUS.—Transverse section, natural size; a small specimen, showing rind, seeds enveloped in gum, etc.

Microscopic Characters.—The pulp of the fruit is largely composed of small, loosely-arranged, oval or rounded oval cells, filled with muller-shaped starch grains.

BELLADONNÆ FOLIA.

Belladonna Leaves, Deadly Nightshade, Dwale.—Fr. Feuilles de Belladone, Morelle furieuse.—Ger. Tollkirschenblätter, Tollkraut.

Macroscopic Characters.—The leaves vary from oval-lanceolate to ovate-lanceolate, are entire at the margin, and acute at the apex,

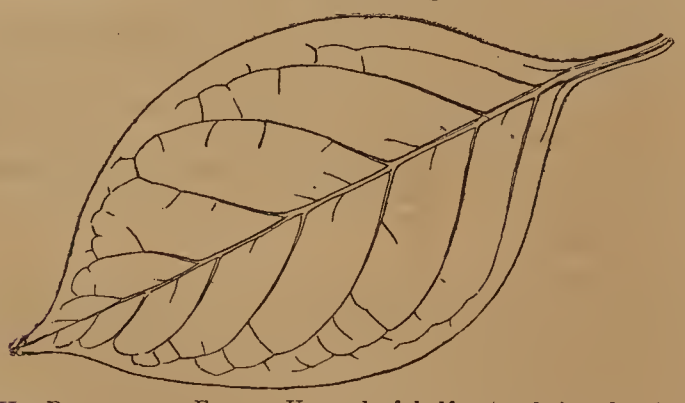


FIG. II.—BELLADONNÆ FOLIA.—Upper leaf, half natural size, showing outline and venation.

tapering below into a slightly winged petiole, about ½-1 inch in length

They vary in size from 2½ inches to 6 inches long, and from 1½ inch to 3 inches in diameter, or even more in the lower leaves. To the naked eye they appear to be quite glabrous, but a few hairs may usually be found near the midrib. On the pedicel and calyx of the flowers and on the upper portion of the stem these hairs occur in abundance. The midrib is prominent below, but

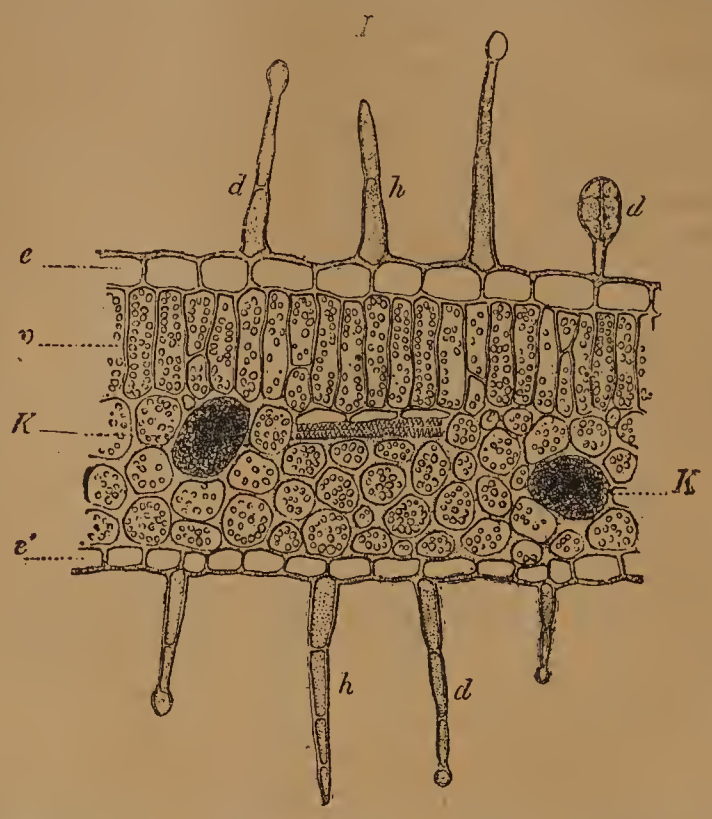


FIG. III.—BELLADONNÆ FOLIA.—Showing (*e*) upper, (*e'*) lower epidermis (*h*) hairs, (*d*) glandular hairs and stalked septate glands, (*k*) cells filled with sandy crystals, (*p*) palisade cells. After Vogl.

depressed on the upper surface. Examined with a powerful lens the upper surface of the dried leaf is seen to be dotted all over with pale, prominent points. If a thin leaf be held up to the light and examined with a lens, these prominences appear as bright points. Although somewhat fleshy when fresh, the leaves become very thin and brittle when dry, in this respect differing from stra-

FIG. IV.—BELLADONNÆ FOLIA.—Showing striation of epidermal cells on under surface of leaf, (*st*) stomata, (*h*) simple multicellular hair, (*fv*) fibrovascular bundle. After Vogl.

monium. When carefully dried the leaves have a pale greyish-green hue, especially on the under surface, but are brownish if badly dried. The odour is characteristic, and the taste sweetish and slightly acid.

Microscopic Characters.—The distinctive character of the leaves, as compared with those of stramonium and henbane, consists in the abundance of the cells filled with minute sandy crystals of calcium

oxalate. In a fragment of leaf rendered clear by maceration in solution of potassium hydrate or of chloral hydrate, these cells appear under a low power of the microscope as minute dark dots scattered abundantly through the tissue. The epidermis, when separated by boiling in liquor potassæ, presents a minutely striated appearance. Like those of other official solanaceous plants, belladonna leaves exhibit three- to four-jointed simple hairs and capitate hairs, also stalked septate glands.

BELLADONNÆ RADIX.

Belladonna Root.—Fr. Racine de Belladone.—Ger. Tollkirschenwurzel, Belladonnawurzel.

Macroscopic Characters.—The root varies considerably in appearance as met with in commerce. If of good quality it consists of pieces several inches to a foot or more in length, and from a quarter to five-eighths of an inch in diameter, of a pale greyish brown colour externally, finely striated longitudinally, and often

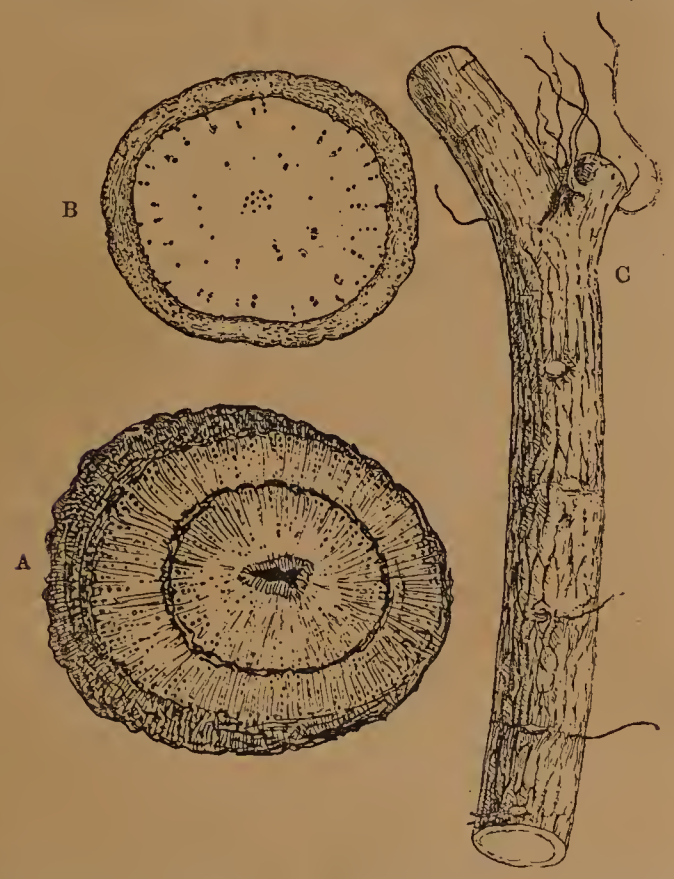


FIG. V.—BELLADONNÆ RADIX.—A, transverse section of upper part of root; B, transverse section of young root; C, portion of young root, natural size.

marked with short transverse scars like liquorice and marshmallow roots. Belladonna root differs from these in the surface being frequently powdery or mealy, owing to the thin epidermis being easily abraded and the starchy matter beneath becoming

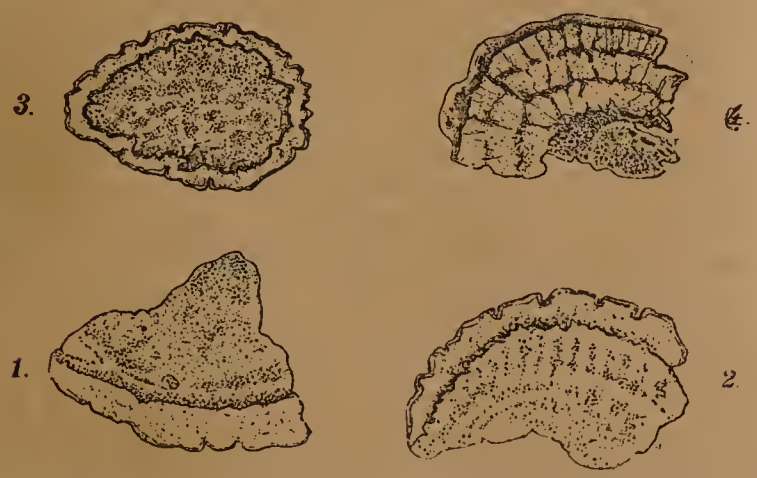


FIG. VI.—BELLADONNÆ RADIX.—1, 2, 4, section of root showing gradual development of woody tissue; 3, section of young root. After Vogl.

rubbed off. The fracture also is short and not at all fibrous. In young roots both the bark of the root and the central column are white and starchy, and small vascular bundles are seen to be scattered over the central column in the transverse section, becoming more numerous near the dark line indicating the cambium ring. In the upper portion of the main root the structure more nearly resembles that of a stem, there being an evident

FIG. VII.—BELLADONNÆ RADIX.—Transverse section of the woody portion showing (*K*) cells containing sandy crystals, (*pr*) parenchyma filled with starch, (*sp*) fibrovascular bundle, (*ms*) medullary rays. After Vogl.

pith surrounded by one or more woody circles traversed by narrow medullary rays, the outer zones being very irregular. In badly dried roots the transverse fracture often appears brownish, hard, and resinous, and the epidermis is not easily abraded.

FIG. VIII.—BELLADONNÆ RADIX.—Longitudinal section, showing (*K*) cells filled with sandy crystals, (*cb*) cambium, (*sp*) porous vessels, (*pr*) parenchyma filled with starch. After Vogl.

Microscopic Characters.—The presence of the cells filled with sandy crystals of calcium oxalate is characteristic of belladonna as compared with other official roots. The compound starch grains, which appear muller-shaped when separated, and large porous vessels also form marked features in the powdered root.

JERUSALEM ARTICHOKES FOR MILCH COWS.—The Cape farmers are finding that the Jerusalem artichoke affords an excellent root fodder for cows in milk. The tubers are most prolific, give a certain crop, keep well, and will grow anywhere. A writer to the *Natal Mercury* expresses his satisfaction with the results of a trial of six acres of these artichokes, and intends to lay down twenty acres for hog feeding. English farmers might get a hint from this.

REVIEWS AND NOTICES OF BOOKS.

THE ANALYSIS OF FOOD AND DRUGS. PART 1. Milk and Milk Products. By T. H. PEARMAIN and C. G. MOOR, M.A. Pp. 132. Price 5*s*. London: Baillière, Tindall, and Cox. 1897.

The object of the authors "is to produce a book convenient for laboratory use which shall contain all that is required for everyday routine work, without in any way pretending to be an exhaustive manual on the subject," and it is intended to complete the work in five parts. It is stated with truth that "the length of the various articles must not be taken as a criterion of the importance of the subjects dealt with, as it often happens that much work has been done on comparatively unimportant articles." Hence it follows that in the first part we have 84 pages dealing with milk and cream and the remaining pages with butter and cheese.

The authors have consulted good authorities on the subject, and have collected some of the latest information with regard to the analysis of milk and milk products, but a little more care and discrimination would have been advantageous to the reader. It is of very little use, for example, to give nearly six pages on the determination of the soluble and insoluble fatty acids in butter when in the same article the value of the method is discounted by Tichborne's results. Surely no analyst now relies on this method as a gauge of impurity in butter, for according to the evidence before the Select Committee, we might by this method "miss as much as 35 or 40 per cent. of adulteration."

In the article on "The bacteriology of milk" again, it might be expected that the authors of "Aids to the Study of Bacteriology" would give some useful methods for the bacteriological examination of milk, but there is only that which is certainly more of theoretical interest than of practical value.

The following passages strike one as being in remarkable concordance:—

'The Analysis of Food and Drugs,' by Pearmain and Moor, 1897.	'The Chemistry of Foods,' by Dr. James Bell, 1883.
As milk sugar is the most constant constituent of milk, the variations in the specific gravity of the whey or serum of genuine milk falls within much narrower limits than in the case of the specific gravity of milk itself (page 6).	As milk sugar appears to be the ingredient of most constant proportion in milk, the variations in the specific gravity of the serum in genuine milk fall within much narrower limits than in milk itself (page 4).
Milk may be defined as the fluid which is secreted in the lacteal glands of all female mammals for the nourishment of their young (p. 1).	Milk is the fluid secreted by all female mammals for the nourishment of their young . . . (p. 1).
The milk of various animals has always been used and valued as a food, and judging from the many references which occur in the ancient writings to the milk of the cow, ewe, and goat, it is plain that these form an important part of the dietary of man from the earliest times (p. 1).	The milk of animals has been used and valued as an article of food from the earliest ages . . . and from the many allusions to milk, which included that of the ewe and goat, it is obvious that it must have formed an important part in the dietary of the earlier nations (p. 2).

After reading these extracts it is curious to see on the cover of the book "All Rights Reserved."

A work on the analysis of food and drugs that should be the outcome of practical experience of the best methods of analysis is much to be desired, but here we seem to have a collection of too much undigested material, and this ought to be eliminated in the succeeding parts, if the work is to accomplish its aims.

ST. BARTHOLOMEW'S HOSPITAL REPORTS, Vol. xxxii. Edited by SAML. WEST, M.D., and W. J. WALSHAM, F.R.C.S. Pp. 548 + 197. London: Smith, Elder and Co. 1897.

This yearly report contains over 700 pages of valuable matter. There are two biographical notices. The first is that of the late Sir George Murray Humphry, written by Mr. C. B. Lockwood. Humphry died at the age of 76, working at his profession almost to the last, having lived to see the Medical School of Cambridge University grow under his fostering care from obscurity to fame. The second biography relates to the late William Morrant Baker, who was a representative of the highest type of surgical teacher, and who up to the year 1893, continued to enrich surgical knowledge though handicapped by a painful and hopeless disease. Both Humphry and Baker began their professional life as apprentices to country doctors, and it is a question whether part of the system of apprenticeship might not profitably be combined with the modern purely academical system.

Among the many interesting original contributions, one by Mr. Thos. J. Horder is particularly good. Mr. Horder has in a manner acted the part of a faithful Boswell to the Johnson of Dr. Gee, and has earned the thanks of earnest students of medicine by preserving some thirty pages of invaluable and concise observations. Mr. Horder also shows the breadth of his professional interest in a collection of reports of surgical cases, all of which are of special interest. Mr. J. H. Paterson contributes an article on "Skin-Grafting by Thiersch's Method." The description of the details of the method could not be better done. The author gives the following example of this surgical procedure: "The large wound extended from Poupart's ligament and the iliac crest above, right down the outer aspect of the thigh as far as the middle of the leg. Nor was it a mere superficial wound, inasmuch as the femoral vessels could be plainly seen therein. On the outer side of the limb the vastus externus and biceps femoris muscles were also exposed. On January 10, 1894, Thiersch's grafting was performed. Fives strips of skin, measuring approximately 5½ by 2½ inches, taken from a patient's upper limbs, were laid at intervals transversely across the ulcer. . . . . The grafts were dressed on the sixth day, and all were found to be living. On February 2 the remainder of the ulcer was covered in the same manner. The patient left the hospital on March 26, 1894. . . . . At the present time the whole area of the ulcer remains soundly healed, the limb is freely movable, and has not caused any trouble whatsoever; in fact, as he himself says, the limb is as useful as ever it was. . . . . The skin all over the ulcer is quite elastic and moves readily over the deeper parts, but it is entirely devoid of sensation as tested by a needle."

There is a good paper on Dupuytren's Contraction of the Fingers, by Ch. E. Hedges, who finds that in sixty-four cases the proportion of males to females affected was eight to one. In forty out of sixty-four cases there was a history of gout or rheumatism. Dr. F. N. Andrewes, as the result of systematic examination of cases of sore throat arising in the nurses of the hospital, comes to the following conclusions:—"I frankly take the alternative position and accept the presence of diphtheria bacilli, even if their virulence is slight or absent, in a case of sore throat, as a criterion of its diphtheritic nature, and I would modify the definition of diphtheria in this sense. It may indeed be possible to recover the bacillus from normal throats. This may be because the bacillus has lost its virulence or because the host has temporary immunity. Bacilli may persist in the throat for many weeks after an attack of the disease. I would, therefore, only maintain that their presence in a case of recent sore throat is to be accepted as evidence of its diphtheritic nature."

Drs. May and Kanthack give an analytical account of the cases of diphtheria treated in the hospital by antitoxin. With full allowance for modifying circumstances, by comparing the mortality which prevailed before antitoxin was used with that observed in 1895, they arrive at the conclusion that, "Both for the cases treated at two general hospitals and for those treated at the hospitals of the Metropolitan Asylums Board, that the mortality per cent. has evidently decreased in the cases under five years of age;

that is to say, the most marked improvement has occurred at the age when the disease is known to be most dangerous to life." In cases of diphtheria complicated by septicæmia, the authors suggest that anti-streptococcus or anti-staphylococcus serum should be tried in conjunction with anti-diphtheritic serum.

There are many other original articles from which the foregoing were chosen almost in the order in which they occur, and in addition of short tabulated accounts of all cases treated in the hospital during the year. The volume, like its predecessors, is a good example of the best form of medical literature.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, JULY 14, 1897.

Present:

Mr. Walter Hills, President.

Mr. G. T. W. Newsholme, Vice-President.

Messrs. Allen, Atkins, Carteighe, Hampson, Martindale, Savory, Warren.

The minutes of the previous Council Meeting having been read and confirmed,

The President reported that Messrs. Johnston and Storrar had written expressing their approval of the proposed amended bye-laws, which were read a first time on Wednesday, July 7. He then moved—

"That the proposed new Bye-laws, which were read at the meeting of the Council on July 7, be now confirmed in accordance with the Bye-laws."

This was unanimously agreed to, and Mr. Hampson then moved—

"That a special meeting of the Council be convened for Wednesday, July 21, at 12 o'clock, for the purpose of further confirming the proposed new Bye-laws."

This also was unanimously agreed to, and the meeting then terminated.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, July 14, the Librarian presented the following report of donations :—

To the Library (London).

J. Cuthbert Welch, Esq., per Messrs. Baillière, Tindall and Cox :—General Index to the *Analyst*, vols. 1–20.

F. M. Bailey, Esq., Queensland :—Companion for the Queensland Student of Plant Life, second ed., 1897.

's Lands Plantentuin te Buitenzorg :—Prodrome de la Flore Algologique des Indes néerlandaises, par E. de Wildeman, 1897.

University of Edinburgh :—Calendar, 1897.

The Curator presented the following report of donations :—

To the Museum (London).

Dr. J. Moeller, Gratz, Austria :—Specimen of Lign Aloes Wood, from Cayenne.

Mr. J. B. Hambrook, Dover :—The Chemical Equivalent Scale used in his Lectures, etc., by Dr. W. H. Wollaston.

To the Herbarium.

Mr. H. N. Ridley, M.A., Director Botanic Gardens, Singapore :—Seventeen Specimens of Medicinal and Economic Plants.

EXAMINATIONS IN LONDON.

July, 1897.

MAJOR EXAMINATION.

Candidates examined	17
,, failed	6
,, passed	11

Blyton, John Henry.
Fothergill, James.
Hamerton, James.
Hankinson, Herbert Stanley.
Hankinson, William.
Jones, Edward Rees.
Metcalfe, William Edward.
Roberts, Haworth.
Smith, Thomas William.
Wallis, James Samuel.
Widgery, Ernest.

EXAMINATIONS IN EDINBURGH.

MAJOR EXAMINATION.

Candidates examined, 4. All failed.

"FIRST" EXAMINATION QUESTIONS.

July 13, 1897.

ARITHMETIC.

Time allowed—from 12.30 *p.m. to* 2 *p.m.*

[The working of these questions, as well as the answers, must be written out *in full*.]

1. Divide 4 tons 1 cwt. 1 qr. 7 lb. 4 oz. 14 dr. by 53.
2. A merchant bought 28 gallons of spirit at 18*s* a gallon, diluted it with water, and then sold it at 16*s*. a gallon, making a profit of £2. How much water did he add?
3. Find the difference between $\frac{5}{16}$ of 4*s*. 6*d*. and ·0625 of £1 1*s*.
4. Find the cost of papering a room 20 ft long, 16½ ft. broad, and 12 ft. high, the paper being 27 inches wide, at 4½*d*. per yard.
5. If I gained 2*d*. in the shilling by selling a book for 4*s*. 8*d*., what do I gain or lose per cent. by selling it for 4*s*. 3*d*.?
6. I had £5000 Stock in 3½ per cents. at 77. I sold out and bought into the 4½ per cents. at 91⅔. What is the change in my income?

The following question must be attempted by every candidate :—

7. A square plot of land contains 42·25 acres. Express approximately in yards the length of one of its sides.

LATIN.

Time allowed—from 11 *a.m. to* 12.30 *p.m.*

I. For all Candidates. Translate into Latin :—

1. The slave is selling the horses.
2. The valour of the men is praised by the general.
3. Live mindful how short-lived you are.
4. I will write to him as long a letter as possible.
5. The war carried on with the greatest ferocity through so many years is not yet finished.

II. Translate into English *either* A (Caesar) *or* B (Virgil).

Candidates must not attempt both authors.

A.—Caesar.

1. Ubi se diutius duci intellexit et diem instare, quo die frumentum militibus metiri oporteret: convocatis eorum principibus, quorum magnam copiam in castris habebat, in his Divitiaco et Lisco, qui summo magistratui praeerat (quem Vergobretum appellant Aedui, qui creatur annuus et vitae necisque in suos habet potestatem), graviter eos accusat, quod, quum neque emi, neque ex agris sumi posset, tam necessario tempore, tam propinquis hostibus, ab iis non sublevetur: praesertim quum magna ex parte eorum precibus adductus, bellum susceperit; multo etiam gravius, quod sit destitutus, queritur.

2. Hic primum ortus est a tribunis militum, praefectis reliquisque, qui ex urbe, amicitiæ causa, Caesarem secuti, non magnum in re militari usum habebant: quorum alius alia causa illata, quam sibi ad proficiscendum necessariam esse diceret, petebat ut ejus voluntate discedere liceret; nonnulli, pudore adducti, ut timoris suspicionem vitarent, remanebant.

Grammatical Questions.

(For those only who take Caesar.)

1. Decline in the plural, *quo die*; and in the singular, *magna parte*. (Passage 1.)
2. Give the principal parts of all the verbs in Passage 2.
3. Write in Latin :—18, 39, 19th, 33rd, *five hundred horses, eight apiece, seven times, twice a day.*
4. What is meant by a "dative of the complement"? Give *two* sentences in Latin as examples.

B.—Virgil.

1. Sed Pater omnipotens speluncis abdidit atris,
   Hoc metuens; molemque et montes insuper altos
   Imposuit; regemque dedit, qui, foedere certo,
   Et premere, et laxas sciret dare jussus habenas.
   Ad quem tum Juno supplex his vocibus usa est:
   Aeole, namque tibi Divum Pater atque hominum Rex
   Et mulcere dedit fluctus et tollere vento,
   Gens inimica mihi Tyrrhenum navigat aequor,
   Ilium in Italiam portans, victosque Penates:
   Incute vim ventis, submersasque obrue puppes;
   Aut age diversos; et disjice corpora ponto.

2. Hoc primum in luco nova res oblata timorem
   Leniit; hic primum Aeneas sperare salutem
   Ausus, et afflictis melius confidere rebus.
   Namque, sub ingenti lustrat dum singula templo,
   Reginam opperiens, dum, quae fortuna sit urbi,
   Artificumque manus inter se, operumque laborem,
   Miratur, videt Iliacas ex ordine pugnas,
   Bellaque jam fama totum vulgata per orbem,
   Atridas, Priamumque, et saevum ambobus Achillem.

Grammatical Questions.

(For those only who take Virgil.)

1. Decline in the singular, *montes altos*; and in the plural, *gens inimica*. (Passage 1.)
2. Give the principal parts of all the verbs in Passage 2.
3. Write in Latin :—18, 39, 19th, 33rd, *five hundred horses, eight apiece, seven times, twice a day.*
4. What is meant by a "dative of the complement"? Give *two* sentences in Latin as examples.

ENGLISH.

Time allowed—from 3 p.m. to 4.30 p.m.

1. Parse fully:—"Thrice is he armed that hath his quarrel just"
2. What is a *passive* verb? Put the verbs in the following sentence into the passive voice:—"The Persians attacked the Greeks, but they did not make any impression on the little army."
3. Correct the following sentences, giving your reasons:—
   (i.) Of London and Berlin, the former is the wealthiest.
   (ii.) The coast, sailing in a ship, seems to move faster than us.
   (iii.) If a man fall from his horse there, he has generally sank in the bog.
4. In the following passage, supply the necessary capital letters, and put in the stops and the inverted commas, where necessary:—is it not strange asked halifax that you should have requested the good offices of one whose acts had brought your head into peril not at all said hampden to whom was i to apply except to the men who were in power i applied to lord jeffreys i applied to father petre and i paid them six thousand pounds for their services but did lord halifax take any money no i cannot say that he did.

The following question must be attempted by every candidate:—

5. Write a short composition on *one* of the following subjects:—
   (i.) Self-help.
   (ii.) The pernicious influence of Idleness.
   (iii.) The opening of Museums on Sundays.
   (iv.) "A careless watch invites a vigilant foe."

JACOB BELL SCHOLARSHIPS EXAMINATION.

FIRST PAPER.

Time allowed, three hours (11 *to* 2).

LATIN.

1. Translate into English:—

Tum numina sancta precamur
Palladis armisonae, quae prima accepit ovantes,
Et capita ante aras Phrygio velamur amictu,
Praeceptisque Heleni, dederat quae maxima, rite
Iunoni Argivae iussos adolemus honores.
Haud mora, continuo perfectis ordine votis,
Cornua velatarum obvertimus antennarum
Graiugenumque domos suspectaque linquimus arva.
Hinc sinus Herculei, si vera est fama, Tarenti
Cernitur; attollit se diva Lacinia contra,
Caulonisque arces et navifragum Scylaceum.
Tum procul e fluctu Trinacria cernitur Aetna,
Et gemitum ingentem pelagi pulsataque saxa
Audimus longe fractasque ad litora voces,
Exultantque vada atque aestu miscentur harenae.

2. Translate into English:—

(*a*) In crystallos redige, quas ablutas et in aëre bene siccatas in vasis parvis obturatis serva. Sint e caesio virides, aëri expositae in pulverem albidum fatiscentes.

(*b*) Liquorem refrigeratum filtra per vitrum grosso modo contusum, et inter perpetuam agitationem, igne sub finem remissiore, evaporatione exsicca. Massam adhuc calidam in pulverem redige, in vas calefactum statim immitte, et in pso bene clauso caute serva.

3. Explain the construction of *amictu*; and give the principal parts of *dederat, adolemus, cernitur, attollit, miscentur* (Question 1).

4. Translate into Latin:—

(*a*) The general exhorted his men as follows: "Why do you make useless complaints? Press on."

(*b*) The excellent Balbus, in his old age, while studying Greek at Corinth, used to say that he was afraid he should not succeed, like Cato, in learning a new language, for his memory failed him, and his old energy had gone. And, indeed, although someone in Cicero says that he has no fault to find with old age, we certainly must not expect to retain all the vigour of youth.

ENGLISH.

1. Parse fully:—"How dangerous is it that this man goes loose!"
2. Write a short Essay on *one* of the following subjects:—
   (*a*) The British Army.
   (*b*) The Power of Conscience.
   (*c*) "Unless above himself he can
   Erect himself, how mean a thing is man!"

ARITHMETIC.

1. Water expands when freezing so that a cubic foot of water produces 1·089 cubic feet of ice. How much water would be produced by the melting of a rectangular block of ice 7 feet long, 6 feet 6 inches wide, and 2 feet 7½ inches thick? (*Answer to three places of decimals.*)

2. If a steamer burns 54·725 tons of coal a day while travelling, and 4·$\dot{1}42857\dot{}$ tons a day while in port, how many tons will she burn during the last six months of the year, if she is in port $\frac{2}{7}$ of 7$\frac{7}{8}$ of $\frac{3}{5}$ of $\frac{7}{9}$ of the time?

3. A tavern keeper buys 136 litres of wine at 2 francs a litre. How many pints of water must he add in order to sell the wine at 1 fr. 70 c. per litre, and gain 25 per cent. on his outlay?

FRENCH.

1. Translate into English:—

La chevelure, relevée sur le front, paraissait avoir été dorée autrefois. La tête, petite comme celle de presque toutes les statues grecques, était légèrement inclinée en avant. Quant à la figure, jamais je ne parviendrai à exprimer son caractère étrange, et dont le type ne se rapprochait de celui d'aucune statue antique dont il me souvienne. Ce n'était point cette beauté calme et sévère des sculpteurs grecs, qui, par système, donnaient à tous les traits une majestueuse immobilité. Ici, au contraire, j'observais avec surprise l'intention marquée de l'artiste de rendre la malice arrivant jusqu'à la méchanceté. Tous les traits étaient contractés légèrement; les yeux un peu obliques, la bouche relevée des coins, les narines quelque peu gonflées. Dédain, ironie, cruauté, se lisaient sur ce visage d'une incroyable beauté cependant.

2. Translate into French:—

Many years ago a terrible fire broke out at a school attached to a convent in the town of Limoges. At the last moment it was perceived that one of the boarders had been left in her room. There appeared to be no hope of saving her, when a young girl pierced the crowd, crying: "Let me do it." She rushed into the midst of the flames, and shortly appeared, carrying the child in her arms.

GERMAN.

1. Translate into English:—

Als ein schlauer Bursche hatte ich immer die Gewohnheit, sobald ich in ein Wirthshaus kam, mich nach der Wirthin umzusehen, und mich schmeichlerisch gegen sie zu betragen, wodurch meine Rechnung meistens vermindert wurde. Eines Abends, als ich in das Posthaus eines kleinen Städtchens trat, und eben nach meiner Sitte verfahren wollte, rasselte gleich hinter mir ein schöner, zweisitziger Wagen, mit vier Pferden bespannt, an der Thüre vor. Ich wendete mich um und sah ein Frauenzimmer, allein, ohne Kammerfrau oder Bedienten. Ich eilte sogleich, ihr den Schlag zu öffnen, und fragte, ob sie etwas zu befehlen habe. "O ja," sagte sie, "wenn Sie mir das Kästchen, das auf dem Sitze neben mir steht, herausheben und hinauftragen wollen. Aber ich bitte Sie, es sanft anzufassen, und nicht im Mindesten zu rütteln." Ich nahm das Kästchen mit Sorgfalt, sie verschloss den Kutschenschlag, wir stiegen zusammen die Treppe hinauf, und sie sagte dem Gesinde, dass sie im Hause zu übernachten gedenke.

2. Translate into German:—

George Niebuhr, the celebrated historian, was born in the year 1776 at Copenhagen. His father, who was a distinguished traveller, left Denmark two years after the birth of his son, and settled in Germany. Young Niebuhr studied for some time at Kiel, and afterwards travelled in England and Scotland. When he returned home he entered the service of the Prussian Government, and was soon afterwards appointed Professor of History at the University of Berlin.

SECOND PAPER.

Time allowed, two hours (3 *to* 5).

CHEMISTRY.

1. How can the composition of water be determined (*a*) by weight and (*b*) by volume?
2. What is the effect of heat upon Mercuric Oxide, Oxalic Acid, Sodium Bicarbonate, Zinc Carbonate, Ammonium Nitrate?

PHARMACY.

1. Write a short article on distilled water, dealing chiefly with its preparation, storage, and use in pharmacy.
2. Give an account of the use of alcohol in pharmacy, and explain your answer by reference to examples.

BOTANY.

1. Describe as fully as you can the flower of any *one* of the following plants: Wallflower, Red Poppy, Foxglove, Sunflower.
2. What are stomata? Describe their structure and functions.

MANCHESTER PHARMACEUTICAL ASSOCIATION SCHOLARSHIP EXAMINATION.

FIRST PAPER.

Time allowed, three hours (11 *to* 2).

The tests in English, Arithmetic, French, German, and Latin set for this examination were the same as those for the Jacob Bell Scholarships Examination, except that the following was given as an alternative Latin paper:—

1. Translate into English:—

Multa ab Caesare in eam sententiam dicta sunt, quare negotio desistere non posset, et neque suam, neque Populi Romani consuetudinem pati, uti optime meritos socios desereret; neque se iudicare Galliam potius esse Ariovisti, quam Populi Romani. Bello superatos esse Arvernos et Rutenos ab Q. Fabio Maximo, quibus Populus Romanus ignovisset, neque in provinciam redegisset, nequc stipendium imposuisset. Quod si antiquissimum quodque tempus spectari oporteret, Populi Romani iustissimum esse in Gallia imperium; si iudicium Senatus observari oporteret, liberam debere esse Galliam, quam bello victam suis legibus uti voluisset.

2. Explain the construction of *negotio desistere non posset* and *quam Populi Romani*; and give the principal parts of *desistere, posset, ignovisset, spectari*.

SECOND PAPER.

Time allowed, two hours (3 *to* 5).

CHEMISTRY.

1. What are "oxidising agents"? Mention the most important and give examples of their action.
2. Describe two commercial methods for the production of sodium carbonate.

PHARMACY.

1. Describe water, steam, and saline baths; what temperatures are attained by them respectively?
2. Describe the preparation of any official fluid extract, and explain the principles involved.

BOTANY.

1. Describe the structure of a typical dicotyledonous leaf.
2. What is chlorophyll? Give an account of its functions.

PROCEEDINGS UNDER THE PHARMACY ACTS.

IS A PARTNERSHIP A CORPORATION?

Pharmaceutical Society *v.* Potter.

On the 8th inst., at the County Court, Reading, before His Honour Judge Lushington, Q.C., the Council of the Pharmaceutical Society of Great Britain sued Andrew Potter, of 21 and 23, London Street, Reading, for a penalty of £5 for keeping open shop for the retailing of poison, viz., arsenic, contrary to Sections 1 and 15 of the Pharmacy Act, 1868.

Mr. R. E. Vaughan Williams, instructed by Flux, Thompson, and Flux, appeared for the Society; Mr. St. Gerrans, instructed by Mr. G. C. Shaw, appeared for defendant.

Mr. Vaughan Williams stated that under the Act of 1868 the Society had cast upon them the statutory duty of taking proceedings when it came to their knowledge that any person was wrongfully selling, or keeping open shop for retailing poison, and this action was to recover a penalty which had been incurred by defendant. After referring to the sections of the Statute bearing upon the case, he said that he did not suppose it would be contended that defendant was a chemist and druggist. On April 29 last, upon instructions received from Mr. Bremridge, who is the Registrar of the Society, Mr. Partridge went to defendant's shop. He asked the shopman in charge, "Do you sell Harrison's weed-killer?" The shopman replied "Yes," at the same time taking a tin of the article from off a shelf, and in answer to Partridge's further inquiry informed him the price of it was 2*s*. Partridge purchased the tin of weed-killer, and also received a receipted bill. The weed-killer had been analysed, and he should prove that the tin contained 1¼ lb. of weed-killer, of which 9½ ozs. was arsenic—sufficient to kill over 2000 persons. Unqualified persons selling this poison were not only liable for penalties under Section 15, but they were also liable for penalties under Section 17, if the regulations there provided were in any way disregarded, and under the provisions of another statute—the Arsenic Act—a sale of this character might also become the subject of criminal proceedings.

His Honour: Do you describe the offence as keeping open shop for the retailing of poison?

Mr. Williams: Yes. I shall prove that the Act under which these proceedings are taken is quite sufficient to make defendant liable. It is a somewhat serious case owing to the nature of the poison, and the careless manner in which it was sold, and when I have proved the facts, I shall submit that the plaintiffs are entitled to judgment for the penalty claimed.

Evidence for the Plaintiffs.

Mr. Partridge, examined by Mr. Williams: Upon instruction received from the Registrar of the Society, I went to Reading on April 29 last. I went to 21 and 23, London Street. The name over the shop is A. Potter. Garden implements and requisites are sold there. A man came into the shop from the street and went behind the counter. Asked him, "Do you sell Harrison's Weed-Killer?" He replied, "Yes." He then took a tin from a shelf close to the window. When he showed me the tin he said the price was 2*s*. I bought it, and he gave me a receipted bill (tin and bill produced). I kept the tin until I was instructed to hand it to the analyst.

Cross-examined: Was never in defendant's shop before. The man who served me with the weed-killer is in Court. When he put it on the counter I asked what was the price. It was not in the window, but upon a shelf about same height as the counter. I could see it as I stood in the shop. There was no other tin there of any sort.

Mr. E. J. Eastes, examined by Mr. Williams: I received the tin from Mr. Partridge. I analysed the contents. The amount of weed-killer in the tin was 1¼ lb. It contained 47 per cent. of arsenic—9½ ozs.—sufficient to kill 2000 persons. Never heard of this particular weed-killer before. Red labels are commonly used on poisonous articles.

Mr. Williams: I put in the tin, and I ask your Honour to look at the label; there is plenty of indication that the contents of the tin is a poison. I also put in the printed register which by Section 13 is made evidence. The defendant's name does not appear therein. I will also put in the receipted bill; and that is my case.

Mr. St. Gerrans: I propose before addressing your Honour to call my witnesses.

Evidence for the Defence.

Mr. Edmund Hawthorn, examined by Mr. St. Gerrans: I am manager of Potter's business. I am a partner with Mr. Potter in the Reading business. Mr. Potter resides at Wolverhampton. He had a house and grounds there. I was not at the shop on April 29. We do not sell anything of the nature of this compound. We do not sell any weed-killer. I did not order this tin. I knew Mr. Potter had ordered it. I cannot say what he wanted it for. It was bought about three weeks or a month prior to sale. I instructed a clerk in the office to let it remain there pending instructions from Mr. Potter.

His Honour: How was your attention called to it?—I saw the order.

Examination continued: Weed-killers do not appear in our catalogue. This tin was not marked for sale. All goods intended for sale are marked with the price.

Cross-examined: It remained in the office for three weeks. Articles for sale are usually put into the front shop. It was sold during my absence.

His Honour: Why did you not ask Mr. Potter for instructions?—I did. He said, "Let it lie there."

His Honour: You are a partner, and you knew it was a poison. What could Mr. Potter want it at his shop in Reading for when he lives at Wolverhampton?

Witness: I do not know.

Re-examined: Mr. Potter instructed me by letter to make the purchase.

Mr. Williams: Where is the letter?—I have not got it here. I do not know where it is.

Mr. John Soper, examined by Mr. St. Gerrans: I have been in Mr. Potter's employ since March last. I was in the shop on April 29. Partridge came in and bought some string. I asked him if he wanted anything else? He said "Yes." What is the price of the weed-killer? From the little experience I had had I drew my own conclusion that the price was 2*s*. Never saw any other tin of weed-killer in defendant's shop. During Mr. Hawthorn's absence I went into the office in the usual way of business. Seeing the tin on the office desk I thought it belonged to the shop. Mr. Stock was in charge during Mr. Hawthorn's absence. He was not there at the time of sale. I did not think it was necessary to ask him.

Mr. St. Gerrans: I admit this man was negligent.

Cross-examined: I concluded it belonged to the shop, like other goods. I did not know it was not for sale. I would as soon sell poison as anything else if I got a profit on it. I believe the invoice price was 1*s*. 9*d*.

His Honour: How long do you say it was behind the counter?

Witness: For about three weeks.

Cross-examination continued: I put it in the window one day and took it out the next morning.

Re-examined: It was put there for momentary convenience.

His Honour: The last witness might have seen it on the shelf; he said he was only absent about a week.

Mr. Hawthorn, recalled by His Honour: I never missed the tin from the office. I never noticed it on the back counter in the shop.

Mr. St. Gerrans submitted that plaintiffs had not given such proof as it was incumbent on them to do before they were entitled to ask for a judgment.

His Honour: You do not charge defendant with selling. Do you ask to amend?

Mr. Williams: My case is that the defendant kept open shop for the retailing of poison, but I will ask your Honour to amend the particulars by charging the defendant with selling or keeping open shop, and that will cover everything.

Mr. St. Gerrans: I object to any amendment at this stage. We are now told for the first time that defendant was the seller. I submit it is too late to make such an amendment in a semi-criminal proceeding.

His Honour: I do not think you have been embarrassed. I have some little doubt about the amendment, but on the whole I think it reasonable to allow it.

Mr. St. Gerrans: This is a highly penal Statute, and it is incumbent upon the plaintiffs to prove their case strictly. I say this Act was passed for the safety of the public, and the Legislature enacted penalties against unqualified persons conducting the physical act of sale. My first contention is that Mr. A. Potter did

not sell, he did not sell by his own hand, and he is not liable for the act of his servant. I cannot conceive that a man can under this Section sell unless he sells with his own hand. I submit that the proper inference to be drawn is that having provided a remedy for an isolated sale, the Legislature did not intend that you should come to a conclusion that in a case like this the person keeping the open shop is to be held liable for a penalty. Is there not some intention in using the words keeping open shop, it necessarily involves more than one sale, a course of business?

His Honour: Do you contend that keeping open shop necessarily involves more than one sale?

Mr. St. Gerrans: Yes.

His Honour: Take the case of a man opening his shop on Monday morning, and before he makes any sale can it be said he is keeping open shop?

Mr. St. Gerrans: No; he is not keeping open shop.

His Honour; I feel the importance of the point as to whether defendant kept an open shop for the sale of poisons.

Mr. St. Gerrans: I submit there must be a very strict examination of plaintiffs' case, and that there is no evidence that the defendant kept an open shop for the sale of poison; the terms of the Statute implies knowledge. An isolated sale without evidence of knowledge or intention is not sufficient to entitle the plaintiffs to a decision in their favour. It is necessary to show that defendant is doing it in the course of his business, that there is an invitation to the public to buy to constitute a keeping of open shop. No such inference can be drawn from an isolated sale. I submit that there is abundant evidence that the shopman took the tin of weed-killer from the office without authority, and that the whole of the evidence goes to show that it was without the knowledge or authority of defendant.

His Honour: Will you go so far as to say that if I, not being a shopkeeper, sell you a poison, should I be liable?

Mr. St. Gerrans: Yes, as the actual seller you would be liable, but not for keeping open shop. The case of the Pharmaceutical Society *v.* Wheeldon is important as showing that when the Statute says any person who shall sell, it means the person who conducts the physical act. I submit that there is no evidence that defendant either sold or kept open shop for the retailing, dispensing, or compounding of poison, and the defendant is entitled to judgment.

Mr. Williams replied at length.

His Honour: Will you deal with the facts? What was the condition of Potter's mind, and as to his knowledge or intention?

Mr. Williams: I contend that there is not a word in the Act which renders it necessary to take into consideration the condition of a person's mind, and it is not necessary to prove either knowledge or intention. The proprietor of the business must be taken to know what goes on in his shop, and the fact that he keeps a shop imports an intention to sell to the public. I shall not say that Potter knew of this actual sale to Partridge, but I do submit that he was liable for the act of his servant. The inference to be drawn from the purchase by Potter and the sale at a profit is that he intended to sell. The facts are all subject to the points of law, the Statute prohibiting both the sale or keeping of open shop by unqualified persons. As to the point that defendant was not the only person in the business, I submit each of the partners, if unqualified, are severally liable, and it is no answer to say there was someone else concerned in the tortious act. Every member of a firm can, and must, qualify himself. Moreover, this is a civil action brought by statutory authority in a Civil Court, where provision is made for suing a partnership in its partnership name. Here the trading or partnership name is "A. Potter," and I submit that whether as individual or partnership the action is rightly brought.

His Honour: I should like you to deal with the point that it was not Potter's hand that sold.

Mr. Williams: The question to be determined is who was the seller? Applying the ordinary test defendant was the seller. It was sold by his servant in the ordinary way of business. He took the profit, and his name is printed on the bill-head, and at the foot is "A. Potter, J.S." He relied upon the decision in the case of the Pharmaceutical Society *v.* Hornsey as an authority in support of his contention that open shop was in fact kept for everything that was sold or could be bought therein.

After a long argument upon the judgments in the case of the Pharmaceutical Society *v.* The London and Provincial Supply Association, Ltd., reported in 5 appeal cases, page 857, as to whether the meaning of that decision was to exclude a partner as well as a limited company from the term person.

Judgment.

His Honour, in giving judgment, said: Nobody can say that this is an unimportant case, seeing the quantity of poison sold was sufficient to kill a large number of people. Nobody can say it is not an important point of law which has to be decided. Reviewing the facts, His Honour said defendant has a number of business premises. In the business carried on at Reading he has a partner, a Mr. Hawthorn, but the business is carried on under the style of A. Potter. The Society's agent went into the shop at Reading on April 29 last, and he then bought this tin which I have before me, and he got a receipted bill which I have here. It has been proved that this tin contained several ounces of arsenic, sufficient to poison a large number of persons, and in that fact the public are deeply concerned. Mr. Potter does not come before the Court to-day. That is a serious matter. He was aware of these proceedings, but does not think it worth his while to come. Mr. Hawthorn tells me this tin was ordered by Mr. Potter of the maker. It came from Harrison's to the place of business at Reading. This tin having arrived at the shop, according to Mr. Hawthorn, he put it on his desk. I understand Mr. Hawthorn that whilst he was absent about a week the tin was removed and sold without his authority. It appears that was not quite so. Soper has been called, and says that seeing the tin in the office he thought it was for sale, and put it in the shop. He says it was in the shop about three weeks. He it was who sold it, but it was not marked for sale, as we are told all articles for sale are marked. He sold it without Hawthorn's knowledge, and Hawthorn did not know it was sold until he received the letter in this action. The case against Potter is different. He was the person who bought it and had it sent to the shop, and he does not come here to explain his action. I am content to hold that Mr. A. Potter did not ever intend to sell this tin, nor did Mr. Hawthorn. Now I have to consider what the law is under those circumstances. The proceedings are under the Act of 1868. Section 1 says it shall be unlawful for any person to sell or keep open shop for the retailing, dispensing, or compounding of poison, unless such person is a pharmaceutical chemist or chemist and druggist. Amongst the poisons which are enumerated in a schedule to the Act I find that arsenic is a poison within the meaning of the Act, and Section 15 says any person who shall sell or keep an open shop for the retailing, dispensing, or compounding of poison not being a duly registered pharmaceutical chemist or chemist and druggist shall for every such offence be liable to pay a penalty or sum of £5. I have allowed the proceedings to be amended by charging Potter with selling as well as keeping open shop for the retailing of poison, and the first question is whether Mr. Potter did sell this poison within the meaning of the Act. If there had been no decision of the House of Lords, I think my judgment might have been different. What is the meaning of the word "sell"? The meaning of the word "sell" comes to this, selling by your own hand, the physical act of sale. I take it that is the meaning of the judgments of the House of Lords in the case of the Pharmaceutical Society *v.* The London and Provincial Supply Association, Ltd., reported in five appeal cases. I think anyone reading Lord Selborne's judgment will see that he regards the only person liable to be the person actually selling. As to the word "person," it was held in that case it did not include a corporation. I must ask myself, Can a corporation be a chemist and druggist? No. If that be so, I must then ask what is the effect of a partnership? Can a partnership be a chemist and druggist? No. I confess I have considerable reluctance about my own decision. The House of Lords holds in the case referred to that person does not include corporation, and I hold that a partnership cannot become a chemist and druggist. I find this in the judgment of Lord Selborne.

"I will add, that regard to the mischief, which beyond all controversy the Act was intended to prevent, leads necessarily to the same conclusion, namely, that he who sells, whether he be master or servant, whether he be the principal or a person to whom the conduct and management of sales is delegated, is struck at by the 15th Section; because, otherwise, a very wide door would be opened to the evils which the Act was intended to guard against. If it were otherwise, nothing more would be necessary, according to the appellant's own argument, than that the business should belong to a person who does not himself carry it on, but who is qualified under the Act; and he might be at liberty to employ in the management of his business persons not qualified, by whom the actual sales would be conducted; and then the public would be exposed to all the dangers which the Act was passed to prevent. The Statute, therefore, in order to be effectual, must strike at the particular acts of those who actually conduct the sales, who actually compound the medicines, and it does strike at those acts. No doubt the words 'keep open shop' may extend to something more, and comprehend a person who keeps an open shop for the sale of poison, etc., although he may not with his own hands do the business of

selling or compounding medicines; one who is only the master or the proprietor of the business, if he be indeed a 'person' within the proper construction of the words of the Act. But to say that the construction of the word 'person' must be enlarged in order to prevent a corporation from 'keeping open shop for retailing poisons,' to say that this is necessary for the objects of the Act, appears to me to be really begging the question. 'Keeping shop' is prohibited, not as a thing apart from, but as a thing involving the particular acts of sale and compounding, etc., within the shop. If a corporation, though it may keep open shop, cannot itself do these particular acts otherwise than by the agency of persons who come within the Act; if the particular mischief which the public would suffer from the sale of things which ought not to be sold, and in a manner in which they ought not to be sold, is sufficiently guarded against by the prohibition of such sales, and by the conditions to which they are made subject, the Act seems to me to be strong enough for its purpose whether a corporation, in whose name and for whose profit the shop is kept open, is included or not."

Acting upon the House of Lords decision, I find that Potter did not sell, it is also true for another reason, because he was a member of the partnership. It seems to me the charge of keeping open shop is open to the same difficulties, and there is an end to the case. The result of the House of Lords case is to exclude a partnership. I must leave the matter to another Court. I feel bound by the judgments of the House of Lords. I must give judgment for the defendant with costs.

Mr. Williams: Will your Honour give the plaintiffs leave to appeal?

His Honour: Yes, certainly.

Illegal Sale of Poison.

Pharmaceutical Society v. *Downham.*

At the County Court, Bradford, on the 13th inst., the Council of the Pharmaceutical Society of Great Britain sued W. G. Downham, of White Abbey Road, Bradford, for two penalties of £5 each for selling poison, viz., morphine, contained in a compound called "Mrs. Winslow's soothing syrup."

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Society; defendant was represented by a solicitor.

Mr. Grey said he had just been informed that defendant had filed an admission of liability. Under the circumstances he must ask for an order for further costs. The admission had been filed at the last moment, and plaintiffs' witnesses were in Court, and he was there ready to go on with the case. He asked that defendant should be ordered to pay further costs, including counsel, and that he be ordered to pay the penalties and costs forthwith.

Defendant's solicitor said he had not been consulted until Monday, and he then advised the defendant to admit the claim, and he would not have avoided the attendance of witnesses. Defendant was not in a position to pay, and he asked that he should be allowed to pay by the instalments offered.

Mr. Grey pointed out that to make the Act effective, penalties ought to be ordered to be paid immediately.

The Registrar: The plaintiffs are entitled to an order for further costs; the admission ought to have been filed earlier. I must enter judgment for the amount claimed and costs, and order payment to be made in two instalments.

PARLIAMENTARY NOTES AND NEWS.

Poor Law Dispensers.—The momentary flash of interest aroused last week at the prospect of seeing something of pharmaceutical import in the proceedings of the House has died away. True, the subtly-worded question of Mr. Lyttelton as to the wrongs of legally-competent dispensers and the risk run by patients in Poor Law Infirmaries has been answered, but no publicity was given to the reply in the daily press. It is somewhat difficult to account for this boycott of matters, which one may be excused for regarding as of more public importance than the parochial cleansing of verminous vagrants. The reply is worthy a verbatim report. Mr. Chaplin said: "The Local Government Board in June, 1895, issued an order by which compounders of medicines duly qualified in accordance with the regulations for the Army Medical Staff Corps were recognised as qualified for appointment as dispensers by Boards of Guardians. The Board had previously issued similar orders as regards particular cases. The order referred to was not issued without careful consideration. The compounding in the Army is, I am advised, most satisfactory, and I see no sufficient reason for altering the order with regard to this qualification."

Eminently Unsatisfactory is the only verdict chemists can pass on the announcement. As a supporter of the Government, one cannot, perhaps, expect very much of the honourable member for Leamington in the way of pressing for further information. It may, however, now occur to the "power" which moved Mr. Lyttelton, to interest one or two members of the Opposition in the subject, so that there may be a chance of seeing the grievances of Poor Law Dispensers considered, if not remedied, before the close of the nineteenth century. What is undoubtedly wanted is a representative of pharmacy in the House—someone, in fact, who could make his presence felt, if necessary, when the Local Government Board vote came up in Committee of Supply. Every trade, profession, calling, and condition seems to have its particular parliamentary champion, but the so-called "handmaid of medicine" remains in an isolation which is neither splendid nor profitable.

The Vote for the Local Government Board affords a case in point. It appears that Mr. Strachey (South Somerset) has a grievance against the Department. It is not a pharmaceutical grievance, though it is nearly allied thereto. He thinks the Board is unnecessarily delaying matters in respect to calf lymph. For example, the report on the preparation and employment of glycerinated calf lymph was due some time back—yet it is still incomplete and uncirculated. Mr. Strachey, therefore, takes vigorous measures to wake up the officials; for he first puts down a question as to the reason for the delay, and follows that up by watching for the votes on the salaries of the Departmental officials. It is astonishing how complaisant a Department becomes when a vote to reduce the salaries by a few thousands a year is threatened!

The Weights and Measures Bill has passed the Commons, and a first stage in the Lords, and it will undoubedly become law this session. Perhaps it is because of the support accorded to it by the Pharmaceutical Society.

South Kensington Museums.—The fire scare created by the interim report of the Select Committee on the Nation's Science and Art Museums received confirmation from the evidence of Sir J. Taylor before the Committee on July 6. Sir John is chief surveyor to the Office of Works, and knows the gravity of the situation. The official and residential buildings in Cromwell Road he stigmatised as old, dilapidated, and of a very inflammable character. He thought there was no possibility of making the present buildings safe, and the only remedy was the thorough one of pulling down and rebuilding. Plans were ready (in fact had been settled five years ago), and the work could be proceeded with if the Treasury would provide the money. The rebuilding is expected to occupy about five years, and Sir John's suggestion is that the contents of the museum might well be placed in the Tate Gallery at Millbank during the interregnum.

Cacao Butter.—Though oft defeated, Sir Howard Vincent remains faithful to the idea that our fiscal system needs reforming. Readers of the *Pharmaceutical Journal* will remember that last year (vol. iii., p. 37) we recorded the imposition of an import duty on cacao butter, due to the efforts of the right hon. member for Sheffield. That represented a solitary Protectionist victory in a disastrous campaign. The hon. gentleman is now desirous of pointing the moral and adorning the tale by publishing the result of twelve months' protection in this foreign article. The Chancellor of the Exchequer, in his reply to Sir Howard's interrogations, stated that the revenue derived from the duty, up to and including June 30 last (eleven months), amounted to £3004. He could not say definitely whether less cacao butter had been imported since the imposition of the duty, but his impression was that there had been a considerable increase rather than a diminution. Whether this particular illustration is exactly the object lesson Sir Howard Vincent desired or expected is doubtful, but "'twas a famous victory" for all that.

Ozone Inhalations in Whooping Cough.—Doumer finds ozone inhalations very successful in cases of whooping cough, both in children and adults. Broken rest was greatly improved, and in one case vomiting was speedily checked. The frequency of the paroxysms was diminished, though a relapse occurred upon discontinuing the remedy. A cure was effected after twelve to twenty-seven inhalations.—*Brit. Med. Journ. Epit.*, 1/97/60.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Infusions.—An infusion may be defined as a preparation obtained by macerating a drug for a *short* time in water, and pouring off the fluid from the insoluble marc. Note that this residue should *not* be pressed to obtain the maximum quantity of fluid. Such a procedure results in the production of a turbid fluid which cannot be filtered bright, for pressure expels from the tissue of the drug certain cell-contents of a mucilaginous or albuminous nature, which do not dissolve in water, but swell up in that fluid to form a colloid magma, which blocks up the pores of the filter. In preparing certain infusions, notably infusions of hops and senna, where the drug is bulky and very absorbent, the volume of infusion obtained by the official directions, *i.e.*, without pressure, is much less than that of the water poured on. It is necessary to bear this in mind when calculating the quantity required for dispensing a prescription. Boiling water is directed to be used when the nature of the drug allows, since hot water has greater solvent powers than cold, and also greater power of penetration. Obviously it is inadmissible for infusum calumbæ, since calumba contains so much starch that an infusion prepared with boiling water would be a thick mucilaginous and unsightly preparation. With regard to quassia, the only other infusion made with cold water, it is said that cold water extracts the bitter principle as well as hot, which is probably true, since the amount of this bitter principle is small. Quassia being of a dry woody nature, also offers fewer advantages than usual to the superior penetrative properties of hot water. It has been stated further that an infusion of quassia made with boiling water does not keep so well as a corresponding infusion made with cold water. This is a doubtful point, concerning which further definite experimental information is required. Two other infusions—those of chiretta and cusparia—are directed to be made with water at 120° F. on the grounds that infusions so prepared are superior in medicinal action and flavour to infusions prepared with either cold or boiling water. Such a statement is largely empirical, seeing how little is known concerning the principles to which these two drugs owe their medicinal properties. From the nature of the menstruum—water—in which so many of the proximate organic constituents of vegetable tissue are soluble, such as gum, sugar, proteid, organic acids, etc., the infusions form favourable nutrient fluids for the development of moulds and various forms of bacteria. They are therefore liable to putrefactive decomposition, and cannot be kept longer than a few days without alteration (see White on "Infusions," *P. J.*, iii., 24, p. 686). To obviate the necessity for freshly preparing infusions each time one is required for dispensing a prescription, so-called "concentrated infusions" are sometimes used. Concentration of an infusion by evaporation would entirely alter, and in most cases deteriorate its flavour, odour, and medicinal virtue. As a matter of fact the so-called concentrated infusions are prepared either by macerating a correspondingly increased quantity of drug, when the total quantity is small, as in the case of digitalis, or by a process of percolation with cold water, the fluid so obtained being preserved from decomposition by the addition of about 20 per cent. of rectified spirit. However convenient such preparations may be, their use, in place of freshly prepared infusions, should not be countenanced by the pharmacist jealous of his reputation. Compare the notes on decoctions.

Hypodermic Injections.—The hypodermic injections of apomorphine and ergotin are directed to be freshly prepared, since they do not keep without the addition of some antiseptic. The addition of antiseptics for the preservation of hypodermic injections can only be carried out to a limited extent, since bodies of this nature are either poisonous (corrosive sublimate) or extremely irritant (alcohol) towards the delicate subcutaneous tissue. The best solvent for the preparation of hypodermic injections is undoubtedly freshly boiled and cooled distilled water, which is consequently free from living micro-organisms; this is more than can be said for the camphor water usually found in pharmacy. The hypodermic injection of morphine is prepared from the acetate or the sulphate; hydrochlorate not being sufficiently soluble to yield a solution of the strength ordered. It is necessary, however, to prepare the acetate fresh because this salt when kept loses acetic acid and becomes basic, in which condition it is not completely soluble in water without the addition of excess of acetic acid. It also becomes discoloured, as may easily be seen by examining a sample which has been kept in stock. In making the official injection care should be taken to use the smallest possible quantity of acetic acid to dissolve the precipitated morphine, excess of acid making the application of the injection very painful. In preparing hypodermic injections, other than the official ones, which may be ordered in prescriptions, the following essential points should be observed:—1, the water should be sterilised by boiling; 2, the bottle in which the injection is sent out should be scrupulously cleaned and rinsed out finally with freshly boiled water; 3, the finished fluid should be perfectly free from foreign suspended matter. It is well also, if possible, to keep the volume of each injection about or below 5 minims, since the injection of a large quantity of fluid causes considerable discomfort at the seat of injection owing to the distension of the tissues.

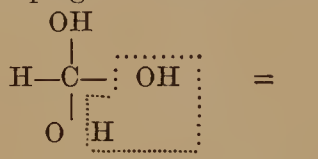
Iodoform.—Iodoform is decomposed when heated slightly above its melting point, iodine and hydriodic acid being evolved, and a black carbonaceous residue left. It is only very slowly decomposed by aqueous caustic potash, but a boiling alcoholic solution of potash produces formate and iodide of potassium—

$$CHI_3 + 4KOH = 3KI + HCOOK + 2H_2O.$$

This reaction is of interest because it constitutes a general method of synthesis for organic acids. One might expect that since potassium exchanges I for (OH) the (OH) groups would replace the iodine, thus—

$$CHI_3 + 3KOH = 3KI + CH(OH)_3.$$

We cannot, however, obtain compounds containing more than *one* (OH) group attached to each carbon atom (see note on chloral hydrate in Students' Page). When we attempt to do so, as in the above reaction, water is split off and a rearrangement of the atomic grouping occurs.



THE FLOWERS OF JULY.

The plants in blossom this month to be found either wild or in gardens include the following, used for medicinal purposes:—*Agrimonia eupatoria*, *Ajuga chamæpitys*, *Althæa officinalis*, *Anthemis cotula*, *Atropa belladonna*, *Avena sativa*, *Borago officinalis*, *Brassica alba* and *B. nigra*, *Bryonia dioica*, *Castanea vesca*, *Conium maculatum*, *Coriandrum sativum*, *Drosera rotundifolia*, *Eryngium campestre*, *Erythræa centaurium*, *Fœniculum capillaceum* (*Aspidium filix-mas*), *Galium aparine*, *Hordeum distichon*, *Humulus lupulus*, *Hyoscyamus niger*, *Hyosspus officinalis*, *Inula helenium*, *Lactuca virosa*, *Lavandula vera*, *Leonurus cardiaca*, *Linum usitatissimum*, *Lolium temulentum*, *Marrubium vulgare*, *Matricaria chamomilla*, *M. parthenium*, *Melilotus officinalis*, *Nepeta cataria*, *Œnanthe crocata*, *Origanum vulgare*, *Papaver rhœas*, *P. somniferum*, *Parietaria officinalis*, *Potentilla tormentilla*, *Pyrethrum roseum*, *Sanicula europæa*, *Scrophularia nodosa*, *Solanum dulcamara*, *Spiræa ulmaria*, *Tamus communis*, *Teucrium chamædrys*, *T. scorodonia*, *Thymus vulgaris*, *Triticum repens*, *T. vulgare*, *Valeriana officinalis*, *Veronica officinalis*.

The following wild plants are worth examination on account of peculiarities of structure or form:—*Bupleurum rotundifolium*, *Clematis vitalba*, *Eschscholtzia californica*, *Eryngium maritimum*, *Hydrocotyle vulgaris*, *Monotropa hypopitys*, *Samolus valerandi*, *Scandix pecten-veneris*, *Spiræa filipendula*, *Thalictrum flavum*, *Trifolium fragiferum*, and *T. subterraneum*.

In *Bupleurum* the leaves are perfoliate and the umbels simple. In *Eschscholtzia* the calyx is calyptrate. In *Clematis* and *Thalictrum* there are no petals, and in the latter the sepals are caducous. In *Hydrocotyle* the fruits are sessile, and do not present the appearance of an umbel, although the fruit is a cremocarp. In *Eryngium* the flowers form a head instead of an umbel, so as to resemble a Composite except in the anthers being free. In *Monotropa* there are no leaves, the plant being a saprophyte. In *Scandix* the cremocarp is enormously elongated. In *Spiræa filipendula* the root is nodulose. In *Trifolium fragiferum* the calyx is accrescent, and in *T. subterraneum* there are sterile flowers with abnormally developed calyces.

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CHEMICAL INDUSTRIES IN MANCHESTER.

THE address delivered by Dr. EDWARD SCHUNCK, as President of the Society of Chemical Industry at the annual meeting held this week in Manchester, had a very exceptional interest in consequence of the speaker's ability to give personal reminiscences of the development of chemical industries during the present century in the district of which Manchester is the centre, and to speak of his acquaintance with some of the men who have been conspicuous in promoting those industries by the application of chemical knowledge. Beginning with JOHN DALTON, whom he knew as a resident with the master of the school attended by Dr. SCHUNCK when a boy, he told how he had frequently observed him taking his early morning readings of a thermometer placed outside his bedroom window, and emerging somewhat later from the door of the house, with a large lantern in his hand, on his way across the street to the house of the Literary and Philosophical Society, where DALTON's laboratory was situated. At that time the present convenience of matches was unknown, and the lantern was taken for lighting the laboratory fire. DALTON was at that time the universal referee in all matters connected with technical chemistry, such as the quality of water used for dyeing purposes, the purity of drugs, etc., and his work was carried on in a small apartment, the dimensions of which did not exceed some three hundred square feet. A contemporary and intimate friend of DALTON was the Quaker calico printer, THOMAS HOYLE, whose name is still associated with this branch of industry as a result of the high perfection to which he brought the production of purple colours on calico. It is probable that DALTON may have had some share in the development of the process employed in the production of "Hoyle's prints," which acquired a world-wide celebrity for their excellence.

Another name that is prominent, not only in the annals of Manchester but also in the history of chemistry, is that of HENRY through three generations. THOMAS HENRY was a chemical manufacturer who directed especial attention to the production of the preparation of magnesia, which is still known as "Henry's magnesia" and was included in the schedule of articles liable to medicine stamp duty on account of the special virtues that were attributed to it. Another preparation made by HENRY was "aromatic spirits of vinegar," also a scheduled article. By the manufacture of these two articles HENRY was reputed to have made a considerable fortune. A paper written by him on the advantages of literature and philosophy in general, and especially on the consistency of literary and philosophical with commercial pursuits, is contained in the first volume of the memoirs of the Manchester Literary and Philosophical Society, and it shows that he was a man of general culture as well as an assiduous practical chemist, one of a class which Dr. SCHUNCK considers to be becoming gradually less numerous, without being fully compensated for by the advances of modern times. The principles propounded in HENRY's paper were practically applied by him in giving his son WILLIAM, who succeeded him in the business, the advantages of a university education. The son took a doctor's degree and was the author of a work entitled 'The Elements of Experimental Chemistry,' which had a considerable repute in its time, and passed through several editions. Though now obsolete, in any other than an historical sense, the work is of interest as affording in the description it gives of the equipment of a chemist's laboratory, a means of contrasting the appliances of that time with those of the present, and it is especially characteristic of this difference, that in Dr. HENRY's elaborate description of chemical apparatus there is no mention of the test tube, which is now so familiar to every beginner. As suggested by Dr. SCHUNCK, that deficiency was probably owing to the circumstance that the attention of chemists was, in those days, directed more to operations with gases and to the results of igneous fusion, than to reactions in the wet way for which the test tube is indispensable. Dr. WILLIAM HENRY has been credited with the invention of artificially aërated water as a beverage, and if that view be correct this very important branch of industry may be regarded as having had its origin in Manchester.

The third member of the HENRY family who acquired distinction as a chemist was Dr. WILLIAM CHARLES HENRY, who had graduated in medicine at Edinburgh University, and afterwards practised for some time as a physician in Manchester, but eventually devoted himself to commercial pursuits and to the management of the chemical works belonging to his family. He was a favourite pupil of DALTON, who bequeathed to him the whole of his apparatus, which was afterwards given to the Literary and Philosophical Society, where it is still preserved as a memorial of the philosopher. The classic life of DALTON, which forms one of the Cavendish Society's series, was written by that Dr. HENRY. It was in the laboratory attached to Dr. HENRY's chemical works that Dr. SCHUNCK first had an opportunity of obtaining practical instruction in the science, and was taught the rudiments of analysis. Such an opportunity was then rarely to be met with, and chemistry could be studied only with the aid of books. Dr. SCHUNCK describes the laboratory as having been "a somewhat dark and dingy apartment," though regarded at the time by him, who had never seen its like before, as somewhat of a paradise.

An eminent local contemporary of the HENRYS, mentioned by Dr. SCHUNCK as one of the class of manufacturers distinguished not only for skill but also for general culture and taste, was JAMES THOMSON, the head of the firm of

calico printers at Primrose, near Clitheroe. By calling to his aid men of scientific distinction and following up the work by which Chevreul and Berthollet contributed to place the art of dyeing on a scientific basis and to establish the principles upon which it depends, Thomson was enabled to effect great improvements in the industry which has such importance in the Manchester district. The process invented by him for discharging Turkey red by printing tartaric acid on the cloth and then passing it through a solution of bleaching powder was one of these improvements for which Thomson will always be remembered in connection with calico printing.

Another man eminent for the improvement of calico printing, but of a type widely different from those already mentioned, was John Mercer. He was of humble birth and, without even the rudiments of learning, entirely a self-taught chemist; but he rose, by his industry and ingenuity, from the position of a handloom weaver to be partner in an important firm of calico printers. Dr. Schunck spoke of Mercer's inventions as having been characterised by great originality. One of the most important of them is the process now called "Mercerising," by which the chemical as well as the physical characters of cotton fibre are altered in a remarkable manner by the action of caustic soda. This process did not at once come into general use as Mercer expected; but latterly it has been very extensively applied for producing a peculiar corrugated or crinkled effect on calico. Mercer's other inventions are fully described in Parnell's 'Life and Labours of John Mercer,' and Dr. Schunck's estimate of him is that he was the greatest genius who ever applied himself to the improvement of calico printing. He was also a zealous cultivator of theoretical chemistry, and was one of the first to suggest the existence of relations between the atomic weights of elementary substances of the kind subsequently developed by Newlands, Mendeleef, and others.

Passing from calico printing to other branches of chemical industry carried on at Manchester, Dr. Schunck next spoke of John Dale, another pupil of Dalton's, who in early life was engaged for some time at print works before becoming a partner in the noted firm of Roberts, Dale and Co. In that position he distinguished himself first by successfully carrying out the manufacture of oxalic acid by the action of caustic alkali upon sawdust, and subsequently, among other things, by his improvements in the manufacture of aniline colours and similar products. Contemporary with Dale were Peter Hart—a partner in the firm of Tennant, Clow and Co, manufacturers of tin salts, nitrates, sodium arsenate and sulphate of indigo—and James Young, who was for several years with the same firm and introduced the manufacture of red prussiate before taking up the production of mineral oil by destructive distillation.

Among the men still living who have contributed to the development of chemical industry in the Manchester district, Dr. Schunck then referred to Mr. Scnstadt as having devised and successfully carried out the process of obtaining magnesium by decomposing the double potassium and magnesium chloride by means of sodium, also to Mr. W. Mather, who invented the plan of converting the metal into wire by forcing it through holes in a metal plate. The works erected at Salford for the manufacture of magnesium have been carried on ever since under the care of Mr. Samuel Mellor, and Bunsen's idea of using the light produced by burning magnesium for photographic purposes, has been carried into practice by Mr. A. Brothers. Magnesium has also been used for signalling and very extensively in making fireworks. The sodium required for decomposing the double magnesium chloride was produced at the Salford works, and after the manufacture of aluminum at Newcastle was abandoned by Messrs. Bell and Co., the production of sodium became almost exclusively a Manchester industry.

The discovery of vanadium in the copper ores occurring near Mottram and Alderley in Cheshire also led to the industrial application of vanadic acid in the production of aniline black by Mr. John Lightfoot, who found that it was the best agent for that purpose. In extracting the copper from these ores by precipitation with metallic iron, a blue liquid remained, from which no copper was separated by zinc. This liquid contained the vanadium, and after being brought to a state of comparative purity by Mr. Mellor at the works of the Magnesium Company, it was the material used by Sir Henry Roscoe for his investigation of the chemistry of vanadium and its compounds.

INTERPRETATION OF THE PHARMACY ACT.

It might well be thought that the meaning of the Pharmacy Act, 1868, should by this time, nearly thirty years after its enactment, be perfectly clear, but a case reported this week affords evidence that there is still doubt in some quarters as to the interpretation of the provisions of the Act. For some time after the Act was passed it was naturally thought that, if it secured nothing else, it fully protected pharmaceutical titles and restricted the sale and dispensing of scheduled poisons to registered chemists. But, then came the decision in the case of the London and Provincial Supply Association, the result of which was to remove joint-stock companies from the scope of the Act, on the ground that the word "person," as used in Section XV. of the Act, cannot be held to include a corporation.

Now another issue bearing upon this same point is raised, as to the meaning of the word "person," and it remains to be decided by the judges of the High Courts whether or not the application of the Act is to be further limited. In the case reported at page 47, the defendant was charged with breach of the Statute by having kept open shop for the retailing of poison and for selling weed-killer containing nearly fifty per cent. of arsenic. The person sued was unregistered, and the case was fully proved, but it was stated in evidence that the defendant had a partner in his business, and His Honour Judge Lushington felt it incumbent upon him to give judgment against the Society on the ground that the case of a partnership is on all fours with that of a corporation.

The Judge confessed that he had considerable reluctance about his decision, but acting upon the House of Lords decision in the case of the London and Provincial Supply Association, he found that defendant did not sell, because he is a member of a partnership. The result of the House of Lords case, he contended, is to exclude a partnership, for a partnership must necessarily be free from the restrictions imposed by Section XV. of the Pharmacy Act, since it cannot become a chemist and druggist. Holding this view, he felt bound, however reluctantly, by the House of Lords decision, and preferred to leave the matter to another court. Accordingly, judgment was given for defendant with costs. The question raised is, of course, of very grave importance to chemists and druggists, but leave to appeal having been given, the matter must for the present be regarded as *sub judice*.

ANNOTATIONS.

How to Get to Glasgow is a subject that will probably engage the attention of many chemists during the next few weeks, and those who wish to secure special travelling accommodation will do well to take the necessary steps without delay. For the information of members of the Conference residing in or near London, or at any place upon the London and North-Western line of route, it may be stated that it will be necessary to give notice early next week if a third-class saloon carriage be required. Accordingly, all who would like to join a party, and think of travelling by the train leaving Euston on Monday, August 9, at 10 a.m., should communicate at once with Mr. Francis Ransom, 12, Bancroft, Hitchin. A minimum number of ten is required to secure the special accommodation, and Mr. Ransom will be pleased to make the necessary arrangements if he receives the names promptly. Those who find it more convenient to travel by the Midland Railway or the Great Northern should communicate with the station-masters in their respective districts if they wish to make any special arrangements. Many will doubtless take advantage of the opportunity afforded for a sea trip, as several steamers run from London and other English ports to Glasgow and Edinburgh. Particulars in all cases will be found in Bradshaw.

Papers to be Read at the Conference should now be coming in, and we are desired to direct attention once more to the announcement published by the Hon. Gen. Secretaries last month, in which it was stated that all manuscripts should be in the hands of the Executive Committee on or before July 31. The papers that are accepted will, if possible, be put in type before the meeting, but to secure that desirable end it is necessary that they should be sent in early, addressed to the Hon. Gen. Secretaries British Pharmaceutical Conference, 17, Bloomsbury Square, London, W.C. No other persons are authorised to receive papers, and all applications for copies or abstracts should be referred to the Hon. Gen. Secretaries, who will attend to them in due course. Proofs of papers put in type will be sent to the authors as soon as possible after receipt, and after correction revised proofs will be furnished to read from. But this arrangement cannot be carried out unless the work of the Hon. Gen. Sectretaries is facilitated by the members who propose to read papers sending in their manuscripts early.

The Eighth International Pharmaceutical Congress begins at Brussels on Saturday, August 14, and will continue until the following Thursday. According to the *Annales de Pharmacie* complaints have been received from several sources, to the effect that no circulars or forms of membership have been received. At the same time it is stated that the success of the Congress promises to be very great. The questions to be discussed are described as being of the highest importance, whilst the festivities are to be on a grand scale. Numerous sympathetic communications have been received from abroad and many foreign delegates are expected to attend, and Belgian pharmacists are urged to uphold the reputation their country holds for hospitality, by showing that though pharmacy in Belgium is not in so flourishing a condition as in other countries, the members of the craft there are "sains et vigoureux et remplacent par une puissante solidarité, une force de cohésion inébranlable et une vitalité intense, les ressources de l'or et des affaires brillantes." Of a surety, it were a pity to spoil this masterpiece of style by translating it into cold-blooded English, and in its original form the description may be more likely to attract pharmaceutical visitors to "Paris the less" next month.

The Programme of the Congress is a very full one. On the opening day the proceedings will commence with a general assembly at 11 a.m.; then at 2 p.m. the various sections will meet, and during the evening there will be a reception of the Congress by the municipal authorities at the Hôtel de Ville. The next day, Sunday, will be devoted to visits to places of interest, followed by a meeting of the Brussels Société royale de Pharmacie. During the next three days the sectional meetings and general assemblies will be followed by excursions, a visit to the Brussels Exhibition, and a gala performance at the theatre, whilst the general assembly on Thursday, the closing day of the Congress, will be followed by a banquet in the evening. Food and exercise for both mind and body are therefore to be amply provided, and the meeting ought to prove both a pleasant and a profitable one.

The Twelfth International Medical Congress will be held at Moscow, commencing August 19, and the members of the medical profession in Russia are busily engaged in preparing for the reception of a large number of English, French, and German colleagues, several of whom are expected to take part in the reading of papers. Entertainments are being freely organised at both Moscow and St. Petersburg in honour of the foreign visitors, and it is stated that free passes are being issued by the Russian railways to intending visitors to the Congress.

The Photographic Convention of the United Kingdom has been held at Great Yarmouth this week, and as a natural result a reign of terror has prevailed amongst modest people who, though brave enough to face the cannon's mouth, are in mortal dread whenever they see a camera near them. The Convention was founded eleven years ago, with the object of promoting what was until quite recent years the "black art" of photography, and the welfare of those interested in that art. The week's programme has been a very full one, opportunities for social pleasures being agreeably mingled with business. Thus the greater part of each day has been taken up with excursions to Norwich, Lowestoft, Beccles, Ipswich, and the Broads, all of which were visited in turn by what the *Daily Telegraph* describes as "ardent experts armed with cameras, big and small, to catch impressions of every point of interest." The evenings have been partly spent in Yarmouth Town Hall, where some of the members have listened to papers on various matters of special interest to photographers, whilst an exhibition of beautiful photographic works has also been held in connection with the Convention.

The Bile of Serpents is found by Professor Fraser to have the power of neutralising serpent venom, whilst ox bile has the same property in a lesser degree. This neutralising action is manifested to a wonderful degree when the bile is injected along with the venom, and to a less extent when it is injected after the venom. In a paper treating of this subject, read by the Professor before the Royal Society of Edinburgh, on Monday, July 5, he stated that he had separated the water-soluble part of bile from the alcohol-soluble part, and found it quite equal to the best anti-venene in its immunising effects with regard to serpent venom. These are very interesting results of the investigation upon which

Professor Fraser has been engaged so long, and it is to be hoped that they may prove capable of practical application.

THE VENOMS OF THE TOAD AND SALAMANDER serve as the subject of an attractive article by Dr. R. T. Hewlett in 'Science Progress' for July, facts being quoted to show that the belief of the ancients in the venomous nature of both creatures was not altogether devoid of foundation. The appearance of both toads and salamanders, and the peculiar sensation experienced on handling them, together with their shy, retiring habits, would favour an evil repute in an age "when Nature was not studied as she is now, and before the advance of scientific investigation and the growth of individual culture had banished superstition and ignorance." Amongst other interesting articles in the same issue is one on "The Red Pigment of Flowering Plants," by Mr. F. W. Keeble, in which the work of Stahl, Simroth, and other workers is summarised, and another on "The Natural History of the Sea," by Mr. George Murray, of the British Museum.

ACCIDENTAL POISONING CASES continue to be fairly numerous. Another infant has ceased to exist because its grandmother administered medicine from the wrong bottle. A lotion containing a preparation of opium had been supplied by a medical man, and the bottle bore the word "poison" on a red label, but the grandmother could not read and apparently had no idea of the meaning attached to red labels in such a connection. Overdoses of laudanum are responsible for four deaths, sugar of lead taken in mistake for a seidlitz powder (*sic*) for one, and spirit of salt thought to be whiskey accounted for another. The members of a bridal party have been seriously ill, as though from poisoning, after partaking of the usually harmless necessary bride-cake; two small boys have almost lost their lives after eating ice-cream purchased in the street, and a young girl has died from the effects of blood poisoning caused, it is believed, by a similar preparation known as "hokey-pokey." It is also worthy of record that glacial acetic acid has proved effective as a corrosive poison in a case of suicide, that of a woman aged thirty-eight.

THE CHEMISTS' ASSISTANTS' ASSOCIATION will be presided over during the session (1897-8) by Mr. T. Morley Taylor, whom we are pleased to see in that position. The new Vice-Presidents are Messrs. G. Roe, and C. E. Robinson, whilst Mr. C. Morley is Hon. Vice-President. Mr. C. Strother continues to act as Hon. Treasurer, and Messrs. F. W. Gamble and George C. Pearson are the new Hon. Secretaries. The remaining members of the recently elected Council are Messrs. F. Cooper, E. W. Hill, A. R. Melhuish, C. E. Pickering, H. H. Robins, F. R. Stephens, and T. Tickle.

THE BRIGHTON ASSOCIATION OF PHARMACY announces an excursion to Parham Park, on Thursday, July 22. The train will leave Brighton at 9·45 a.m., reaching Bramber soon after 10. After visiting the Castle and Church, it is proposed to walk to Steyning, carriages being provided for a few ladies, and a plain lunch will be served at 11.30 at the "White Horse," At 12.30 carriages will be at the "White Horse" Hotel, and drive to Parham Park and House, which will be specially opened by the courtesy of the Earl de la Zouche. About 4 p.m. the visitors will start on the return drive, and dinner is to be ready at the "White Horse," Steyning, at 6 p.m. Tickets, to include railway fare, carriage drive, admittance to Parham Park, lunch and dinner, will be 12*s.* 6*d.* for each person, and they should be at once applied for to the Hon. Secretaries, Mr. W. W. Savage, 109, St. James's Street, and Mr. C. G. Yates, 21, Upper Hamilton Road, Brighton.

THE SECRETARY OF THE P.A.T.A. asks us to refer to the fact that provision has now been made for including donors and honorary members on the roll of the Association. The report of the Executive Committee shows that several satisfactory additions have been made to the protected list, and that more than three hundred members have joined during the past quarter, whilst Messrs. Burgoyne, Burbidges and Co. have joined the Wholesale Section. Several meetings have been held in connection with grocers' associations, and in all cases resolutions in favour of the P.A.T.A. scheme were passed unanimously, the majority of the associations also recommending the Grocers' Federation to give the scheme all possible support. The annual dinner of the P.A.T.A. is to take place on Thursday, August 19, at the Holborn Restaurant.

THE HEREDITARY PRINCIPLE IN DENTISTRY is not to be trusted, if we may judge from a report of a recent action for damages. The plaintiff claimed for compensation in respect of personal suffering alleged to be due to unskilful treatment. This treatment consisted partly in the application of a red-hot iron to the nerve of an affected tooth, an operation which, it is needless to say, caused intense agony. Later the tooth was removed and an abscess found under it. Expert evidence having been given as to the barbarity of the red-hot iron treatment, one of the defendants explained that it was intended to cure neuralgia. He said that, though not a registered dentist, he was born in the business, having been brought up to it by his father, who had also been a dentist. The inevitable result of the case was a verdict for the plaintiff—ten pounds damages, with costs.

THE WEIGHTS AND MEASURES (METRIC SYSTEM) BILL, as now published, is identical in substance with the Bill of 1896, but is shorter and simpler in form, and as the table of metric equivalents is merely a matter of calculation, it has been thought unnecessary to schedule it to the Bill. The latter provides that, notwithstanding anything in the Weights and Measures Act, 1878, the use of a weight or measure of the metric system in trade shall be lawful, and nothing in Section 19 of that Act shall make void any contract, bargain, sale, or dealing, by reason only of its being made or had according to weights or measures of the metric system, whilst a person using or having in his possession a weight or measure of the metric system shall not by reason thereof be liable to any fine. It is proposed that the Board of Trade standards which may be made under Section 8 of the Weights and Measures Act, 1878, shall include metric standards derived from the standard metre and standard kilogramme deposited with the Board of Trade; and further, that it shall be lawful for the Queen by Order in Council to make a table of metric equivalents in substitution for the table in Part I. of the Third Schedule to the Weights and Measures Act, 1878, whilst as from the date at which the Order in Council comes into operation, Part I. of the said Schedule and Sections 18 and 38 of the said Act shall be repealed.

MARCONI'S WIRELESS TELEGRAPHY has been successfully experimented with at Spezzia between the port and Palmaria Island, seven kilometres distant, as well as between steamers. In all cases the results were equally satisfactory, the maximum distance over which communications were made being fifteen kilometres, and it is stated that a further trial of the invention will shortly be made between Dover and Calais.

REAGENTS, REACTIONS, METHODS AND FORMULÆ, KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 36.)

Geissler's test paper for albumin. Strips of filter-paper are saturated, half with concentrated citric acid solution, and half with 3 per cent. mercuric chloride solution to which 12 to 15 per cent. of potassium iodide has been added. A strip of the citric acid paper is first dipped into the urine to be tested, then the mercury-potassium iodide paper. If albumin be present a precipitate results. Concentrated urine must first be diluted. See Oliver.

Geitel's test for neutral fat in free fatty acids. Dissolve 2 Gm. of the fatty acids in 15 C.c. of hot alcohol, and add 15 C.c. of ammonia. If a considerable percentage of neutral fat be present the solution becomes turbid. Traces of neutral fat are detected by adding carefully a layer of cold methyl alcohol. If natural fat be present a turbidity is produced at the zone of contact.

Geoffroy's mounting medium. Dissolve, with as little heat as possible, 3 to 4 Gm. of gelatin in 100 C.c. of 10 per cent. aqueous chloral hydrate solution. See Gilson's chloral hydrate jelly.

Geogehan's acid reaction. All inorganic and organic acids, with the exception of hydrocyanic acid, precipitate red mercuric iodide from a solution of the double salt of mercuric cyanide and potassium iodide.

Gerard's test for biliary colouring matter. Solution of iodine in aqueous potassium iodide is added in small quantity to a chloroformic extract of the urine to be tested. If potash solution be added the reddish colour of the chloroformic extract disappears, and in the presence of bile colouring matter the potash solution is coloured green.

Gerrard's test for atropine and hyoscyamine. Dissolve 5 Gm. of mercuric chloride in 95 Gm. of 50 per cent. alcohol. If 2 C.c. of this solution be heated with 0·001 Gm. of atropine a red precipitate is formed. Hyoscyamine produces a similar precipitate, but homatropine is not precipitated.

Giacomi's staining method. Stain cover-glass preparations for a few minutes in a hot solution of fuchsine, then place in water containing a few drops of ferric chloride solution, and afterwards decolorise in strong ferric chloride solution. If any precipitate be formed with the iron solution, complete the decolorisation in alcohol. Counter-stain with vesuvine.

Gibbes' borax carmine. Mix carmine, 30 grains; borax, 120 grains; water, 4 fl. ozs., and decant when clear. After staining sections inthis for a few minutes, wash in a mixture of hydrochloric acid, 1 part, and absolute alcohol, 20 parts. When the tissues are of a bright rose colour wash in several changes of spirit to remove the acid.

Gibbes' double staining method. Well mix magenta, 2 Gm., and methylene blue, 1 Gm., then add slowly aniline oil, 3 C.c., dissolved in rectified spirit, 15 C.c. Subsequently add 15 C.c. of distilled water and keep the stain in a stoppered bottle. Cover-glass preparations are placed for 4 minutes in the slightly heated stain and sections left for some hours in the stain at the ordinary temperature. Afterwards wash in methylated spirit until no more colour comes away, then dehydrate, clear in cedar oil, and mount in balsam.

Gibbes' magenta stain. Mix magenta, 2 Gm.; aniline oil, 3 Gm.; rectified spirit, 20 C.c.; and distilled water, 20 C.c.

Gieson's (Van) formalin method. Tissues are hardened in 4, 6 or 10 per cent. solutions of formaldehyde, followed by 95 per cent. alcohol.

Giessel's reaction for cocaïne. On the addition of 2 C.c. of a saturated potassium permanganate solution to 5 C.c. of a 1 per cent. solution of cocaïne, a violet precipitate of cocaïne permanganate is produced.

Gilson's bleaching process. Objects hardened in bichromate solution are bleached with a few drops of an alcoholic solution of sulphurous anhydride.

Gilson's chloral hydrate jelly. Mix equal volumes of melted gelatin and glycerin, and add crystals of chloral hydrate until the bulk of the mixture has increased by one half, warming until dissolved. See Geoffroy's mounting medium.

Gilson's imbedding process. Objects are dehydrated, soaked in ether, and placed in a test-tube containing collodion or thin celloidin solution. Dip the tube into a bath of melted paraffin and allow the collodion to boil until it becomes of a syrupy consistence and is reduced to about one-third of its original volume. Then turn out the mass, mount on a block of hardened celloidin, and harden the whole in chloroform for about an hour. Next clear in cedar oil and fix on the microtome.

Gilson's mercuro-nitric mixture. Mix nitric acid (sp. gr. 1·456), 78 C.c., glacial acetic acid, 22 C.c., mercuric chloride, 95 to 100 Gm., alcohol (60 per cent.), 500 C.c., and distilled water, 4400 C.c. When required for marine animals, add a few crystals of iodine. Any granular precipitate in preparations should be removed by washing with water containing a little tincture of iodine.

Gilson's preservative fluid. Mix alcohol (60 per cent.), 60 C.c., water, 30 C.c., glycerin, 30 C.c., acetic acid (15 parts of glacial acid to 85 of water), 2 C.c., and mercuric chloride, 0·15 Gm.

Girard's reaction for coal-tar dyestuffs in wine. Add to 20 C.c. of the wine to be tested 4 C.c. of 10 per cent. potash solution and 20 C.c. of a 5 per cent. mercurous sulphate solution, then shake the mixture and filter. Natural wine yields a colourless filtrate; artificially coloured wine a red one.

Glaessner's reaction for fatty oils. This depends upon the behaviour of the oils toward fuming nitric acid, concentrated sulphuric acid, and carbon disulphide.

Gmelin's reaction for biliary colouring matter. A layer of the urine to be tested is carefully poured over fuming nitric acid. In the presence of biliary colouring matter zone colour-reactions are produced, which change from green to blue, violet, red, and yellow. In order to concentrate the intensity of the reaction a precipitate of barium sulphate is produced in the urine, and this carries with it the colouring matter. The collected and dried precipitate is then tested with nitric acid. There are numerous modifications of this test. Thus Bruecke first adds dilute boiled nitric acid, then concentrated sulphuric acid. Vitali adds a few drops of potassium nitrite solution, then dilute sulphuric acid. Masset adds concentrated sulphuric acid to the urine, then a crystal of potassium nitrite; green streaks emanate from the fragments of the nitrite. Fleischl mixes the urine with an equal volume of a concentrated solution of sodium nitrite, and then adds a layer of concentrated sulphuric acid from below by means of a pipette. Rosenbach adds nitric acid containing nitrous acid to the filtered urine. Dragendorff and Deubner filter through a porous plate in place of ordinary filter paper and then perform the nitric acid test on the plate. Hilger treats the urine with barium hydrate at a moderate temperature and tests the resulting precipitate, after being washed, with nitric acid.

Gmelin's salt. This is potassium ferricyanide.

Goadby's preservative fluids. This consists of 120 Gm. of sodium chloride, 60 Gm. of alum, 0·25 Gm. of mercuric chloride, and 2·33 litres of water. A stronger preparation contains only half the amount of mercuric chloride and water. When the preparations contain calcium carbonate, omit the alum.

Godbay's solution. See Goadby's preservative fluids.

Godeffroy's reagent for alkaloids. A solution of antimony chloride. It precipitates aconitine, atropine, quinine, cinchonine, piperine, strychnine, veratrine in the form of white or yellow precipitates. From aqueous hydrochloric acid solutions caffeine and morphine are not precipitated.

Godeffroy and **Laubenheimer's** reagent for alkaloids. Silicotungstic acid produces sparingly soluble precipitates with hydrochloric acid solutions of the alkaloids.

Goette's hardening fluid. Mix 50 C.c. of 2 per cent. copper sulphate solution, 50 C.c. of 25 per cent. alcohol, and 35 drops of rectified wood vinegar.

Golgi's sublimate method. Small cubes of tissue are hardened for 15 to 30 days in Müller's fluid, which should be frequently changed. Then transfer for 8 to 10 days to 0·25 to 1 per cent. aqueous mercuric chloride solution, which must be changed, as it becomes coloured. If desired, treat subsequently with weak sodium sulphide solution to darken the stain and make it sharper. After cutting sections from material thus prepared they must be well washed with water.

Gouver's solution for the detection of albumin. A solution of mercuric cyanide in an excess of potassium iodide. With albuminoids this solution produces a white precipitate.

Grahe's test for cinchona barks. Genuine cinchona barks yield red fumes when heated in a test tube, whereas spurious barks produce vapours and tar of a brownish colour.

Gram's solution. Iodine, 1 Gm.; potassium iodide, 2 Gm.; distilled water, 300 Gm.

* After Schneider, Altschul, Lee, Squire, Crookshank, and others.

Gram's stain for bacteria. This is prepared by shaking 15 drops of aniline oil with 15 Gm. of water, filtering the solution and adding to the filtrate 4 to 5 drops of saturated alcoholic solution of gentian violet. Or, shake 3·3 C.c. of aniline with 100 C.c. of distilled water and, after filtering, add 11 C.c. of concentrated alcoholic solution of gentian violet and 10 C.c. of absolute alcohol. After preparations have been stained for 1 to 3 minutes in one of the above they are quickly rinsed in absolute alcohol and then placed in Gram's solution of iodine in potassium iodide (iodine, 1 Gm. ; potassium iodide, 2 Gm. ; water, 300 C.c.), until they have acquired a brown colour. This takes about 1 to 3 minutes, and they are next washed in 90 per cent. alcohol until they become pale yellow, then dehydrated, cleared, and mounted in balsam. Counterstain with cosine or vesuvine if desired.

Grandeau's reaction for alkaloids. Carefully add bromine water to a solution of the alkaloids in concentrated sulphuric acid. With some alkaloids it produces characteristic colour reactions. Thus, solution of digitaline and digitaleïne in sulphuric acid is yellow, but becomes rose-red to violet through the action of bromine. Preparations of digitalis produce the same reaction. Morphine also produces a red colour. In place of bromine water Dragendorff employs a solution of bromine in potassium hydroxide or bromine vapours.

Graser's staining method. Stain sections for 12 to 24 hours in an extremely dilute aqueous solution of methyl violet, then wash out in acidulated alcohol, and subsequently in pure alcohol.

Gravis' agar agar. Dissolve agar agar, 1 part, in water, 1000 parts. Used for fixing serial sections on slides. Use as Born and Wieger's quince mucilage, which see.

Gray's gelatin process. Fix serial sections on slides with a solution of gelatin, 1 part, in water, 100 parts. Let the slides dry spontaneously overnight, then remove the paraffin with a suitable solvent, and treat the preparations for 5 minutes with a 2 per cent. solution of potassium bichromate to render the gelatin insoluble. Stain as desired, and mount.

Greittherr's cocaïne reaction. Mix a few drops of a cocaïne solution with 2 to 3 C.c. of chlorine water, then add a few drops of 5 per cent. palladium chloride solution. A fine red precipitate is produced, which is insoluble in alcohol and ether, but soluble in sodium hyposulphite solution.

Grenacher's alum carmine. Dissolve 5 Gm. of ammonia alum in 100 C.c. of distilled water, add 1 Gm. of carmine, and boil for 20 minutes, filter when cool, and add distilled water to make up to 100 C.c.

Grenacher's alcoholic borax carmine. Dissolve 4 Gm. of borax in 100 C.c. of distilled water, then add 3 Gm. of carmine, and heat gently. Finally, add 100 C.c. of 70 per cent. alcohol, filter the solution, if necessary, before use. Pieces of tissues are stained in this for 1 to 3 days, and then transferred to 70 per cent. alcohol, containing 0·5 to 1 per cent. of hydrochloric acid.

Grenacher's alcoholic carmine. Add 3 to 4 drops of hydrochloric acid, and a few grains of powdered carmine to 50 C.c. of 60 to 80 per cent. alcohol. Boil for 10 minutes, cool and filter.

Grenacher's bleaching mixture. Mix glycerin, 1 part, with 80 per cent., alcohol, 2 parts, and add 2 to 3 per cent. of hydrochloric acid.

Grenacher's hæmatoxylin. See Delafield's hæmatoxylin.

Greshoff's reaction for iodoform. With silver nitrate iodoform reacts readily, with formation of carbon monoxide, silver iodide, and nitric acid.

Griess' reaction for fæcal matter in water. A solution of diazosulphanilic acid (1 per cent.), which has been made alkaline with soda solution. Water containing fæcal matter becomes yellow within five minutes upon addition of this solution.

Griess' reaction for nitrous acid. (1) A solution of a salt of *m*-phenylenediamine produces a yellowish-brown colour with nitrous acid. A solution of the base (0·5 per cent.) is prepared with the aid of sufficient sulphuric acid to produce an acid reaction. If the solution is not colourless it should be decolorised with freshly-burnt animal charcoal. (2) A solution of sulphanilic acid and naphthylamine sulphate is coloured red by traces of nitrous acid. The solution to be tested is acidified with sulphuric acid ; sulphanilic acid solution is added, and, after a few minutes, solution of naphthylamine sulphate, which has been decolorised with animal charcoal. See Lunge's reaction.

Griess' test-paper. The paper is saturated with one of Griess' reagents for nitrous acid.

Griess-Ilosvay's reagent for nitrous acid. An acetic acid solution of sulphanilic acid and naphthylamine.

Guenzburg's reaction for free hydrochloric acid in gastric juice. Dissolve 2 Gm. of phloroglucose and 1 Gm. of vanillin in 30 Gm. of alcohol. If a few drops of this solution be evaporated with an equal amount of gastric juice in a porcelain capsule, the presence of hydrochloric acid is indicated by the formation of a red film.

Guezda's reagent for albumins. This consists of a solution of nickel sulphate and ammonia.

Guignet's reagent. This is simply an ammoniacal solution of copper sulphate.

Gunning's test for acetone. Iodoform and a black precipitate of nitrogen iodide are formed on adding tincture of iodine and ammonia to the solution to be tested (*e.g.*, distillate from urine). The nitrogen iodide gradually disappears, and the yellow colour of the iodoform predominates. Alcohol in this case does not produce iodoform. Compare Lieben's reaction.

Gutzeit's test for arsenic. The substance to be tested is placed in a test-tube containing pure zinc and pure dilute sulphuric acid. The mouth of the tube is closed with a piece of filter-paper moistened with a few drops of silver nitrate solution (1 : 1). If arsenic be present the arsenuretted hydrogen formed produces a yellow spot on the paper, which is blackened upon the addition of water. See Flueckiger's test for arsenic.

Guyon's reagent for the detection of aldehydes. Add to a solution of 1 Gm. of fuchsine in 1 litre of water a mixture of 20 C.c. of sodium acid sulphite solution of 30° Beaumé and 10 C.c. of concentrated hydrochloric acid. If 1 C.c. of this reagent be brought in contact with 2 C.c. of the solution to be tested, the presence of aldehyde is indicated by the formation of an intensely purple red reaction. This reagent is also known as Schiff's reagent.

Haensel's liquid. A trace of acetic acid is added to Fol's picro-chromic acid.

Haentsch's glycerin medium. Mix glycerin, 1 part, with alcohol, 3 parts, and water, 2 parts.

Hager's arsenic test (Kramato method). A hydrochloric acid solution of arsenic or arsenous acid produces a permanganate-like spot when heated gently with a strip of copper, commercial tin, or tin-foil. Compare Reinsch's test for arsenic.

Hager's butter test. (Organoleptic reaction.) A cotton wick is saturated with the liquefied fat, then ignited, and after 2 minutes the flame is extinguished. Pure butter develops the odour of strongly fried butter, margarin that of acroleïn.

Hager's glycerin reaction. If an aqueous solution of glycerin coloured blue by litmus tincture be mixed with a solution of borax similarly coloured by means of litmus, the mixture assumes a red colour. Compare Linde's test for glycerin.

Hager's reaction for colchicine. A solution of borax produces a white precipitate in concentrated solutions. The precipitate is not formed in dilute solutions at the ordinary temperature, but is formed upon heating to 50° C.

Hager's reagent for alkaloids. A solution of picric acid produces precipitates in alkaloidal solutions, and can also be used as a reagent for albumin. On pouring a layer of the reagent over one of the solution (urine) to be tested, a turbidity is produced in the presence of albumin.

Hager's test for alcohol in volatile oils. On adding a little tannin to the oil it forms a sticky mass if alcohol be present, whilst if a drop of the oil be poured into water, the presence of alcohol is indicated by a milky turbidity.

Hager's test for cholesterin. See Salkowsky's test.

Hager's test for glucose. A solution of red mercuric oxide, 30 Gm. ; sodium acetate, 30 Gm. ; sodium chloride, 50 Gm. ; in glacial acetic acid, 25 Gm. ; and water, 400 C.c., is diluted to a litre. If a solution containing glucose (diabetic urine) be heated with this reagent, a precipitate of mercurous chloride results.

Hager's test for potable water. On the addition of tannin solution, tannin, 1, water, 4, alcohol, 1, potable water should not produce a turbidity even upon standing for some time.

Hager's test for the hydrides of sulphur, arsenic, antimony and phosphorus. The hydrides formed by the action of zinc and sulphuric acid upon the substance to be tested are allowed to act on parchment paper moistened with solution of silver nitrate. If the resulting brown or black spot be macerated with 10 per cent. solution of potassium cyanide, the colour resulting from the action of sulphuretted hydrogen disappears at once, whilst that caused by the hydrides of antimony and phosphorus disappears gradually (in 1 to 2 hours), and that from the arsenuretted hydrogen remains permanent.

Hager's test for the purity of alcohol (aniline test). Dissolve 1 Gm. of cacao oil in 2 to 3 Gm. of aniline contained in a test tube, and set aside for 1½ hour at a temperature of 15° C. If the oil be pure it floats as a clear liquid layer on the aniline, but if tallow, wax, stearin or paraffin should be present the oily layer shows granular formations or solidifies.

Haine's solution for the detection of glucose. Dissolve copper sulphate, 3 Gm.; potassium hydrate, 9 Gm.; and glycerin, 100 Gm., in 600 Gm. of water. Upon the application of heat, glucose (diabetic urine) effects the precipitation of red cuprous oxide.

Haller's (Béla) macerating fluid. See Béla Haller's fluid.

Hamilton's hæmatoxylin. Mix hæmatoxylin, 12 Gm.; ammonia alum, 50 Gm.; glycerin, 65 C.c.; and distilled water, 130 C.c. Boil the solution, and while hot add 5 C.c. of liquid carbolic acid. Expose the mixture to daylight for a month to ripen it.

Hammarsten's reaction for indican in urine. On mixing the urine with an equal volume of fuming hydrochloric acid, then adding solution of chlorinated lime drop by drop, and shaking the mixture out with chloroform, the latter takes up the indigo resulting from the indican and is coloured blue. An excess of chlorinated lime is to be avoided. This is also known as Jaffé's test.

Hanaman's slide-cleaning solution. Add 1 fluid part of strong sulphuric acid to 8 fluid parts of potassium bichromate.

Hannstein's aniline mixture for staining microscopic preparations. A mixture of equal parts of methyl violet and fuchsine, or of 1 part of the violet and 2 of fuchsine.

Hansen's hæmatein solution. Dissolve 1 Gm. of hæmatoxylin crystals in 10 Gm. of absolute alcohol, and add a solution of 20 Gm. of potash alum in 200 Gm. of distilled water. Then pour the mixture into a porcelain capsule containing 3 C.c. of concentrated aqueous solution of potassium permanganate, heat the whole to boiling point with constant stirring, and after the solution has turned to a dark reddish violet continue the boiling for half a minute to a minute. When cool the solution is ready for use.

Harting's preservative fluid... An aqueous solution of mercuric chloride (1 : 200 to 1 : 500).

Hauchecorne's reaction for cotton-seed oil in olive oil. Heat oil, 6 Gm., with 2 Gm. of pure nitric acid ($3HNO_3$ 40° Bé+$1H_2O$) on a water bath for 20 minutes. Pure oil remains unchanged or becomes lighter, and should solidify within 24 hours to a flesh-coloured mass. Adulterated oil assumes an orange-brown red. The nitric acid must be free from nitrous acid.

Haug's solution for decalcification. Mix 1 Gm. of phloroglucin with 10 C.c. of pure nitric acid (sp. gr. 1·4), and warm very slowly and carefully with gentle agitation. Dilute the solution with 100 C.c. of distilled water and add 10 C.c. of nitric acid. Hydrochloric acid may be used instead of nitric acid, 30 per cent. of acid being used, and 0·5 per cent. of sodium chloride should then be added.

Hefelmann and **Mann's** test for fluorine in beer. This depends upon the precipitation of fluorides as calcium or barium fluoride. Upon treating the precipitate containing fluorides with sulphuric acid, hydrofluoric acid is formed, and can be recognised by its glass-etching properties.

Hegler's test for lignin. Sections are covered with alcohol and treated with a dilute alcoholic solution of thallium sulphate. Lignin is coloured orange-yellow, whereas cellulose and cork remain colourless.

Hehn's chloral reagent for volatile oils and resins. Saturate 100 C.c. of alcohol with chlorine, and partly remove the resulting hydrochloric acid by distillation. Then add sulphuric acid and distil the resulting metachloral. When two drops of the latter are brought in contact with a drop of certain volatile oils or a fragment of some resins, characteristic colour reactions are produced. (See Dragendorff's 'Analysis of Plants.') Oil of myrrh, or the petroleum ether extract of myrrh, produces a violet colour with the reagent.

Hehner's figure. This denotes the amount of insoluble fatty acid yielded by 100 Gm. of fat, and serves for the characterisation of fats.

Heidenhain's iron hæmatoxylin method. Sections are treated for 0·5 to 3 hours with a 1·5 to 4 per cent. solution of iron alum, then washed with water and stained in a 0·5 per cent. aqueous solution of hæmatoxylin. Rinse with water, and again treat with the iron solution for 20 to 60 minutes. The sections are sometimes stained for 24 hours or more in a weak solution (1 per cent.) of Bordeaux R, or aniline blue, before treatment with the iron alum.

(To be continued.)

SOCIETY OF CHEMICAL INDUSTRY.

The annual general meeting of this Society was opened on Wednesday last under the presidency of Dr. Edward Schunck, in the chemical theatre of the Owens College, Manchester.—The report of the Council gave a very satisfactory account of the Society's position, the number of members being now upwards of three thousand. Financially there has been a great improvement, in consequence of the adoption of various economies, and the excess of revenue over expenditure has amounted to more than a thousand pounds.—The production of the collective index has involved more labour than was anticipated, but the Council anticipates that the delay in the production of the index will be found justified by its improvement as an aid to research.—Dr. John Clark and Mr. F. J. R. Carulla retire this year from the Chairmanship respectively of the Scottish and Nottingham sections, and they are succeeded by Mr. George Beilby and Mr. J. O'Sullivan. Mr. H. R. Proctor retires from the Secretaryship of the York section.—The inquiry as to the concessions requisite in regard to the use of spirit for manufacturing purposes has been continued, and there has been a cenference with the officials of the Excise Department, which it is hoped will have satisfactory results.—Professor Frank Clowes, D.Sc. (Lond.), of University College, Nottingham, has been elected President of the Socicty for the ensuing twelve months, and the next annual meeting will be held at Nottingham.

THE MUSEUMS ASSOCIATION.

MEETING AT OXFORD.

The meetings of this Association took place during last week in the Theatre of the Ashmolean Museum, by the kind consent of the Curator, Mr. Arthur J. Evans. On Wednesday, July 7, after the opening address had been delivered by the President, Professor E. Ray Lankester, the first paper read was by Professor E. P. Poulton, M.A., F.R.S., on

The Different Methods of Setting Lepidopterous Insects,

in which the adoption of a modification of the continental method combining the advantages of that adopted in this country was recommended, the insect being raised higher on the pin, with the label folded small beneath, and the wings flatter than in the English method.—The next paper was by Professor A. H. Miers, M.A., F.R.S., on

The Classification of Minerals in the Oxford Museum.

Professor Miers arranges the minerals in eighteen classes, as follows:—1, Elements; 2, Haloids; 3, Sulphides, etc.; 4, Sulpharsenides, etc.; 5, Oxides; 6, Hydrates; 7, Aluminates; 8, Borates; 9, Carbonates; 10, Silicates, etc.; 11, Nitrates; 12, Phosphates, etc.; 13, Niobates, etc.; 14, Sulphates; 15, Chromates; 16, Molybdates, etc.; 17, Uranates; 18, Organic Compounds. The large and difficult group of silicates (10) he sub-divides into four sections, viz.:—A, in which monovalent elements are essential; B, divalent elements essential, including (1) divalent alone, (2) divalent with monovalent; C, trivalent elements essential, including (1) trivalent alone, (2) trivalent with monovalent, (3) trivalent with monovalent and divalent, (4) trivalent with divalent; D, double salts. The paper gave rise to some discussion, but the general feeling was that a difficult subject had been treated in a masterly manner.—The next paper was entitled—

Remarks on The System of Arrangement of the Pitt-Rivers Collections,

by Henry Balfour, M.A. This was subsequently illustrated in a practical manner by Mr. Balfour, who conducted a party of curators round the Museum. The method adopted is to class objects of the same kind, *e.g.*, flint implements, etc., together, those of each country forming a separate group, but placed side by side for comparison, each specimen being clearly labelled with explanatory remarks. It was generally admitted by the visitors that a museum so arranged is much more instructive and interesting than one in which each country is treated separately, the comparative method having decided advantages.—On Thursday a paper on

Popular Museum Exhibits,

by Harlan I. Smith, of the American Museum, gave rise to some discussion. Mr. Balfour considered that labels should form an important part of popular exhibits; Dr. Talmage, that labels should include references to the best books on the subject; and Dr. Flinders Petrie, that each label should lead on to the next.—A paper by Mr. Goodrich

On Museum Preparations,

detailed the result of his experience in mounting zoological objects. He recommended the use of celloidin for attaching objects preserved in spirit to glass plates in bottles, Mr. Hoyle considered a mixture of glue and turpentine more satisfactory.—A paper on

Federal Staff for Museums,

by Professor W. M. Flinders Petrie, gave rise to considerable discussion and led to various suggestions. Professor Petrie's idea was that it might be possible for arrangements to be made through the Museums Association for specialists to lecture on their special subjects in different towns, and at the same time to look through the collections in the museums in the towns and to verify doubtful specimens, to suggest improvements, and to promote exchanges between different museums. It was suggested further that a register of curators or scientific men who could undertake such work should be kept by the Museums Association.—On Friday a paper on

The Circulation System at South Kensington

was read by Mr. Howarth, in which it was suggested that the system needed modification. In the discussion that followed the opinion was expressed that South Kensington might render greater service by supplying casts, etc., of works of art, etc., at a moderate price, and dispose permanently of its duplicates to provincial museums, seeing that persons often returned to see specimens in ignorance of their being only lent for a given time.—Dr. Talmage read a very interesting paper on—

The Selenite Geodes of Utah.

These geodes consist of isolated masses of large crystals of selenite, transparent as glass, occurring on a sandstone formation. The crystals sometimes measure a yard or a yard and a half in length in the Salt Lake district in the United States of America. The isolation of the geodes and their resistance to air and water, whilst the surrounding sandstone was much weathered, was accounted for by their toughness and softness, just as the sandblast used to engrave glass does not affect the paper used to protect parts of the glass. In the discussion that followed, Mr. Rudler pointed out the interesting fact that the diamond shape of the panes of glass used in ecclesiastical buildings arose from the fact that cleavage plates of selenite crystals were formerly used, and the lead was made to fit the plates. Even after the introduction of glass the selenite plates were still used for a considerable time, on account of their surface when dulled presenting the appearance of ground glass, and aiding in producing the "dim religious light" so esteemed in ecclesiastical building. He further remarked that the value of the Burton ales depended largely on the sulphate of calcium contained in the water of the Trent, so much so that the addition of that salt to water used for brewing purposes has led to the coining of the word "burtonisation."—The members of the Association were personally conducted round

The Ashmolean Museum,

by the curator, Mr. Evans, and the sculptures and apparatus of the Department of Classical Archæology were explained by Professor Gardner.—Professor Ray Lankester conducted a party through the zoological department of the University Museum, and Mr. Balfour spent a considerable time in commenting on the valuable and exceedingly well-arranged Pitt-Rivers Collection in the same museum to a deeply-interested audience.—A cordial invitation to the Association to visit Sheffield next year was given through Alderman Brittain and accepted.—Mr. Plattnauer resigned his position as one of the Secretaries, and Mr. Paton was appointed to undertake the editorial duties in his stead.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

A well-attended meeting of the junior section of the above Association was held on Tuesday, the 6th inst., for the purpose of presenting the prizes gained by the students in the recent Pharmacy and Pharmaceutical Latin examinations conducted by Professor Greenish.—Mr. J. D. Turney, Chairman of the Educational Committee) occupied the chair.—Mr. J. R. Johnson (Hon. Secretary Educational Committee) read the report of the work done during the past session, also the remarks by Professor Greenish on the recent examination.—Mr. Turney remarked on the splendid facilities for pharmaceutical students which Plymouth offered, both in connection with the technical school and the Association. He urged all students to avail themselves of the classes now being conducted by Messrs. Reade and Johnson, and hoped that those gentlemen would be encouraged by the greater proportion of the unqualified members joining. The following prizes were then distributed:—Pharmaceutical Latin and Posology: 1, W. Hellyer; 2, H. Vibert. Pharmacy: 1, J. Ivey; 2, A. Downing; 3 (special prize presented by Mr. O. A. Reade), T. Darke. Votes of thanks to the Chairman and to Messrs. Reade and Johnson for their great kindness in so ably conducting the classes having been accorded, some interesting slides were then shown under microscopes kindly lent by Messrs. Turney, Reade, and Cantle.

At the quarterly meeting held on July 13, Mr. F. Maitland in the chair, the question of the action of certain wholesale houses in regard to proprietaries was referred to the trade section to deal with.—After a long discussion on the Early Closing Movement, Mr. Cocks proposed, and Mr. U'Ren seconded the following resolution, which was carried unanimously:—

> "That this meeting is in sympathy with the Early Closing Movement on Wednesdays, recommending from 2 to 6 p m., and refer the same to the General Committee to deal with."

Mr. C. J. Park was elected a delegate to the Pharmaceutical Conference, and expressed the hope that, in the future, the British Pharmaceutical Conference would be better supported by the chemists of the Three Towns.

PHARMACEUTICAL SOCIETY OF IRELAND.

MEETING OF THE COUNCIL.

The monthly meeting of the Council was held on Wednesday, the 7th instant, at 67, Lower Mount Street, Dublin, at three o'clock. The President, Mr. W. F. Wells, presided; and the other members of the Council present were the Vice-President (Mr. Downes), Messrs. Grindley, Porter, Dr. Walsh, Conyngham, Kelly, Bernard, Murray, J. P. (Clones); Hayes, Professor Tichborne, and Simpson.—The President welcomed Mr. Porter, who had been co-opted a member of the Council, saying he was sure he would prove a useful member.—Mr. Porter returned thanks for being elected.—The President said that since they last met, the honour of knighthood had been conferred on a gentleman who had been connected with the Society almost since its inception—he referred to Sir George F. Duffey. Sir George had been the first visitor on behalf of the Lord Lieutenant and Privy Council at the examinations of the Society. He had assisted the Society in every way, and had made many suggestions; and the Council had shown their appreciation of them by carrying out, with very few exceptions, everything that he had recommended. The result was that they had now a system of examinations of which they need not be ashamed. He (the President) had therefore great pleasure in moving the following resolution:—

> "At this the first meeting of Council after knowledge of the honour of knighthood having been conferred on the Visitor on behalf of the Lord Lieutenant and Privy Council at our examinations, we desire before proceeding to business to congratulate Sir George Duffey, M.D., on his recognition by Her Majesty in her list of Jubilee honours."

—Mr. Grindley said he had great pleasure in seconding the motion. An additional reason for congratulating Sir George Duffey was that the close relationship that had always subsisted between him and the Council had led very much to the action that had been taken by the College of Physicians in having the list of poisons extended.—The resolution was unanimously adopted.—A letter was received from Mr. M. R. Whitla, resigning his seat on the Council.—The resignation was accepted with regret.—Orders were read of the Irish Privy Council making elementary theoretical chemistry a compulsory subject in the Society's Preliminary examination on and after January 1, 1898, and adding phenol, commonly called carbolic acid, all oxalates, biniodide of mercury, and preparations of strychnine to Part 2 of Schedule A of the Sale of Poisons (Ireland) Act.—The President said it was a great advantage that carbolic acid was now declared a poison. In England a tremendous lot of poisoning cases occurred every week, and yet the authorities would not put carbolic acid in the list of poisons there.—On the motion of Mr. Bernard, seconded by Mr. Conyngham, it was directed that the Order in Council relating to the additions to the Poisons Schedule

should be published in the Dublin, Belfast, and Cork daily newspapers as a warning to dealers.—A letter from the Clerk of Petty Sessions of Enniscorthy, forwarded £1 19*s.* 10*d.*, being two-thirds of the reduced fine of £3 imposed on John Kinsella, assistant to the Enniscorthy Co-Operative Agricultural Society, Limited, for selling Hayward's sheep dip without being authorised to do so.—The President: That case cost us £12.—Mr. Bernard: Could a question be asked in Parliament as to whether the Council is to go on losing money in carrying out their Acts?—The President: That would be the only chance we have. Mr. Field and Mr. McAleese, the member for Monaghan, have already expressed their willingness to ask any questions we wish.—Dr. Ninian Falkiner was re-elected the Society's professor of botany and materia medica, with leave to appoint an assistant, subject to the approval of the Council.—Reports of the Law Committee and the Certificates Committee were adopted, and other business having been disposed of, the Council adjourned.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

The members of this newly re-organised Association, numbering with lady friends about fifty, held their first outdoor social on Wednesday, July 7. Finchale Priory, a picturesque ruin on the banks of the Wear, a few miles east of Durham, was selected by the committee for the excursion. Standing in a secluded glen, the abbey ruins are washed on three sides by the Wear, the precipitous wooded banks of the river forming a most effective and imposing background. The company was thoroughly representative of the trade—wholesale and retail—and included not a few members from the surrounding district, Jarrow, Shields, Durham, Blyth, Consett, Hexham, etc. The party met at the Central Station at 2 p.m. (waterproofs and umbrellas being the order of the day, in spite of Mr. President's assurance that he had squared the weather clerk) and left for Leamside Station by rail, the N.E.R. having provided reserve accommodation for the wayfarers. Clear of Gateshead prospects improved. The sun shone brilliantly, and with the exception of a sharp thunder shower during the walk from the station to the Abbey, perfect weather was enjoyed during the afternoon and evening. At 4 o'clock tea was served in a marquee in the grounds; thereafter photography, in which all and sundry seemed to participate. Mr. W. J. Clarke and Mr. Davidson "took" the whole party, and go where one pleased the "snapshotist" was lying in wait, seeking whom he might incorporate in his pictures. Mr. J. Gibson, jun., of Hexham, acted as cicerone in a ramble through the old priory, and gave descriptions of the more important parts of the pile. Back to Leamside by the riverside and the fields for the 7.48 return—some of the party very nearly succeeding in missing it, too—and home by 9 o'clock. In the words of one of the old drug standards "Newcastle is getting on! There has never in the history of the trade been a similar gathering of the local craft."

THE ATTFIELD TESTIMONIAL.

On Saturday, July 10, in the presence of about 150 friends and old pupils, Dr. John Attfield, F.R.S., was presented with an illuminated autograph album in a polished oak casket, together with a silver tray and silver tea and coffee service, as a mark of esteem and appreciation of his long services in the cause of pharmaceutical education. The presentation took place in a spacious tent on the lawn at Ashlands, Watford, Dr. Attfield's charming residence, and the occasion was signalised by a garden party given by Mrs. Attfield. Soon after five o'clock, Mr. Charles Umney took the chair, and after referring at length to Dr. Attfield's long and successful career, he called upon Mr. John Moss, who sketched in considerable detail the progress of the movement which followed the announcement of the retirement of Dr. Attfield from professorial life. Sir Borradaile Savory also spoke, and the chairman then presented the testimonial, in the name of the subscribers, to Dr. Attfield, who was visibly affected as he expressed his appreciation of the compliment which had been paid him. Mr. MacEwan afterwards moved a vote of thanks to the chairman and secretary of the committee, on behalf of the subscribers, and this was seconded by Dr. Attfield and responded to by Messrs. Umney and Moss. After the presentation, photographs of the company were taken in the tent, and subsequently on the lawn.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Advertisements and orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

Correspondents should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Reprints of articles cannot be supplied unless authors communicate with the Editor before publication of the articles. The right to reproduce all original matter and illustrations published in the Journal is strictly reserved.

Queries addressed to the Editor will be replied to in the Journal as early as possible after receipt, but it is not always possible to publish answers the same week as the queries are received.

LETTERS TO THE EDITOR.

The Manufacture of Morphine.

Sir,—I also have re-read the article on the "Manufacture of Morphine," and see no reason either to change my opinion or to alter or withdraw anything I said in my letter. My statements were not "second-hand stories," but were told to me by people who knew the facts. Mr. Hawaby, my employer, was well acquainted with Mr. Morson, and had known him a good many years; and as for the half-ton batch of opium, I heard Mr. Williams himself make the statement. As to the date of Mr. Morson's commencement in Farringdon Street, I cannot say that I ever knew it, but the time when I first heard the history would be in 1844-5. One can hardly, however, be expected to remember the exact date of a conversation of no very great importance that took place more than half a century ago. I have no intention of entering into a controversy on such a well-known fact, but my object in writing was to claim a little recognition for a man whose name had been omitted from the history of a manufacture he was the first to originate in this country. If Mr. Brown will refer to the *Pharmaceutical Journal*, 3rd series, vol. iv., page 727, I think he will find a fuller statement of this subject.

Cheetham Hill, July 12, 1897. W. Wilkinson.

Reciprocity with the Colonies.

Sir,—The information contained in your report, that the Council at its last meeting had decided to refer the application of the Registrar of the Pharmacy Board of Victoria for the recognition of Victorian certificates, to the Law and Parliamentary Committee for consideration, will afford gratification to all those conversant with the merits of the case and having the welfare of British pharmacy at heart. The Pharmacy Board of Victoria has now been in existence for over twenty years, and was established to carry out the provisions of the Pharmacy Act which became law in 1876. That Act is allowed by all competent authorities to be the most comprehensive and satisfactory of any in the British dominions, including that of Great Britain, the various acts of the other colonies being copies of it. The Act compels everyone entering the calling to pass a Preliminary examination similar to that of Great Britain previous to apprenticeship, and enforces a four years' apprenticeship, the last year to be spent in attendance at lectures and demonstrations on the various subjects included in the curriculum, viz., materia medica, botany, chemistry, practical chemistry, and practical pharmacy, at the College of Pharmacy or some other properly appointed and recognised school. The final examination, which is supervised by a specially appointed government official, is conducted at the College of Pharmacy, Melbourne, by examiners possessing the highest qualifications. The Act also provides ample machinery for conserving the rights of all graduates, as has been already fully explained in your Journal (see p. 444, December 1, 1894), so I need not enter into these details. The effect of this wise legislation

is to be seen in the class of men who embrace the calling and the respect in which they are held in the community. Surely under such conditions Victorian pharmacists have every ground for applying for reciprocity, especially as the British qualification has always been recognised by them, and while there is little chance of a Victorian pharmacist ever desiring to practise pharmacy in this country, there is outside the actual merits of the case a far larger issue at stake, and one that must appeal to all, viz., the bond of unity that should exist throughout our great Empire, which to be thorough, as I believe it eventually will be, must recognise all institutions both civil and political. I think I am in touch with most when I say that in pharmaceutical matters the time has come for reciprocity with colonial examination boards, and that colonial pharmaceutical qualifications should enjoy the same distinction of interchange as colonial legal and medical qualifications do.

London, N. W., July 13. ALFRED REEVE,
Late Member Pharmaceutical Council, Victoria.

On Dessertspoons and some other Measures.

Sir,—My friend Mr. R. Reynolds makes reference to the 'Extra Pharmacopœia' in your issue of last week, page 21, and hopes that the editors may publish the whole table of the approximate value of tea, dessert, and tablespoonfuls as given in the 'French Codex,' "in their next edition." The subject is not so free from difficulty as he thinks. Mr. Reynolds quotes from the 'French Codex' of 1867, in which a "cuillerée ordinaire" is equivalent to 20 grammes, whereas in the later edition of 1884, a "cuillerée ordinaire" is equivalent to 15 grammes, and a "cuillerée à dessert" to 10 grammes. "Une cuillerée à soupe" would be an ordinary tablespoon, and the last Codex would only give this as equal to 255 minims, which is very much less than the ordinary English tablespoon in general use. I do not see, therefore, that we can adopt the French approximations without making "confusion worse confounded." I drew attention to this subject in the Journal of Febuary 19, 1876, p. 679. The modern English tablespoon more often contains six drachms than four drachms.

London, July 12, 1897. W. MARTINDALE.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

GRASS.—*Festuca myurus.* [*Reply to* C. B. M.—102/5.]

PLANT.—*Aconitum variegatum.* [*Reply to* FLORES.—102/14.]

'PHOTOGRAPHIC NEWS.'—The address is 9, Cecil Court, Charing Cross Road, W.C. [*Reply to* S. H.—101/35.]

SEAWEED.—It is *Rhodymenia palmata*, eaten in Scotland under the name of dulse or dilse, and supposed to act as a blood purifier. [*Reply to* SEAWEED.—101/22.]

SALICYLIC ACID IN FOOD.—There is great uncertainty in the matter, as legal decisions which have been given vary greatly, and as matters stand risk is incurred by using the acid as a preservative in any proportion. [*Reply to* K.—101/27.]

PRESCRIPTION QUERY.—With the prescription—Quininæ sulphatis, grs. 10; potass. iodid., grs. 10; aquæ ad., 3 fl. ozs.—you were doing rather more than is justified in adding enough dilute sulphuric acid to produce a clear mixture. Perhaps the prescriber wished to avoid acidity. The proper course would be to add sufficient mucilage to suspend the precipitated iodide of the alkaloid and to use a "shake the bottle" label. The acid solution would not keep very well, and would soon contain an appreciable quantity of free iodine. [*Reply to* FESTINA LENTE.—100/42.]

SHAMROCK.—The specimen sent is from a cultivated species of *Oxalis*, the determination of which will require perfect flowers. The plant sometimes sold in the streets of London as Irish shamrock appears to be *Trifolium minus*, but is not usually in flower on St. Patrick's Day. [*Reply to* J. A. H.—101/9.]

PANCREATISED COD-LIVER OIL.—If no special make is specified in the prescription, pancreatised cod-liver oil may be prepared as follows:—Pancreatin, 1; powdered acacia, 2; distilled water, 4. Mix intimately and then gradually add, to form an emulsion, cod-liver oil, 20; simple syrup, 4; cherry laurel water, or other flavour, ½ part or *q.s.* [*Reply to* J. G.—101/30.]

PRESCRIPTION QUERY.—You are right in stating that the following prescription is "a horrible mess." It is so in more senses than that in which you apply the phrase:—Sodæ salicylat., ℥ij.; syrup. Eastonii, ℥j.; tinct. chloroformi et morphin., ℥ij.; hazelline, B. and W., ℥j.; aq. ad, ℥viii. Still, you can do nothing with it. You must here follow the written prescription. If the patient consents to swallow it that is not your affair. [*Reply to* J. G.—101/30.]

PRESCRIPTION QUERY.—The precipitate you observe in the solution containing zinc chloride, aluminum chloride, and cocaine hydrochloride is probably due to the metallic salts. Both frequently contain insoluble oxychloride, of zinc and of aluminum respectively. If you dissolve the salts separately in water, you will probably find that the resulting solution is milky from this cause, and the cocaine salt does not affect it. Well-prepared zinc chloride is soluble to a clear solution in half its weight of water. This solution on long boiling throws down the basic salt, which is the cause of the turbidity of some commercial specimens. The addition of a very small trace of hydrochloric acid will take this into solution again. Crystalline aluminum chloride should be used. [*Reply to* J. H. T.—101/34.]

SOLUBLE ESSENCE OF LEMON FROM THE OIL.—The simplest way to prepare this will be to obtain some terpeneless oil and make a 10 per cent. solution of this in alcohol, tinting with spirit colour. A far more satisfactory preparation, however, is that made by the addition of terpeneless lemon oil to the soluble essence made from the lemon peel. A passable soluble essence, free from the less soluble limonene may be made by washing, in a separator, one volume of lemon oil with a mixture of three volumes of rectified spirit and one volume of water. Shake them well together and allow to stand until they separate into two clear liquids, then run off the spirituous layer and shake this again with a fresh volume of lemon oil. This method, however, does not give such good results as merely dissolving the terpeneless oil in alcohol. The same applies to oil of limes. [*Reply to* J. H.—101/29.]

INFORMATION WANTED.

CAPSULE MAKING AND FILLING MACHINE.—Particulars wanted of a machine for making and filling capsules. There is said to be an article of French make on the market, something like a tablet-compressing machine, which mechanically cuts out the capsules from a sheet, in two halves, then fills and closes them. [L. O.—101/40.]

OBITUARY.

HARRISON.—On July 1, John Paul Harrison, Chemist and Druggist, Hale, Cheshire. Aged 38.

MOUSLEY.—On July 6, William Mousley, Chemist and Druggist, Redditch. Aged 66.

WILKS.—On July 7, Cuthbert Wilks, Chemist and Druggist, Lincoln. Aged 84.

ROACH.—On July 8, Pope Roach, Pharmaceutical Chemist, St. James's Street, London. Aged 80. Mr. Roach was a very old member of the Pharmaceutical Society, his certificate being dated January, 1843.

DAWSON.—On July 10, John Dawson, Chemist and Druggist, Stourbridge. Aged 84.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Attfield, Cocks, Currie, Edwards, Evans, Ferrall, Godkin, Hogg, Littleboy, Maiden, Martindale, Moore, Nicholson, Norgate, Pearson, Poulson, Ranken, Ransom, Rowell, Senior, Wilkinson, Williams, Yates.

ROYAL COLLEGE OF SURGEONS OF
27 JUL 97

ALKANET ROOT.

BY E. M. HOLMES, F.L.S.

Although alkanet was known as a drug to Theophrastus (vii., 9), Dioscorides (iv., 35, 36), and Pliny (22, 23),* and similar roots have been used in the East for centuries, comparatively little is to be found concerning the drug in modern text-books on materia medica, notwithstanding the fact that there are probably few pharmacists who do not keep the root in stock. The plant is not described either in Pereira's 'Materia Medica' or in 'Pharmacographia,' nor is any figure of the plant to be found in Bentley and Trimen's or other English works on medicinal plants. In Woodville's 'Medicinal Plants' (vol. ii., 3rd ed., plate 106) the drug is referred to *Anchusa tinctoria*, but the figure given is that of *A. officinalis*, L. (*vide Index Kewensis*, i., p. 119), which does not yield a red root. The author, indeed, remarks (*l.c.*, p. 315): "In this climate its roots never acquire the deep colour on which its utility depends." The only good figure that I have seen of *Alkanna tinctoria*, Tausch, the plant which is the chief source of the alkanet root of commerce, is given by Berg in 'Offizin. Gewächse' (plate xxiv.*c*).

I have never seen the plant cultivated in botanic gardens in this country, and for some years I have endeavoured to obtain the plant, which is a native of the south of Europe, through pharmacognosists in Austria, but without result. At the commencement of this year I saw the plant mentioned in the seed list of the Botanic Garden of Montpellier, and on writing for some was informed that the demand for the seeds had been so great that the stock was exhausted. Professor L. Planchon, however, was good enough to send me several roots, so that I have been able to study the habits of the plant. The literature on the subject being so scanty, and the plant itself apparently so rare in cultivation, I have thought that a few observations on the plant under cultivation in this country might prove of interest to some of the readers of this Journal. The roots, which arrived in March, had scarcely any rootlets, and Professor Planchon doubted whether they would grow. But as they had only a few leafy shoots at the crown, and had scarcely started growth, I had some hopes of success. Having learned from him that the plant grows in sandy fields amongst grass fully exposed to the sun, the sandy soil probably containing calcareous matter derived from shells, I planted some in full exposure to sunlight, and others in a position where they would only get the morning sun and be somewhat sheltered from cold winds, two others being placed in pots in a cool greenhouse. The soil used was a mixture of grassy loam and "hassocks,"* broken down into sandy grit by frost. The two specimens fully exposed to the sun, although covered during windy days and frosty nights, succumbed by reason of the dryness of the soil. Those exposed only to the morning sun and sheltered by stones and herbage from cold winds progressed slowly, but ultimately flowered freely, vigorous growth occurring only as the air became warmer. Those in the greenhouse quickly made a start and flowered before those in the open ground had made flowering shoots. The crown of the root sends up several slender leafy shoots, which are at first prostrate or decumbent, but become gradually ascending, and when elongated and in flower they are nearly erect from a decumbent base. Besides these there are at the same time a few shoots which do not develop flowers.

The plants evidently require a warmer atmosphere than is usual in an English spring and will not thrive in the open except in sheltered warm situations. The flowers are about the size of those of *Anchusa sempervirens*, but of a more beautiful, ultramarine blue colour. They ha no scales in the throat of the corolla, differing in this particular from the genus *Anchusa*, but the tube of the corolla has on the external surface two rows of indentations which cause a slight bulging of the corolla between the brown anthers. These have very short filaments, three of the anthers being situated above the upper row of indentations, and two above the lower row, and the throat of the corolla is lined with minute glandular hairs. The stigma in the flowers I have examined is on a level with the two lower stamens. This may possibly be an arrangement to provide self-fertilisation in case the flowers are not cross-fertilised, or it may be a special adaptation to direct a particular insect to the honey which lines the corolla tube. The leaves are of a slightly greyish-green tint and are covered with hispid hairs and very short stalked glands, the latter being visible only under a good lens. The accompanying figure represents the plant of one-third the natural size as grown in a pot in this country, though possibly smaller than the wild plant as occurring in the warmer climate of Montpellier.

ALKANNA TINCTORIA, TAUSCH.

1. Whole plant. About one-third natural size. 2. Corolla, magnified, showing relation of stamens to indentations in throat of corolla.

In 'Les Drogues Simples' MM. Planchon and Collin state that several other Boraginaceous plants have red roots and can be substituted for alkanet, such as *Onosma echioides*, L. (S. Europe), *Arnebia tinctoria*, Vahl. (Egypt and Arabia). According to 'Pharmacographia Indica,' ii., p. 524, four kinds of alkanet are described by Mohammedan writers, Harjuya being the Persian and Ratanjot the Indian name for the drug. It is also stated that the roots of *Onosma hookeri*, C. B. Clarke, and of a species of *Arnebia*

* 'Pharmacographia Indica,' vol. ii., p. 524.

* "Hassocks" is a local name for the soft layers of stone found between layers of Kentish ragstone in the greensand formation, but which, unlike the ragstone, split up and become pulverised by the action of frost, forming excellent soil for rockeries.

from Afghanistan are known as Rang-i-badshah (*i.e.*, royal dye) and Ratanjot, and that a third kind is imported from China, and consists of long woody twisted roots like the alkanet of Europe.

In the Hanbury collection of materia medica there is a specimen of a root resembling alkanet in colour, but having a thin laminated papyraceous bark like the tunic of a bulb. It was received from Dr. Stocks, and has the native name of Maharunga, and is referred to *Lithospermum euchroma*, Royle, which is identified in the Kew Index as *Macrotomia perennis*, Benth.

Specimens exist in the Herbarium of the Society of *Macrotomia benthami*, D.C., and of *Onosma echioides*, Linn., both of which have roots of a deep purple colour, and a laminated bark. In the former the laminæ are faintly reticulated, and in the latter strongly wrinkled transversely. Both would at once be recognised in commerce as alkanet but different to the European drug.

In Watts' 'Dictionary of the Economic Products of India' (i., p. 318), *Arnebia thibetana*, Kurz, is stated on Dr. J. E. T. Aitchison's authority to have a scaly root bark, and to be used as dye. The roots of *Onosma emodi*, Wall., and *O. hookeri*, Clarke, are also said to yield a red dye (*l.c.*, p. 488). Whether any of these are superior in tinctorial power to European alkanet or no might perhaps be worthy of inquiry. *O. hookeri* is said to yield the best Lepcha red dye ('Flora Brit. India,' iv., 178). The root is used as a red dye for wool, a vegetable acid, such as that of apricots, being employed for the purpose of giving the desired tint. An alkanet root from Japan is referred to *Lithospermum erythrorhizon*. The plants of which the roots are known to be used like alkanet are therefore as follow: *Alkanna tinctoria*, Tausch; *Arnebia thibetana*, Kurz; *Arnebia tinctoria*, Vahl.; *Lithospermum erythrorhizon*; *Macrotomia benthami*, D. C.; *Macrotomia perennis*, Benth.; *Onosma emodi*, Wall.; and *Onosma hookeri*, Clarke.

THE ACTIVE PRINCIPLE OF DIGITALIS.

BY C. C. KELLER.*

The unsatisfactory results obtained with the digitalin prepared according to the method described by Kiliani† have again directed attention to digitoxin, which is, according to Schmiedeberg, the most potent constituent of digitalis leaves, and forms the chief part of Nativelle's digitalin. On that account C. C. Keller has devised a method of determining the efficacy of digitalis preparations by ascertaining the amount of digitoxin present in them.

The chief characters of digitoxin which are of importance in this connection are its free insolubility in alcohol and chloroform, slight solubility in ether, and its solubility in petroleum spirit. It is precipitated from solutions in water or dilute alcohol by tannin but not by basic lead acetate. From acid or alkaline water solutions it can be extracted by shaking with chloroform. Although pure digitoxin is almost insoluble in water, it is dissolved to some extent in the presence of extractive materials and the other glucosides of digitalis. Digitonin and digitalin are almost insoluble in chloroform.

To ascertain the amount of digitoxin in digitalis leaves they must first be extracted with 70 per cent. alcohol, preferably by percolation, which must be continued until the residue from 3 or 4 cubic centimetres, redissolved in water with two drops of dilute hydrochloric acid, gives after filtration no appreciable turbidity on the addition of tannin.

The residue of the extract from which alcohol has been removed by evaporation is mixed with water, washed into a beaker of about 250 C.c. capacity, diluted to the volume of 222 C.c., and mixed with basic lead acetate. The very voluminous precipitate is separated by filtration, and excess of lead removed from the filtrate by adding sodium sulphate. The clear liquid is then mixed with 2 C.c. ammonia solution (10 per cent.), and shaken four or five times with about 30 C.c. of chloroform. The clear chloroform solution evaporated gives the digitoxin mixed with some fat and other substances. For purification the residue is dissolved in 3 C.c. chloroform, 7 C.c. ether, and 50 C.c. petroleum spirit added. The digitoxin then separates in white flocks and, on shaking, the liquid becomes quite clear. For weighing the digitoxin it may be dissolved off the filter with hot alcohol and the solution evaporated in a suitable vessel, or the petroleum spirit may be decanted off and the digitoxin weighed in the state of powder.

Digitoxin thus obtained dissolves in strong hydrochloric acid with a yellowish colour, and the solution when warmed becomes greenish, then greenish-brown; on adding water the colour becomes greenish-yellow, and after some time flocks are separated.

A solution of digitoxin in glacial acetic acid containing ferric chloride gives Keller's reaction when floated on strong sulphuric acid. At the line of contact a dark zone appears, and after a few minutes the acetic acid liquor becomes dark blue. This reaction takes place with one-tenth of a milligramme of digitoxin in one C.c. of acetic acid.

The complete separation of digitalin is difficult, as it is sufficiently soluble in chloroform for traces to be taken up, and to that circumstance must be ascribed the red coloration of digitoxin when mixed with strong sulphuric acid.

The watery liquid from which digitoxin has been extracted by shaking with chloroform has a bitter taste and contains digitonin, which can be separated by precipitation with tannin, but as it does not possess the peculiar efficacy of digitalis, its separation is of little importance. Keller was unable to obtain any substance corresponding to the description of digitalein, and he considers it is merely digitonin mixed with traces of digitoxin and digitalin.

After separating digitonin tannate, the filtered liquid still contains digitalin.

The general conclusion arrived at by Keller is that digitalis leaves contain digitoxin, digitonin and digitalin identical with the products from digitalis seeds, but in somewhat different proportions, the amount of digitoxin in the seeds being much smaller than that in good leaves, but it varies very much in different samples of leaves, or from 0·26 to 0·62 per cent. A still greater variation was found in the pharmaceutical preparations of digitalis, and Keller strongly recommends the adoption of means for ascertaining the medicinal value of the drug on the basis of the amount of digitoxin it contains.

* *Berichte Deutsch. Pharm. Gesellsch.*, vii., 125.
† See *Pharm. Journ.*, lv., 29.

ORGANIC COLOURING MATTERS.

In Dr. Schunck's presidential address to the Society of Chemical Industry he gave a very interesting *résumé* of the chemical history of several colouring matters occurring naturally. Among these chlorophyll, or the substance to which the green colour of the leaves and other parts of plants is due, has an especial importance in several respects. There is little doubt that chlorophyll is in some way not yet understood concerned in some of the chief functions of vegetation by which the conversion of carbonic acid, ammonia, and water derived from the atmosphere and soil into organised material is effected. Under the influence of air and light chlorophyll is an extremely fugitive substance; but in apparent inconsistency with the alteration thus caused, it yields under the influence of what are considered to be relatively strong chemical agents, such as mineral acids or alkaline solutions,

products of remarkable stability. With strong acids chlorophyll undergoes complete alteration, yielding various definite products, the most important of which is known by the name of phyllocyanin. In alcoholic solution phyllocyanin resists the action of air and direct sunlight, and thus differs from chlorophyll, which would soon lose its colour. Phyllocyanin also combines with metallic oxides, yielding compounds of a brilliant green colour which are remarkably stable.

On subjecting the product of the action of strong hydrochloric acid upon chlorophyll to the further action of an alkali, a substance is obtained named phylloporphyrin, which crystallises in lustrous red needles and possesses very remarkable properties. Hæmoglobin, the colouring material of blood, treated in the same manner yields an analogous product known as hæmatoporphyrin. Both substances are remarkably similar; they are of a red colour, act the part of weak bases towards strong acids, give off fumes of pyrrol when heated, and their solutions in ether show absorption spectra of seven bands, the intensity and relative position of which are almost the same in both cases, the only difference being that the bands of hæmatoporphyrin are slightly nearer to the red end of the spectrum. In composition these two substances are closely related to phylloporphyrin, the composition of which is expressed by the formula $C_{16}H_{18}N_2O$, while that of hæmatoporphyrin is, according to Nencki, represented by the formula $C_{16}H_{18}N_2O_3$.

The close approximation between a derivative of chlorophyll and an analogous derivative of hæmoglobulin, a substance that is as important in the animal economy as chlorophyll is in the vegetable economy, offers an enticing field for speculation as to the parts respectively played by those natural products. But though the connection between them was discovered in Dr. Schunck's laboratory by his former collaborator, Dr. Marchlewski, he did not enter into the matter further than to mention the opinion of Professor Nencki, that it may eventually serve to throw some light on the process of evolution that the chemical constitution of organised structures has undergone in former ages, the development of the material of which those structures consisted having gone on *pari passu* with that of their form and structure.

Another case of the formation of colouring substances in plants is that of indigo, and many years ago Dr. Schunck was led by experimenting on this subject to the conclusion that the leaves and other organs of indigoferous plants contain a glucoside which, when exposed to the action of certain reagents, splits up mainly into indigo and a kind of sugar. To that substance he gave the name of *Indican*, and he succeeded in approximately determining its composition so far as to account for its decomposition under the influence of acids. Indican is remarkable in apparently possessing, like chlorophyll, some of the susceptibility belonging to its vital organic origin. It is very readily decomposed, but with very different results, according to the agent by which alteration is caused. For instance, a water solution of indican when boiled and then mixed with an acid yields indigo red instead of indigo blue, but when the solution is heated with alkali before the addition of acid, brown resinous products are formed bearing no resemblance to, or connection with, indigo. In every case, however, the products, unlike the parent substance from which they are derived, are remarkably stable in character, and in that respect they resemble the products obtainable from chlorophyll in the same way.

Dr. Schunck does not attach much importance to the opinion that the formation of indigo in the watery extract of indigoferous plants is the result of fermentation, caused by a peculiar bacterium. He is more disposed to regard this view as an instance of the prevailing fashion to attribute everything that we cannot explain to the influence of bacteria, just as in former days electricity was made serviceable in a similar manner. In reference to the production of indigo from woad, which has been described by Messrs. Darwin and Meldola* as consisting in a "zymolitic decomposition of glucosides," Dr. Schunck regards their explanation as a mere hypothesis, and in opposition to it he quotes the experiments carried out by Mr. Bridges-Lee† at one of the Indian manufactories of indigo, showing that he has been unable to detect any special distinctive fermentation to which the formation of indigo can be ascribed.

In regard to the substitution of the artificially prepared indigo blue discovered by Baeyer and others for the natural product, Dr. Schunck does not consider the hopes entertained are likely to be realised, partly because natural indigo, considering the large amount of colouring material it contains, is one of the cheapest of dye stuffs, partly also because its artificial production would require a very cheap material to begin with and a simple inexpensive process of manufacture, and partly because improvements in the treatment of the indigo plant might lead to the production of a much greater yield of indigo in which the relative proportion of indirubin to indigo blue would be augmented to such an extent as to suit the requirements of some dyers. But Dr. Schunck's sympathies in this respect evidently lead him to take a rather more conservative view of the matter than might be the case with an enthusiast for chemical progress. He doubts whether the impossibility of replacing natural indigo by an artificial product is to be regarded from a moral and æsthetic point of view as altogether a misfortune. In the same spirit he speaks of the use of artificial alizarine as a substitute for that obtained from madder as being destitute of some features of interest presented by the older method of working.

Concerning the very extensive subject of artificial colouring matters and their application in the arts of dyeing and calico printing, Dr. Schunck's remarks were confined to a statement of the impressions formed by a comparison of modern methods with those employed when he was practically conversant with those arts. On the chemical side he found that these branches of industry have been entirely revolutionised, almost everything was new to him; the chromium and titanium salts, tannin and tartar emetic, now used as mordants, were unknown in his day. Among a host of new colouring materials, mostly artificial products, the only old acquaintances he met with were the indigo vat, unaltered except as to details, and a process of indigo printing invented in his day, though not much used then. In the production of Turkey red and other alizarine colours madder has been entirely superseded by the artificial product and flavopurpurin, which was first prepared in Dr. Schunck's laboratory; but artificial alizarine has now to face severe competition from another artificial product—paranitraniline red. Nevertheless, Dr. Schunck considers that something may still be done in the chemistry of natural colouring materials, and in support of that opinion he refers to the investigations of curcumin—the colour material of turmeric—and of safflower, by L. G. Radcliffe, of the Manchester Technical School.

Incidentally, Dr. Schunck enters a protest against the chemical theory of dyeing, as to which much has been written lately, and he upholds the view that the action is not chemical, but essentially physical or mechanical, the fixation of colour on fabrics being due to a form of surface attraction.

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* *Nature*, November 12.

† 'On Indigo Manufacture,' by J. Bridges-Lee, M.A. Calcutta: Thacker, Spink, and Co.

SIR HANS SLOANE, BART., M.D.

[1660–1753.]

Of all the English physicians of the eighteenth century Sir Hans Sloane is probably the most distinguished. But although he was thoroughly versed in the best medical science of his time and conducted a most extensive practice in the highest circles with the greatest success, he owed his fame neither to his skill as a physician nor to any contribution made by him to the literature of medicine. Distinctions of these kinds, in combination with his long and fruitful devotion to the cultivation of natural science, so impressed his contemporaries indeed as to procure for him the twofold honour —unprecedented before or since—of being at one and the same time President of the College of Physicians and of the Royal Society, but it is as the virtual founder of the British Museum that he is chiefly remembered by his countrymen. At the same time the interest attaching to his career, professional and other, and his character as a man, claim for him a foremost place in the medical biography of England during the eighteenth century.

Hans Sloane was by birth an Ulster man, and was born at Killeleagh, County Down, on April 16, 1660. His father, a Scotchman settled in Ireland, was, according to one account, receiver-general of the estates of the Lord Claneboy, afterwards Earl of Clanricarde. According to another he was receiver-general of taxes for County Down, and after the Restoration a commissioner of array. His mother was the daughter of Dr. Hickes, the non-juror and eminent Anglo-Saxon scholar. Hans was the youngest of seven sons, the eldest of whom went to the English bar and became M.P. for Thetford. He was a delicate boy, and preferred to the sports of his companions, rambles in the fields and woods in search of wild flowers, and to watch birds and beasts. In early youth he had a long and serious malady, which lasted three years. One known effect of this calamity was to make him then and ever after almost a total abstainer from alcoholic drinks. Another effect may be surmised to have been that subjected, doubtless, to lengthened medical treatment of the imperfect kind of those days, he was fortified in the "strong natural inclination" of which he himself speaks to study medicine and follow it as a profession. For success in this he added personal advantages to zeal in the acquisition of medical knowledge. He was tall, graceful, sprightly, and social.

He came to London in his eighteenth year, and attended lectures on physics and anatomy. His first choice of a domicile was significant of his zeal for knowledge. He took up his abode with Staphorst, a German, who had studied chemistry under Stahl, and from whom Hans thus could learn whatever was known of that science. Staphorst's house, moreover, adjoined Apothecaries' Hall, then, as now, in Water Lane, Blackfriars, and the zealous young student had the run of an establishment in which he made himself familiar with the drugs then in vogue, their uses, and the methods of compounding them. Many, perhaps most of them, were derived from the vegetable world, and of the plants which yielded them there was a unique collection in the "Physic Garden," as it was then called, of the Apothecaries' Company. Hans was a frequent visitor to it, both as a student of medicine and a lover of botany. In those days plants which we now cultivate for their beauty exclusively were laid under contribution for medical purposes. Preparations of some among the prettiest but now practically least useful of our gardens, the lily and the cowslip, for instance, occur in the prescriptions of Sloane's contemporaries. "Simples," at present abandoned for the most part to the humble "herbalist" of rural districts, were in constant and general use by the most fashionable physicians. Here, from the 'Pharmacopœia Londinensis' of 1677, the year in which Hans Sloane came to London, is the formula for an unguent of very varied composition. To produce the *unguentum nervinum*, the flower garden and the kitchen garden, the herbs of the field, the shrubs and trees of the woodland, were pressed into the service of the physician.

℞. Cowslip (leaf and flower), Sage, Ground Pine, Rosemary, Lavender, Laurel (leaf and berry), Chamomile, Rue, Small Eye, Mellilot (leaf and flower), Wormwood (āā one handful), Mint, Betony, Pennyroyal, Parsley, Lesser Centaury, St. John's Wort (āā one half-handful), Sheep's Foot (or neat's foot) Oil, lb. 5; Mutton (or Beef) Suet, lb. ij.; Oleum de Spica, ʒ. Mash and boil. *Fiat unguentum secundum artem.*

As the young Hans Sloane investigated the growth of the Apothecaries' Garden, which furnished them with so many of their drugs, he little thought how much it was to owe to his munificence when he had become a famous and a wealthy physician. But the interesting story of that garden and of Sloane's connection with it and benefactions to it has been already told in the second of our articles on "The Botanic Gardens of the World," which appeared in the *Pharmaceutical Journal* for October 17, 1896. To what was said there may, however, be added a fact, the knowledge of which is due to comparatively recent research in the Record Office. It is that in the reign of James I. the College of Physicians petitioned the Crown for a site on which to establish a similar garden, and that several noblemen had promised to contribute largely to it. But nothing came of the project, and it was left for the Apothecaries' Company to succeed where the College of Physicians had failed.

The diligent Hans spent six studious years in London. There, with his usual aptitude for making friends, aided of course by his scientific accomplishments and the reputation which it procured him, he had already, although so young, formed an intimacy with two distinguished men, Robert Boyle, the chemist and physicist ("father of chemistry and brother to the Earl of Cork"), and the excellent John Ray, the botanist and zoologist, who is still remembered by his 'Wisdom of God Manifested in Creation' (from which sprang Paley's 'Natural Theology'), and who has given his name to the Ray Society. Ray remained until death Sloane's affectionate friend and correspondent. Having learned all that London could teach him, Hans migrated in pursuit of knowledge, studying botany with its great French cultivator Tournefort at Paris, taking his M.D. degree at the University of Orange (1683), sojourning studiously at Montpellier, "herborising" sedulously in its vicinity, and returning to England in 1684 with many new plants for his friend Ray to classify and describe.

He now settled in London as a physician. There is a story that he got first into practice by happening to play at whist with a lady of rank, who was visited by an ague fit, which he cured, and thus acquired a professional celebrity and fashionable connection. It is much more certain that his knowledge and zeal procured him the friendship of the illustrious Sydenham (who has been called the English Hippocrates), then at the head of the profession, and who, verging on his latter end, introduced Sloane to his patients. "Observation" not theory was Sydenham's watchword in medicine, and he found in Sloane a zealous adherent to that principle. It has even been said that Sydenham took Sloane into his house as an inmate, a statement repeated by Dr. Munk in his biographical work 'The Roll of the College of Physicians.' But we have found among the Sloane MSS. in the British Museum letters directed to him "near Dr. Sydenham's house in Pall Mall," which would make him a neighbour not a guest of the great physician. Sydenham's patronage was sufficient, without the aid of ague-stricken ladies at the whist table, to introduce Sloane to patients of rank and position. His medical skill and agreeable manners did the rest. His acquisitions of knowledge on the Continent procured him the Fellowship of the Royal Society in the year after his return to England. In 1685 he ran the eminent astronomer Halley close as a candidate for the Assistant-Secretaryship of that Society. In 1687 he became a Fellow of the Royal College of Physicians.

Some even of Sloane's admiring biographers speak of him as a lover of money for its own sake, and charge him with actual parsimony. But no proofs are given in support of either of these allegations, and all the evidence furnished by what we know of his career is in quite an opposite direction. One illustration of his preference of knowledge to pelf is suggested at the point in his biography which has been reached; others, more striking, will be given further on. In 1687, the year in which Sloane was admitted a Fellow of the College of Physicians, the second Duke of Albemarle (son and successor of the Monk who brought about the Restoration) was appointed Governor-General of Jamaica and its dependencies. The Duke's physician, Dr. Barwick, asked Sloane to recommend some one to accompany His Grace in that capacity. Jamaica had no charms for Barwick himself and he did not fancy that a rising physician like Sloane, who had been almost a partner of the great Sydenham, would care to go on that distant errand with its uncertain future. But Sloane's scientific enthusiasm was keenly stimulated by the prospect of contemplating the strange flora and fauna of a tropical region, of which he knew only enough from the imperfect accounts in books to make him wish to know more. He offered himself for the position, and was at once, naturally, accepted. In days when even the apothecary of Dr. Radcliffe was making £1000 a year, Sloane's terms were moderate, £600 per annum and a preliminary £300 to equip himself with an outfit, which included medicines and scientific apparatus of several kinds.

With the Duke and Duchess of Albemarle, Sloane reached Jamaica in the last month of 1687. In spite of his physician's

sedulous care the Duke died not long after his arrival, and in the suite of the widowed Duchess, Sloane re-embarked for England in the spring of 1689. Sloane had been the busiest of men during the eventful year which saw William III. substituted for James II. on the throne of England, and indeed on the voyage out he had been actively making natural history collections at Madeira and at several West India islands visited before Jamaica was reached. Jamaica itself was thoroughly explored by him, its flora and fauna, its geology, minerals and meteorology were examined and studied. Numbers of new and curious objects in the organic and inorganic worlds were collected, and care taken for their preservation during the return voyage. But with all this, Sloane was assiduous in his attention to his duties as physician to the Duke, the Duchess, and their suite. Not only so, he was constantly called on to prescribe for all sorts and conditions of men, women, and children in Jamaica, from the families of the wealthiest planters to those of the poorest negroes, in the latter case without fee or reward.

For some time after his return to England, Sloane remained as physician in the household of the Duchess of Albemarle, and it is curious to see letters addressed to him "at Albemarle House, Clerkenwell," a region long since deserted by Dukes and Duchesses. Afterwards he lived for many years "at the corner of Southampton Street, Bloomsbury Square." It was here doubtless that the collections which he had brought from Jamaica, having been arranged by him, they were inspected by John Evelyn, who writes in his diary under date 1691, April 16 :—

> "I went to see Dr. Sloane's curiosities, being an unusual collection of the native productions of Jamaica, consisting of plants, fruits, corals, minerals, stones, earths, shells, animals, insects, etc , collected with great judgment, several folios of dried plants, and one of which has about eighty several sorts of ferns, and another of grasses, the Jamaica pepper in branch, leaves, flowers, and fruit, etc. This collection, with his journal and other philosophical and natural discoveries and observations, is indeed very copious and extraordinary, sufficient to furnish a history of that island."

The fame of the Jamaica collection established that of the collector as a cultivator of science, and with a steadily growing reputation for medical skill after he left the household of the Duchess of Albemarle—for no hobby ever lessened Sloane's diligence and care in the practice of his profession—year after year scientific and professional distinctions were showered on him. In 1693 he gained the position for which years before he had been an unsuccessful competitor with Halley, and was elected Secretary to the Royal Society. In 1694 he was appointed Physician to Chelsea Hospital. The man who has been charged with parsimony made a noble use of the emoluments of his office. He devoted them for the seven and thirty years during which he held it exclusively to benefit the inmates of the Hospital, and was only prevented at the outset from refusing any salary by the thought that it might be made a precedent to the injury of successors not so prosperous as himself. In 1695 he printed a bare catalogue of his Jamaica plants, and married the wealthy daughter of an opulent London alderman. Probably it was then that he invested a large portion of his fortune in importing the bark which yields our invaluable quinine, and which at that time was in growing demand, but from an inadequate supply was a very expensive drug. This was doubtless a most profitable speculation. Sloane is said to have extended the medical application of the bark itself. According to one of his biographers "he was the first to administer bark in mortifications, having cured Dr. Tenison, Archbishop of Canterbury, of a mortification in his toe" by administering bark. Sloane, it will be seen hereafter, had among his patients personages of even more exalted rank than that of the Primate of all England.

He threw his usual energy into the discharge of his duties as Secretary of the Royal Society, an office which greatly increased the number, already considerable, of his correspondents among the scientific and medical notabilities of the Continent, to say nothing of his countrymen. This aided him in one of the most conspicuous and useful successes which he achieved early in his secretarial career. It is to Sloane that the Royal Society owes the resumption of the issue of its 'Philosophical Transactions,' the publication of which, when he became Secretary, had ceased for years. The resumed issue was edited by him, and he contributed a good many papers to it, and enlisted among its contributors foreign correspondents of note. As an editor he was reproached with printing too many papers on subjects connected with his own profession. The reproach was not true as regarded his own contributions, for only a small minority of them were on medical themes. The 'Transactions,' however, did—as they had done from the very first, long before Sloane edited them—contain, with much that was valuable, a good deal of solemn trifling. It raises a smile to see Sloane himself figuring as the contributor of a serious paper consisting of "Remarks on a vulgar opinion that the swallowing of stones assists digestion ; occasioned by the case of a man who had swallowed 200 pebbles." But in those days Sir Thomas Browne would have found, in current medical beliefs, ample material for another book on "vulgar errors" which, in our enlightened days, seem astounding. Even as it was, such papers as that mentioned gave occasion to scoffers, just as Butler had, in 'Hudibras,' ridiculed the Society's proceedings at its outset. In 1700 appeared a pamphlet, 'The Transactioneer,' a prose satire in the form of dialogue, and rather smartly written, on some of the trivialities to be found in the 'Transactions.' The satire, an anonymous one, was written by Dr. King, of the 'Anecdotes,' but its authorship was attributed by Sloane and others to a rather notable member of the Council of the Royal Society, John Woodward. He was a man of considerable scientific eminence in his day, less as Gresham Professor of Physic than as a geologist. As the author of 'The Natural History of the Earth,' and of a 'Natural History of Fossils,' he is regarded as one of the fathers of English geology. His name lives as that of the founder of the Woodward Professorship of Geology in the University of Cambridge, to which he bequeathed his geological collections of fossils and so forth. But his temper seems to have been as violent as that of Sloane was serene. For Sloane he cherished a great dislike, while Sloane looked on him with no friendly eye as the author of 'The Transactioneer.' Woodward was the cause of the only episode in Sloane's career, one generally distinguished by the absence from it of controversy, in which he had a serious and open quarrel with a fellow-man of science.

Woodward formally denied that he was the author of the 'Transactioneer,' but he did not mend matters when he intimated that there had been considerable reason for the caustic animadversions of the satirical pamphleteer. Things had gone on from bad to worse at the meetings of the Council, when during the reading of a paper by Sloane, Woodward abruptly charged him with entire ignorance of anatomy, and on another occasion he interrupted some remark of Sloane's by exclaiming, "Speak sense or English, and we shall understand you." It became evident that either Sloane must resign the secretaryship or Woodward leave the Society. At last came a motion for Woodward's expulsion. The illustrious Sir Isaac Newton, as President of the Royal Society, was in the chair, and much depended on his verdict. Newton and Sloane were friends ; we have glimpses of them communing socially at the Grecian in Devereux Court, Strand. But independently of private friendship, Woodward was clearly in the wrong. One of Woodward's allies laid stress on Woodward's achievements in natural philosophy. Sir Isaac characteristically replied, "For a seat on the Council a man should be a moral philosopher as well as a natural one," and Woodward was expelled. His medical skill seems to have been very indifferent. According to his friend and neighbour, Dr. Daniel Turner, Woodward had only one kind of treatment for all maladies, "vomits and cathartics administered alternately *de die in diem* till the sick man is cured, or being quite spent is forced to give over." Well might Dr. Turner express his wonder that "'the softer sex' could put up with such a treatment for six months or two months successively." It was perilous for the strongest man. The eccentricity of Woodward's medical treatment has been commemorated by Pope :—

> "As one of Woodward's patients, sick and sore,
> I speake : I nauseate, yet he thrusts in more."

But this English Sangrado of "vomits and cathartics" was Gresham Professor of Physic.

In 1701 the University of Oxford made Sloane one of its Doctors of Physic. At that time his collections consisted chiefly of natural products, organic and inorganic, and of scientific and other books. But in 1702 he acquired another of a much more varied kind, forming a whole which, furnished with continual additions up to the end of his life, was destined to be the nucleus of the British Museum. This was the museum, accumulated during generations, of his friend Courten, containing, beside natural products and pictorial representations of them, a costly collection of coins and medals of many ages and nations. Evelyn valued the contents of Courten's Museum at £8000, equivalent, perhaps, to a sum thrice as large at the present day. This collection became the property of Sloane, whom Courten made his executor and residuary legatee.

He had to spend a considerable sum in paying legacies left by Courten, and the payment of which was a condition of the bequest to himself.

In 1707 appeared the first volume of Sloane's one book, a massive folio, 'A Voyage to the Island of Madera (*sic*), Nievis (*sic*), St. Christopher, and Jamaica, with the Natural History of the Herbs and Trees, Four-footed Beasts, Fishes, Birds, Insects, Reptiles, etc., in the last of these Islands.' It was copiously illustrated with copper plates, which represented natural products, and were, as the title-page informed the reader, "as big as the life." These illustrations and their descriptive letter-press formed the staple contents of the volume, but to it was prefixed a very lengthy and elaborate introduction, comprising an account historical, topographical, meteorological of the islands, with remarks on its natural history and on the manners and customs of its inhabitants, white and coloured. Respecting these last there is much curious matter, still interesting, throwing light on colonial life and industry in Jamaica during the last decade of the seventeenth century and on the condition of the negro-slave population, who were occasionally, Sloane reports, treated with barbarous cruelty by their owners. But, from our point of view, by far the most valuable portion of this huge introduction is the medical section. Sloane, as already mentioned, was extensively consulted professionally by all classes of the population of Jamaica.

The records of his experiences as a Jamaican physician extend over many pages, the contents of which have been left unnoticed by his biographer, but which will be extremely instructive to the future historian of medicine in England as showing the details of the practice of one of the first of English physicians three centuries ago. With a few local exceptions, the maladies which Sloane had to treat in Jamaica were much the same as those with which his London practice had familiarised him, and with still fewer exceptions his treatment of them was also the same. Nothing can be more minute and business-like than his record of his Jamaican practice, extending over some hundreds of cases. The name, age, occupation of each patient, high or humble, old or young, male or female, are followed by a detailed account of the symptoms of the disease or ailment, of the remedies applied, and of the result of their application. With many that are obsolete, some of the medicines administered are still used in one form or other, among them bark, mercury, laudanum, and a few more. The treatment would often seem eccentric now; bleeding and blistering are seldom absent long from Sloane's account of his therapeutics. As a slight specimen of the curious matter with which Sloane's reports abound, let us quote the case of one of his patients, a master mariner: "Captain Nowel, aged about 40, cholerick, drank very hard, fancied himself ill of a cholera morbus." Sloane administered laudanum, but it was "of no avail." The captain "went on drinking drams of a morning" until he reached a stage the finale of which was of the oddest kind. "He reduced by these means his stomach to a weakness that at last he could keep nothing therein but the milk of a negro woman he sucked!"

(To be continued.)

OUR MOTHER TONGUE *

BY F. A. UPSHER SMITH.

(Concluded from page 8.)

MISTAKES THAT ARE MADE.

Occasionally mistakes are made, even by eminent men. What man would be so destitute of proper judgment as to admit that "girl" comes from "*garrula*," literally "talkative"; even though the argument is supported by the fact that "silence" is the only masculine noun in "ence" in the French language. Surely the reputation for gallantry so long held by the French must receive a severe shock when they tacitly admit that "silence" is the only thing a woman cannot keep.

With your permission I will illustrate this point by reference to one of Paul de la Croix's novels. Describing the escapades of a young lady who was petted and spoiled by her aunt, he says that on each return home Mdlle. —— was greeted with "*une verte mercuriale.*" Now to a pharmacist this phrase might convey the impression that a dose of some mercurial medicine was administered to the fair offender, did he not know the true meaning of the expression. I may remind you that the French Parliament was inaugurated about the fourteenth century, and just as at the opening of the Assizes our judges were accustomed to address the Court, denouncing every kind of crime and vice, so on the occasion of the opening of the French Parliament the President would deliver a similar homily called "*une verte mercuriale*," "*verte*" because it was vigorous, forcible; and "*mercuriale*," because the assembly was always convened on a Wednesday.

Now and then a derivation shows signs of adaptation, as when "*mors*, death," is derived from "*amarus*," because death is bitter. Sound alone is not sufficient in determining the parentage of a word; we must not trust to appearances, but must take letters as our guide. Leibnitz said that "many etymologies are true which at the first blush seem improbable," and it may be added many seem probable which are not true. Swift, ridiculing the random way adopted by the etymologists of his day, suggested "ostler" as a possible contraction from "oat stealer."

THE CORRECT USE OF SYNONYMS.

We now come to two interesting classes of words, synonyms and words which are similarly spelt but derived from two sources, and with quite distinct meanings. Of the latter class "mosaic" is an example. The word "mosaic," as applied to work, *opus musivum* = graceful work, *i.e.*, connected with the Muses. But the "Mosaic law" is so called after the inspired law-giver of Israel. Among other words with this peculiarity, "league," "post," and "riddle" may be mentioned. Synonyms, I may remind you, are words very much alike in the main, but with some slight differences of meaning. They frequently result from the fusion of tribes to form a nation.

The English language owes much of its richness to a somewhat similar process. Thus we have the words "trick," "device," "finesse," artifice," and "stratagem," all meaning much about the same thing. Now, "trick" is Saxon, "*derise*" is Italian, "*finesse*" is French, "*artificium*" is Latin, and "*stratagema*" Greek. In the use of synonyms great care should be taken, because, in science especially, there cannot be too much exactitude in the choice of words. The two words "vengeance" and "revenge" are often confused. The former is ascribed to God and to men acting as the executors of his righteous doom, while the motive power of "revenge" is found in men's sinful passions.

Among synonyms we have many pairs derived from Anglo-Saxon and Latin, *e.g.*, shepherd and pastor, feeling and sentiment, handbook and manual, anger and ire, kingdom and realm, love and charity, freedom and liberty. Among verbs we find a choice between soften and mollify, whiten and blanch, cloke and palliate. Adjectives give us shady and umbrageous, unreadable and illegible, unfriendly and inimical, almighty and omnipotent. In all these differences may be observed. A "shepherd" is a keeper of sheep, but "pastor" is exclusively applied to ministers of religion. The adjective "pastoral" is applied to both. "Illegible" refers to the handwriting, and "unreadable" to the subject matter; thus, a man may write an unreadable book in an illegible hand. To "blanch" implies abstraction of colour from anything, as when the cheeks are blanched with fear; but we "whiten" anything by laying on a white substance, as in whitewashing a ceiling. We read of "whited sepulchres," but "blanched sepulchres" would not convey the same idea to our minds. I think where a choice is open we, as Britons, should chose an Anglo-Saxon word wherever possible; they have the advantage of being thoroughly expressive and to the point.

Again, we have the two words genuine and authentic; a "genuine" work is one written by the author whose name it bears; an "authentic" work is one which relates truthfully the matters of which it treats. Hume's 'History of England' is genuine, but I suppose can scarcely be called authentic. And in sacred writings the Gospel of St. Luke is said to be both genuine and authentic.

The words "invention" and "discovery" are often loosely used. We speak of the motor car as an "invention," and call Newton's law of gravitation a "discovery."

The correct use of the words in these cases is apparent when we reverse them. "The discovery of the motor car" will not do, because motor cars were not in existence until recently, and so could not be "discovered," since "discover" implies the removal of a veil which hides an object. In like manner the invention of the law of gravitation is incorrect, since the law of gravitation existed ages before Newton found it out. Newton drew aside the veil of secrecy which had until then hidden this law from men. It was the Creator of the universe who, so to speak, invented, or better planned, the law of gravitation.

* Read before the School of Pharmacy Students' Association.

THE USE OF SLANG EXPRESSIONS.

The worst enemy our mother tongue possesses is undoubtedly the slang which creeps into both speech and writings at the present day. Some people use slang in order to make their expressions pithy. One hears feet called "Trilbys." Now, this interpolation is not only unnecessary, but it is a desecration of our mother tongue. Besides, are we not guilty of a breach of good manners, since few would understand the term who had not read Du Maurier's novel?

Newspaper reporters are too prone to the use of slang expressions, and none more so than those who describe football matches. Taking up a provincial paper some time ago, I noticed in the account of a single match the following expressions, besides many more. "Hobbs got two 'rattling' single handed runs." "Putterill was accredited with a 'clinkling' effort at goal." "Wilson screwed a sharp 'daisy-cutter' from behind." "King saved by a 'narrow squeak.'" To appreciate how a run could "rattle" or an effort "clink" will require some degree of imagination. And it is difficult to see how any squeaking on the part of King could save a goal. Then, again, "West Herts, 'bucking up' well, now had as much play as their opponents."

We sometimes apply the same adjective to very different objects. Thus we speak of a sweet song, a sweet face, a sweet orange, and a sweet flower. Here we have the adjective "sweet," which was primarily used in relation to the sense of taste, applied to three other senses of sound, sight, and smell. I think we may say that a sympathy exists between some of the senses. I have been told that a blind man, on being asked to describe the colour of "scarlet," said that it was like "the sound of a trumpet." Speaking on this subject in his 'Essay on the Beautiful,' Dugald Stewart says:—"As the epithets 'sweet' and 'delicious' literally denote what is pleasing to the palate, and 'harmonious' what is pleasing to the ear, as the epithets 'soft' and 'warm' denote certain qualities that are pleasing in objects of touch or of feeling, so the epithet 'beautiful' literally denotes what is pleasing to the eye. All these epithets, too, it is worthy of remark, are applied 'transitively' to the perceptions of the other senses. We speak of 'soft' and of 'sweet' sounds, of 'warm,' of 'soft,' of 'delicious,' and of 'harmonious' colourings with as little impropriety as of a 'beautiful voice' or of a 'beautiful piece of music.' If the transitive applications of the word 'beauty' be more numerous and more heterogeneous than those of the words 'sweetness,' 'softness,' and 'harmony,' is it not probable that some account of this peculiarity may be derived from the comparative multiplicity of those perceptions of which the eye is the common organ?" And further he says:—"I shall begin with supposing that the letters A, B, C, D, E, denote a series of objects; that A possesses some quality in common with B, B a quality in common with C, C a quality in common with D, and D a quality in common with E, while at the same time no quality can be found which belongs in common to any 'three' objects in the series. Is it not conceivable that the affinity between A and B may produce a transference of the name of the first to the second, and that in consequence of the other affinities which connect the remaining objects together, the same name may pass in succession from B to C, from C to D, and from D to E. In this manner a common appellation will arise between A and E, although the two objects may, in their nature and properties, be so widely distant from each other, that no stretch of imagination can conceive how the thoughts were led from the former to the latter. The transition, nevertheless, may have been all so easy and gradual that, were they successfully detected by the fortunate ingenuity of a theorist, we should instantly recognise, not only the verisimilitude, but the truth of the conjecture; in the same way as we admit, with the confidence of intuitive conviction, the certainty of the well-known etymological process which connects the Latin prepositions "e" or "ex" with the substantive "stranger," the moment that the intermediate links of the chain are submitted to our examination (*i.e.*, "e," "ex," extra, extraneus, éstranger, étranger, stranger).

THE NECESSITY OF CARE IN COMPOSITION.

I do not propose to make more than a passing reference to the necessity for careful attention to composition; quite ludicrous effects are produced by the misplacement of words, as for example, "There was in the town a hall capable of seating a thousand persons and a small theatre." I have it on good authority that a child once asked mildly for "a feeding bottle for a baby with a screw neck." This point requires of the pharmacist due consideration, so that mistakes may be avoided such as one mentioned by Remington in his 'Practice of Pharmacy,' where a patient is directed "to take one powder at bed-time, if he cannot sleep in water." This reminds me of an advertisement which ran as follows: "Don't go elsewhere to be cheated."

And now, gentlemen, I must bring these imperfect remarks to a close. I am indebted for much of the information I have been able to gather to the works of Trench, Attfield, Jevons, and Bentley and Trimens, and also to Mr. Brudenell Carter.

In conclusion, allow me to remind you that our language is a precious heritage, handed down to us to purify and to enrich, but never to degrade. Bearing this in mind, we shall, to the best of our ability, "shun the use of slipshod English," and cultivate the purer diction of Milton and of Addison.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, JULY 21, 1897.

Present:

MR. WALTER HILLS, PRESIDENT.

Messrs. Allen, Atkins, Carteighe, Hampson, Martindale, Savory, Warren.

The PRESIDENT moved—

"That the proposed new Bye-laws, which were read at the meeting of the Council on July 7, and confirmed at a special meeting of the Council on July 14, be further confirmed in accordance with the Bye-laws."

This was unanimously agreed to. The PRESIDENT then moved—

"That a special general meeting of the Council be convened for August 4, at 3 o'clock, for the purpose of confirming the proposed new Bye-laws."

This also was unanimously agreed to, and the meeting then terminated.

EXAMINATIONS IN LONDON.

July, 1897.

MINOR EXAMINATION.

Candidates examined ..	256
,, failed ..	170
,, passed	86

Allgood, Charles Alfred.
Ascroft, Benjamin.
Ashcroft, Alfred William.
Bartlet, Alexander.
Bertles, Samuel Richard Gorst.
Billings, Sydney James.
Blackmore, Frank.
Bolitho, William Henry Hosken.
Brown, Thomas Frederick.
Brown, William Charles.
Bull, William Robert Watcham.
Burton, George Stanley.
Bustard, Francis Edwin.
Church, Charles Edward.
Clark, Henry Burton.
Clements, Charles Frederick.
Coe, Arthur Edward.
Coley, James William Ernest.
Cook, Thomas.
Couch, William.
Coulson, Horace.
Cox, Hugh.
Davies, Caradoc.
Davis, John Butler.
Day, John Edwin.
Dixon, Ernest Rowlatt.
Eldred, Willie.
Ellis, John.
Epps, James Washington.
Epton, James.
Errington, John Wm. Brice.
Fairweather, George.
Falck, Charles.
Farrow, Tom.
Franee, James Hassall.
Galt, Thomas James.
Guard, Harry Ernest.
Hackett, John.
Hacking, Charles Harold.
Happold, Carl.
Hardwick, Albert Charles.
Harris, Frank Howard.
Hickling, Alfred John.
Hill, Philip Robert.
Jenkins, Evan Jones.
Jenkins, Herbert.
Jones, Ernest William.
Jones, Thomas Henry Owain.
Jordan, Ernest Samuel.
Lambert-Shea, Wm. Albert.
McGlinchy, John Owen.
Matthews, Harold Evan.
Merrikin, Sydney Herbert.
Miller, Harold.
Molson, Algernon Heanley.
Morgan, Harold Marston.
Nelson, William Brown.
Nicholls, Thomas Lawrence.
Nield, Walter.
Norman, Charles Henry.
Pattinson, Thomas.
Perrédès, Pierre Elie Félix.
Phillips, George Thomas.
Pinchbeck, Gerald.

Sanderson, Frank.
Shackleton, George Harry.
Skinner, William.
Smith, Fredk. Alfred Upsher.
Smith, George William.
Smith, Harold James.
Stearn, Leonard.
Stephenson, James.
Street, Spencer.
Taylor, Robert Stanley.
Teale, John Oliver.
Thorne, William Harold.
Ventham, Arthur William.
Walker, Vernon.
Ward, Ernest Baker.
Ward, Wm. Hy. Chancewell.
Watson, Herbert Shepley.
Wendon, William.
Whittaker, Herbert.
Wild, Sydney.
Williamson, Edward.
Worth, Wallace.

FIRST EXAMINATION.

Certificates by approved examining bodies were received from the under-mentioned in lieu of the Society's examination :—

Adams, Arthur Soltan ; Horsham.
Digby, Cecil E. ; Colchester.
Fawcett, Frank Dalby ; Bebington.
Holden, William C. ; Folkestone.
Hole, William C. ; Bristol.
Jones, Arthur Henry ; Cardiff.
Larder, Frederick ; Louth.
Lister, Willie ; Scarborough.
Little, Thomas Anderson ; Nottingham.
Newton, William Herbert ; Rusholme.
Norris, Robert Charlie ; Taunton.
Nundy, William Lockwood ; London.
Roberts, Annie E. ; Rhayader.
Shields, Leonard ; Mexborough.
Smith, Herbert A. ; New Wandsworth.
Stranack, Morris Wm. ; London.
Taylor, Walter Percy ; Shrewsbury.
West, Douglas ; Colchester.
Wickham, Thos. B. C. ; Weston-s.-Mare.
Wright, Samuel Walter ; Edinburgh.

EXAMINATIONS IN EDINBURGH.

July, 1897.

MINOR EXAMINATION.

Candidates examined 141
,, failed 86
,, passed 55

Armstrong, Thomas.
Barker, John Bryden.
Begg, John Cuthbertson.
Bentley, Thomas.
Bowie, John Alexander.
Brown, John Thomas.
Brown, William.
Caird, Harry.
Cairns, John.
Clark, Alexander Robertson.
Cochrane, Alexander.
Collie, John.
Dean, Charley.
Dennis, William.
Drummond, William Donaldson.
Duncan, Alexander.
Duncan, James Greenhill.
Garsed, William.
Gray, John Henderson.
Halley, Daniel.
Hulme, Frederick Hitchin.
Jones, John Lloyd.
Kay, James.
Laister, John Willie.
Longbottom, William Graham.
Ludlam, William Henry.
Mackie, Alexander.
Macrae, David.
Martin, Alexander Clark
Martin, William Francis.
Mathewson, William Watson.
Maxwell, Arthur Thomas.
Mitchell, Peter.
Orrell, William Herbert.
Pirie, Joseph Mather.
Riddell, James Hamilton.
Roberts, John Morris.
Robertson, Alexander Hamilton
Robinson, Robert.
Savage, George Smith.
Shepperson, Arthur.
Shorrock, Mary.
Sime, William.
Simpson, Thomas.
Sinclair, James.
Stewart, Andrew Hare.
Swift, Ernest Radcliffe.
Thompson, Laurence Noel.
Thwaite, Ernest Edward.
Tinsley, Samuel Hilton.
Tulloch, James John Brock.
Watts, William.
Whineray, George Edward.
Wright, James Geddes.
Wright, John Todd.

COUNCIL PRIZES EXAMINATION QUESTIONS.

July 20, 1897.

BOTANY.

Time—10 *a.m. to* 11.30 *a.m.*

1. A typical flowering plant develops a root in the soil and a shoot in the air. What are the functions of these parts? Show how they are adapted internally and externally to perform the work required of them.
2. What is a seed? Give an account of the development of the seed in any plant. Point out the features in the life history of Pteridophytes which preclude the formation of a seed in this group of plants.
3. What are the Natural Orders of Bicarpellate Gamopetalæ, which include official plants? Briefly state the diagnostic characters of these orders, and enumerate the official plants belonging to them.
4. Write an account of the life history of the plant which yields Ergot.

MATERIA MEDICA.

Time—11.30 *a.m. to* 1 *p.m.*

1. State the characters of the following substances, their sources, and the processes by which they are obtained : Anethol, Citral, Eucalyptol, Menthol, and Thymol.
2. Mention the varieties of Jalap found in commerce, and their characters. What are the active principles of Jalap?
3. Describe the characters of the principal commercial varieties of Gum Arabic, and state their botanical and geographical sources
4. Name six mydriatic alkaloids, and give their botanical sources.

CHEMISTRY.

Time—2 *to* 5 *p.m.*

1. Give an account of the modes of formation and properties of the different forms of sulphur.
2. State what you know of the electrolytic conductivity of solutions of acids and of their salts, and of the conclusions which have been drawn therefrom.
3. Contrast and compare the chemical character of the elements Nickel and Cobalt, with special reference to the methods for their separation from other elements and from each other.
4. Give a detailed account of the oxidation of ethyl alcohol by nitric acid, and state how the products may be separated from each other.

THE WEIGHTS AND MEASURES (METRIC SYSTEM) BILL.

The following is the text of the petition in favour of the Weights and Measures (Metric System) Bill, which has been presented to the House of Commons by the Council of the Pharmaceutical Society :—

The Humble Petition of the Council of the Pharmaceutical Society of Great Britain under their Common Seal,

Sheweth,

(1) That your Petitioners are the Council duly elected by the members of the Pharmaceutical Society of Great Britain, which was incorporated by Royal Charter, 1843, and invested with further powers by the Pharmacy Acts, 1852 and 1868.

(2) A Bill (hereinafter referred to as the Bill) has been introduced to your honourable House intituled "Weights and Measures (Metric System) Bill."

(3) The Bill has for its object the legalisation in the United Kingdom of the use of weights and measures of the Metric System.

(4) It has more than once been brought to the notice of the Council of the Pharmaceutical Society of Great Britain that the present condition of the law relating to weights and measures acted prejudicially to the interests of those practising Pharmacy in Great Britain. The President of this Society in 1894 gave evidence to this effect before a Select Committee charged with the duty of inquiring into the question of legalising the Metric System. In the dispensing of Continental prescriptions, for instance, Pharmacists are compelled at present either to break the law by using Metric Weights and Measures or to adopt the cumbrous expedient of ascertaining the English equivalents and using the nearest legal weights and measures.

(5) Your Petitioners humbly pray your honourable House that the Bill may be allowed to pass into law as it now stands.

The Corporate Seal
of
the Pharmaceutical Society of Great Britain
July 7, 1897.

Seal.

(Signed) W. Hills, President.
(Signed) Richard Bremridge, Secretary and Registrar.

BRITISH PHARMACEUTICAL CONFERENCE.

GLASGOW MEETING, 1897.

Preliminary List of Papers to be Read.

1. "Pharmacy Past and Present," by Thos. G. Forshaw, M.P.S.
2. "Note on the Word Asafetida," by Professor John Attfield, F.R.S.
3. "Our Present Knowledge of the Mydriatic Group," by Gordon Sharpe, M.D., etc.
4. "Pharmaceutical Ethics—A Retrospect," by Leo Atkinson.
5. "Medicinal Petroleum," by F. C. J. Bird.
6. "Phosphates and Platinum," by W. G. Stratton.
7. "Liquor Bismuthi et Ammonii Citratis," by W. G. Stratton.
8. "Strength of Commercial Samples of Alkaline Tinctures," by Clarence A. Seyler, B.Sc., F.I.C.
9. "Note on Some Soluble Compounds of Arsenic," by Professor Henderson.

10. "The Pharmaceutical Value of Sumatra Benzoin," by Thomas Dunlop, Ph.C.
11. "Hypophosphites," by Charles T. Tyrer, F.C.S.
12. "Some Observations on Organotherapy," by J. C. MacWalter, L.R.C.S.I., etc.
13. "Further Note on the Pharmacy of Conium Maculatum," by E. H. Farr, F.C.S., and R Wright, F.C.S.
14. "Further Observations on Oil of Citronella," by J. C. Umney and R. S. Swinton.

PARLIAMENTARY NOTES AND NEWS.

Metric System.—The Society's petition in favour of the Board of Trade Metric System Bill was presented to the House of Commons on the 15th instant by the Right Hon. C. T. Ritchie, and was ordered to lie on the table—where, by the way, a good many petitions in favour of amending the Sale of Food and Drugs Act are mouldering. The text of the Society's petition is given at page 68. With such a testimonial of character the Bill has experienced no difficulty in passing its second reading in the House of Peers, and the remaining stages between it and the statute book contain no obstructive elements.

Delivery of Telegrams.—It seems to be a dangerous policy to make concessions to the public. Mr. Henniker Heaton is not satisfied with the extension to three miles of the area of free delivery for telegrams, and finds an injustice in the fact that the charge for delivery is calculated, not from the boundary of the free area, but from the door of the terminal post office. The result is that the unfortunate person residing three miles and a quarter from the terminal office is charged four miles at threepence a mile, instead of threepence for one mile or under. Mr. Henniker Heaton, however, did not, when questioning Mr. Hanbury, mention that this person would formerly have had to pay one shilling a mile. Mr. Hanbury, as representative of His Grace of Norfolk, gently rebuked the reformer for his ingratitude. The area of free delivery had, he said, been very largely extended recently, and it was proposed to see what effect the concessions would have upon the Postal Revenue before formulating further schemes of administrative philanthropy.

Recess in Sight.—The winding-up resolution was carried on Thursday, and nothing but Government business can be taken now. Mr. Balfour's resolution (which follows precedent) is a triple-headed one, and conveys to the veriest layman the futility of hoping for the further progress of non-official measures. The three heads are (1) Government business is not to be interrupted; (2) may be entered upon at any time, though opposed; and (3) when the Government business has been disposed of, the House shall adjourn without question put. By this method (which will be businesslike or tyrannical according to the political complexion of the onlooker) Mr. Balfour hopes to close the session at the commencement of August.

This Arrangement naturally did not meet all views, and one or two individuals even of the ministerial party were disloyal enough to grumble. Mr. Jeffreys asked what had become of the promised Government Bill dealing with the question of the adulteration of Food Products. He has repeatedly asked the question this session with no effect. Mr. Haldane (Haddington), put in a word for the London Teaching University which tarries so long, and Mr. Strachey showed worthy persistence in calling attention to the excellent Bill dealing with the supply of calf lymph, which would be slaughtered by the First Lord's motion. But Mr. Balfour, speaking in tones of sympathetic condolence, expressed his inability to give way even to the temptations afforded by calf lymph.

The Committee on the Companies Bill is once again having weekly meetings, and if it were not disrespectful one might urge that the second "e" in the modifying word ought properly to be replaced by an "a." The evidence given on Monday expressed the views of a gentleman who must have been a descendant of the celebrated Dr. Pangloss, so optimistic was he in regard to the benefits conferred by the Companies Acts. There had, of course, admitted the witness, been cases of fraud and hardship here and here, but after all it was a mere flea-bite, so to speak, when compared with the thirteen hundred million sterling invested in limited companies in this country. Who said "Liberator"? Well, the witness did admit there had been an abuse of the Companies Acts in that case, but, *que voulez-vous*, the properties had all turned out well, and it was only a question of over-financing certain individuals. The witness (whose name is Stanley Boulter) also thought that the public as a rule did not take shares on the faith of the terms of the prospectus. Mr. Boulter would have us believe that the present law regulating the formation and registration of limited liability companies is the best of all possible laws. The Committee made its report to the House of Lords on Tuesday.

The Decline of the Director.—According to Mr. Stanley Boulter, it is becoming increasingly difficult to get good directors for companies. Evidently good directors, like the beloved of gods, die young, or perhaps they retire from business early. If the Companies Bill passes, Mr. Boulter feels that the species will become as rare as auk eggs. Such a prospect might give rise to alarm in the minds of the drafters of the Bill if they had not heard the same kind of evidence before. A little judicious cross-examination however, elicited that Mr. Boulter's fears really amounted to this: Men of good position, that is, men who had successful businesses of their own, in fact, ideal men for a company, would never take up the responsibilities which the Bill sought to impose upon directors. The Lord Chancellor, at any rate, did not appear to be impressed, for with the brutal logic of one who knows a thing or two, he replied, "I should have thought that if a man has a business of his own to attend to he had better not be a director of a company." It is disheartening to read the trivial arguments which have been placed before the Committee in the interests of more or less imaginary directors, and to reflect that whatever ostensible reason exists for the evidence, its actual effect has been to shelve an extremely valuable Bill, and to preclude the consideration of a principle of vital importance to all professional men, whether doctors, dentists, veterinary surgeons, or chemists.

The Petroleum Committee has reported that it cannot conclude its labours this session, and recommends re-appointment next year. These Select Committees are getting to be hardy annuals.

NOTES AND FORMULÆ.

(Specially abstracted for the Pharmaceutical Journal.)

Collodion for Skin Diseases.

Skinner suggests that acetone collodion may be made thus:—pyroxylin, 10 grains; camphor, 3 grains; acetone, 1 ounce. Another formula which is largely used in photography, and would be useful to dermatologists, is as follows:—Pyroxylin, 10 grains; white Castile soap, 6 grains; ether (sp. gr. 0·720), 1 ounce; ethylic alcohol, ½ ounce. The soap is rubbed down with the alcohol, and the other ingredients added, and the whole shaken together. After allowing to settle, the clear liquid is filtered through cotton wool. —*Brit. Journ. Derm.*, ix., 195.

Grease-proof Paper.

Zimmerman states that parchment paper drawn through a 2 or 3 per cent. solution of pyroxylin in ether-alcohol or other solvent is rendered quite grease proof. The film formed upon evaporation is firmly united to this kind of paper, while water detaches it from ordinary paper. If the parchment paper be treated first with a 3 to 5 per cent. solution of cuprammonium success is assured, though the paper may be very stout and hard.—*Pharm. Era*, xvii., 323.

The Chemistry of Asafœtida.

The percentage compostion of asafœtida has been found by Polásek to be:—Ether-soluble resin (ferulic acid ester of asaresinol tannol), 61·4; ether-insoluble resin (free asaresinol tannol), 0·60; gum, 25·1; volatile oil, 6·7; vanillin, 0·06; free ferulic acid, 1·28; moisture, 2·36; foreign matter, 2·5. The formula for asaresinol tannol was found to be $C_{24}H_{33}O_4 \cdot OH$.—*Archiv der Pharm.*

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

LINIMENTA.—The liniments as a class do not admit of much generalisation. Their application is usually accompanied by friction, and the solvent or vehicle for the active constituent is usually oil or spirit. The former facilitates the absorption of substances dissolved in it, while spirit increases the rubefacient action when the liniment is intended to have a local stimulant effect.

LIQUORES.—The "liquors" or "solutions" of the Pharmacopœia consist chiefly of definite chemical substances dissolved in water. It will be observed that they may be for the most part classified under two heads:—(1) solutions of substances which cannot be conveniently kept or used in the pure condition, *e.g.*, liquor ammoniæ; (2) convenient dilutions of very powerful remedies in a form readily available for the physician, *e.g.*, the liquors containing alkaloids.

LIQUOR ANTIMONII CHLORIDI.—In making this the following reaction occurs:—

$$\text{(i.)}\ Sb_2S_3 + 6HCl = 2SbCl_3 + 3H_2S.$$

Note now that in the ordinary course of analysis antimony is precipitated from solution as sulphide by means of sulphuretted hydrogen:—

$$\text{(ii.)}\ 2SbCl_3 + 3H_2S = Sb_2S_3 + 6HCl.$$

Comparing these two equations it will be seen that one is exactly the reverse of the other. This furnishes an example of a reversible chemical reaction. Each equation is true, but can only be accomplished under conditions not stated in the equation. In equation (i.) we have an excess of strong hydrochloric acid, and the mixture is boiled. This causes the expulsion of sulphuretted hydrogen, and the formation of antimony chloride proceeds. In equation (ii.) it is assumed that we are passing a stream of sulphuretted hydrogen in excess into a weakly acid solution of antimony chloride. Precipitation of antimony then proceeds as shown, but in order to secure the precipitation of the whole the last portion must be precipitated in well-diluted solutions.

LIQUOR BISMUTHI ET AMMONII CITRATIS.—The ordinary salts of bismuth cannot be administered in solution owing to the property of bismuth (like antimony) to form insoluble oxysalts, which require the presence of a considerable quantity of free acid to prevent their formation. The "scale" compounds which bismuth forms enable the physician to prescribe bismuth in neutral solution.

LIQUOR CHLORI.—Chlorine water is an energetic oxidising agent. Owing to the affinity of chlorine for hydrogen, it decomposes water, the oxygen of which is set free.

$$Cl_2 + H_2O = 2HCl + O$$

This reaction proceeds more rapidly when the solution is exposed to sunlight or in presence of a substance capable of oxidation:—

$$Na_2SO_3 + H_2O + Cl_2 = 2HCl + Na_2SO_4$$

The determination of the strength of liquor chlori is accomplished indirectly, viz., by titrating the equivalent quantity of iodine, liberated on addition of excess of potassium iodide, with volumetric solution of sodium thiosulphate. Every 127 parts of iodine correspond to 35·5 parts of chlorine, according to the equation—

$$KI + Cl = KCl + I$$

Note the difference in the reaction of chlorine and iodine with the thiosulphate. The latter forms tetrathionate and iodide of sodium and the disappearance of the brown colour of free iodine from the solution shows distinctly the termination of the reaction.

$$2I + 2Na_2S_2O_3 = Na_2S_4O_6 + 2NaI.$$

Chlorine is, however, a more energetic oxidising agent than iodine, and decomposes the thiosulphate with formation of sulphate of sodium and free sulphur. The completion of this reaction is not accompanied by any visible sign which is necessary for a rapid process of volumetric analysis—hence chlorine is more easily determined indirectly by titration of its equivalent in iodine.

LIQUOR FERRI ACETATIS.—In preparing ferric hydrate for this liquor, as well as for any other purpose—the scale compounds, for example—note carefully that the best method of procedure is to pour the solution of ferric salt *into* excess of ammonia. If the order of mixing be reversed, the precipitated hydrate will be contaminated with oxy-salt—oxysulphate in the present instance. The ferric hydrate which is produced by the first addition of ammonia *to* ferric solutions being precipitated in presence of still undecomposed soluble ferric salt, combines with and carries some of this down with it, and retains it even if excess of ammonia be subsequently added.

LIQUOR FERRI PERCHLORIDI FORTIOR.—Ferrous chloride is first produced:

$$\underset{56}{Fe} + \underset{2\times36\cdot5}{2HCl} = FeCl_2 + H_2.$$

Fifty-six parts of iron require seventy-one parts of *real* hydrochloric acid for the formation of ferrous chloride. The four ounces of iron in the Pharmacopœia formula would therefore require $\frac{71\times4}{56}$ oz. of real HCl, or a little over five ounces. Now, 20·5 fluid ounces of strong hydrochloric acid (sp. gr. 1·16, and containing 32 per cent. by weight of real HCl) will provide $\frac{20\cdot5\times1\cdot16\times32}{100} = 7\cdot6$ oz. real HCl. This extra quantity is necessary for the subsequent formation of ferric chloride. The ferrous chloride is oxidised to ferric chloride by means of nitric acid, which is selected as the oxidising agent because the products of its reduction are volatile, and consequently leave no foreign residue in the finished liquor (compare potassium permanganate or chlorate). Nitric oxide is produced when ferrous salts are oxidised by means of nitric acid. Therefore every two molecules of nitric acid yield three available atoms of oxygen.

$$2HNO_3 \begin{cases} H_2O \\ N_2O_5 \end{cases} \begin{cases} 2NO \\ 3O. \end{cases}$$

Each atom of oxygen is capable of raising two molecules of ferrous chloride to ferric chloride, $2FeCl_2 + 2HCl + O = Fe_2Cl_6 + H_2O$, and this is the key to the equation commonly given in text-books:—

$$6FeCl_2 + 6HCl + 2HNO_3 = 3Fe_2Cl_6 + 4H_2O + 2NO.$$

The test described in the Pharmacopœia with copper foil proves the absence of arsenic, which would probably be present if crude hydrochloric acid were employed in manufacture.

LIQUOR HYDRARGYRI NITRATIS ACIDUS.—This solution contains mercuric nitrate, because excess of nitric acid is employed. If excess of mercury be treated with diluted nitric acid, chiefly mercurous nitrate is obtained. When metals are acted upon by nitric acid note that the hydrogen displaced by the metal to form the nitrate is never evolved—

$$Hg + 2HNO_3 = Hg2NO_3 + 2H.$$

for nascent hydrogen is a powerful reducing agent, and when produced in presence of an oxidising agent like nitric acid, the latter is reduced and water is formed. Nitric acid is a compound of the highest oxide of nitrogen (N_2O_5, nitric anhydride or pentoxide) and water. When nitric acid is reduced one or more of the lower oxides are produced, in the present case chiefly nitric oxide, but if the acid be undiluted chiefly nitric peroxide (NO_2) is evolved. The equation usually given for the action of nitric acid on mercury—

$$3Hg + 8HNO_3 = 3Hg2NO_3 + 2NO + 4H_2O,$$

is rendered thus quite simple, for when nitric acid is reduced to nitric oxide every two molecules of nitric acid yield three atoms of available oxygen. Now three atoms of oxygen require six atoms of hydrogen for the formation of water, and six atoms of hydrogen will be displaced by three dyad mercury atoms—

$$6HNO_3 \begin{cases} 3Hg \\ 6NO_3 \\ 6H \end{cases} > 3Hg2NO_3$$

$$2HNO_3 \begin{cases} N_2O_5 \begin{cases} 3O \\ 2NO \end{cases} > 3H_2O \\ H_2O \end{cases} 2NO$$

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ON THE VALUE OF SELF-ADVERTISEMENT.

A FEW short months ago an opportunity presented itself for dealing in these pages with the all-absorbing topic of the chemist's remuneration, and incidentally it was pointed out that the value of an individual's services to other people is, more frequently than not, based upon his own estimate of those services. But it seems necessary to remark that those words must be interpreted literally, or what is in reality an axiom becomes a more or less fallacious statement. The word "estimate," for example, must be taken in its ordinary sense and not regarded as including its derivative "over-estimate." The modest man is much too prone to under-estimate his own worth, whilst he who is for ever seeking, in season and out of season, to impress his fellows with a quite inordinate sense of his personal value, errs in the opposite direction. The shrewd business man, however, who has learned by experience that lights lose much of their virtue as illuminants when hidden under bushels, is continually impressed with the necessity of maintaining his position in the good opinion of others at such a level as he can easily justify. He seeks no more than his due, for he realizes that he might thus become involved in an attempt to prove what is incapable of proof. At the same time, he fully recognises the importance of receiving all credit that is rightly due to him, and of satisfying all comers that his own estimate of his powers is at least as near the truth as any such estimate can be. He does not assume a virtue when he has it not, but feels that he ought to be credited with it when it is really inherent and not allowed to lie dormant.

The extent to which self-advertisement is permissible depends entirely upon innate good taste, and neither those who under-estimate nor those who fairly estimate their deserts are at all likely to offend in that direction. But the persistent self-advertiser has usually grown so accustomed to accept his own exaggerations as the truth that he is lost to all sense of due proportion in such matters. He is found on every hand, and no profession or trade can claim that it knows him not. His methods vary, too, as widely as his circumstances, one of the most successful, perhaps, being what may be termed the indirect method, corresponding closely to what has been appropriately termed "the puff oblique." So delicately can this method be worked that even those who are least deceived by it are at times impelled to express their admiration of the manner in which the strings are controlled, and facts manipulated so that results are obtained which may totally misrepresent the actual state of affairs. This is very marked in an advertisement of a firm, which has been submitted by a correspondent of the Journal for an expression of opinion thereon. The firm has taken advantage of a flaw in the Pharmacy Act to create a large trade in articles which were formerly obtained by the public almost exclusively from registered chemists. And now the new-comers assume to themselves the sole possession of all the business virtues that success alone can justify anyone laying claim to. Presumably, too, this impresses the British public, and however much the legitimate dispenser and dealer in drugs may feel inclined to disparage the intellectual capacity of that gullible body, its patronage is much too important an item amongst the factors that lead to success to be despised and ignored. Perhaps the most absurd claim advanced by this firm of self styled "chemists" is that of having saved the public vast sums of money, by having cut down the assumed "enormous profits" of chemists by one-half. And, doubtless, this fiction finds credit, to the considerable detriment of those who are properly entitled to call themselves chemists. The latter cannot well retaliate in kind but in self-protection they must do something.

How far, then, is the self-respecting chemist to go in the direction of self advertisement, and on what lines should he proceed? The only safe rule is that already referred to, which limits advance into the unsafe regions of improbability and exaggeration by the exercise of the natural good taste of the individual mostly concerned. If that check be wanting, it is almost impossible to conceive the lengths to which an inordinate sense of vanity, or a desire to reap where he has not sown, may lead him. Instead of trusting to his own merits to attract such notice as will benefit him, he will probably resort to all kinds of unworthy artifices to secure undue prominence. And after exhausting all the direct methods that occur to him, it is yet open to him to gain fresh notoriety by taking a prominent part in "booming" other persons, or in advocating quixotic schemes. He may even so far prevail upon the feelings of others of like nature as to secure their assistance in helping him to exercise what by this time will have become a fixed habit. A scientific man in this position is apt to become imbued with one idea, to which all his future work becomes subsidiary, and it suffers accordingly; a medical man in the same position tends to degenerate into a quack with one mode of treatment for all complaints; whilst a chemist and druggist in such circumstances risks becoming lost to all sense of professional decency. So long as that maintains its hold, it prevents him degenerating into a mere nostrum-monger and purveyor of other men's wares, or a poacher upon what should be regarded as the preserves of other professional men. If, however, his standard of self-respect be maintained unimpaired, and his business capacity be fully exercised within due limits, he will gain sufficient profit to satisfy anyone of moderate ideas, accompanied by the inestimable blessing of a quiet conscience. He will take a leading position in his own profession, keep interlopers out of his business by carrying it on under such conditions as they cannot possibly comply with, and at the close of his career will look back with pleasure on a record unstained by any suspicion of mean or ungenerous actions.

ANNOTATIONS.

THE PROPOSED NEW BYE-LAWS have been again confirmed, at a meeting of the Pharmaceutical Council held on Wednesday, and they will be formally submitted for the approval of the members and associates in business of the Society on Wednesday, August 4, at a Special General Meeting to be summoned for three o'clock in the afternoon. As the proposed alterations have been unanimously agreed to by the whole of the members of the Council, it may be anticipated that no objection will now be raised by anyone entitled to speak on the subject, unless indeed there should still be left one or two irreconcilables who are prepared to oppose on principle (or its lack) anything that may be proposed for the benefit of pharmacy in general and of the Pharmaceutical Society in particular.

A PHARMACY ACT CASE of considerable importance was heard at Leicester, on Tuesday, the charge being for taking, using, or exhibiting the title of "chemist," contrary to Sections 1 and 15 of the Pharmacy Act, 1868. There was no novelty in the charge, of course, but the circumstances under which the offence was alleged to have been committed were such as had not previously been brought before a court of law. The defendant, D. G. McGoun, who is not qualified, owned a shop which was apparently a chemist's shop. Over one window were the words "Lytton Drug, Oil and Colour Stores"; the name "D. G. McGoun" appeared over the door, and over the second window "Butler and Son, Chemists." Upon labels used by defendant, the statement was made that he had been eight years with Butler and Son, chemists, and the defence was that he had not in so many words claimed to be a chemist. That plea, however, the Judge regarded as trivial. He said he thought it was quite clear that defendant did use and exhibit the title "Chemist" contrary to the Act; it made no difference at all as to the way in which he used it, as anyone seeing the announcement might naturally think it meant that defendant was a chemist. There was no doubt he did exhibit over his shop the title of "Chemist" within the meaning of the Act, in a way to do the mischief which for the safety of the public the Act is intended to prevent. Accordingly, judgment was given for the Pharmaceutical Society, with costs. Another case, heard at Edmonton County Court on July 16, was of a more ordinary character, defendant having sold Powell's balsam of aniseed without being possessed of the requisite legal qualification. The usual penalty, with costs, was recovered in this instance also.

THE LIST OF PAPERS to be read at the Conference at Glasgow is printed at p. 68, and affords promise of much matter of direct pharmaceutical and chemical interest. Judging from the titles also, the papers will, in most cases, be short. The fact of the matter is that long papers are, as a rule, quite out of place at meetings where the time available for business is so short as it will be at Glasgow. Short, pithy, practical papers are the best appreciated contributions, and perhaps it may not be too late for anyone who has had thoughts of communicating a lengthy dissertation on any subject to reflect upon the advisability of cutting it short. The subjects now being decided upon, and much of the matter presumably ready, it is to be hoped that the self-sacrificing authors will further add to the Hon. Secretaries' indebtedness by promptly sending in their manuscripts. Mr. Naylor, upon whom the bulk of the work at this time unavoidably falls, has, we regret to say, been seriously unwell for some time past, and though he has now in great measure recovered, his labours will be considerably lightened if those who propose to read papers do not wait until the last moment before sending them in. By Saturday next, July 31, the last paper ought to be in his hands, and the earlier than that the better for all concerned.

CARBOLIC ACID was taken in mistake for an infusion of gentian and other roots at Hunslet, last week, the victim being a woman of fifty-five, who suffered greatly from indigestion, and was in the habit of taking a dose of the mixture after a meal. An "unlabelled" bottle containing the poison was kept in the same cupboard as the mixture, and the unfortunate woman died within an hour of swallowing some of the contents. The jury returned a verdict of "Death from misadventure," but did not apparently think it worth while to draw attention to the peculiar features of the case. Why, indeed, should they? Coroners and juries have for years past been entering protests, without avail, against free trade in carbolic acid and the neglect of adequate precautions to protect the public against accidents from the misuse of the poison. It is not to be wondered at, therefore, that they should, sooner or later, weary of well-doing. The only other noteworthy poisoning cases during the past week are, first, that of a child who drank an acid liquid used for cleaning brass, and, next, that of a young girl who died at North Hylton, from the effects of eating laburnum seeds. The girl's sister, who was somewhat older, also ate of the seeds, but is expected to recover.

IN THE DISCUSSION ON DESSERTSPOONS and some other measures, Mr. Martindale has shown the difference between the equivalents of spoonfuls as given in the French Codex of 1867 and in the edition of 1884. The complete table in the latter is as follows :—

Evaluation approximative des cuillerées.—Verrée.

	Grammes.
Une cuillerée à café d'eau commune équivaut à	5
,, à dessert ,, ,, ...	10
,, ordinaire ,, ,, ...	15
Une verrée équivaut à 8 cuillerées ordinaires, soit	120

It is but justice to Mr. R. Reynolds to say that, in a letter accompanying his communication on this subject, he requested that the extract from the 1867 Codex should be checked by reference to the later edition. We regret, however, that this request was overlooked. Mr. Martindale's contribution to the present valuation of spoonfuls by our French neighbours is distinctly of value, and the 'Extra Pharmacopœia' would seem to be one of the best places of record for English pharmacists.

THE GROCERS' FEDERATION has decided to lend its moral support to the Proprietary Articles Trade Association's scheme, fifty-five delegates voting in favour of that course at the recent Conference, and only seventeen against. Mr. Glyn-Jones was first afforded an opportunity of explaining the object and aims of the P.A.T.A., and that he appears to have done to great advantage, for the tone of the numerous speeches delivered in the course of the debate which followed indicated that the delegates had weighed the *pros* and *cons* very carefully, and were not likely to come to a rash conclusion. The fact that the majority decided in his favour may therefore be taken as evidence that a very large number of level-headed men of business outside pharmacy see sufficient reason to give the scheme a fair trial, at least. Grocers have no sentimental grievance about the loss of trade in articles they never ought to have encouraged the sale of, and it is quite possible that they see in this anti-cutting movement a means whereby business that has been to some extent filched from chemists and conducted at a minimum of profit, if not at an actual loss, may now be comfortably extended with the

assurance of a reasonable return for the slight amount of trouble involved. But whether the chemist will equally benefit in the long run is quite another story. Meanwhile, it is interesting to note that a large number of registered chemists who have combined for a specific purpose, may shortly be associated with a much larger number of grocers in an endeavour, on the one hand, to recover lost ground, and on the other, to maintain a secure hold on captured territory, if not to extend it. Some critics regard the combination as "unholy," and are of opinion that the two policies are diametrically opposed. But others again differ, and perhaps only time will prove who is right.

Professor J. P. Remington, the President of the Seventh International Pharmaceutical Congress which was held at Chicago in 1893, will be a passenger by the s.s. "Paris," leaving New York on the 28th of this month, and will probably reach London about August 5. Before proceeding to Brussels, we understand that Professor Remington proposes making a visit to Glasgow in order to be present at the Conference meeting and see some of his old friends.

Serpents' Bile enters into the composition of the medicines most depended upon for the treatment of snakebite by the natives of Africa, and Professor Fraser stated in his lecture, referred to last week, that several specimens of those native medicines have been sent to him, which contain bile mixed with powdered serpents' heads and other ingredients. Venom is used by some "snake doctors" as an antidote, being administered by the stomach, but it appears that bile is preferred by many. This is applied locally as well as swallowed, being rubbed into the wound inflicted by the serpent. One "snake doctor" told Professor Fraser that bile is really the better antidote, but that, as venom can be more largely obtained, the bile is reserved for employment in cases where the patient's recovery appears doubtful after treatment with venom. An interesting suggestion is offered by Professor Fraser, to the effect that the interest associated with the action of bile is probably not restricted to its effect on venoms. Analogies in composition, he points out, would suggest that the same action is exerted upon many of the toxins of disease, and this is supported by the further analogy that many of these toxins, such as those of tetanus and diphtheria, while notoriously active when present in the blood, are inert when introduced into the stomach.

Auto-Intoxication, produced in some circumstances by the many poisonous substances generated in the intestine, may partly be due, Professor Fraser thinks, to failure of the liver to secrete a sufficient amount of healthy bile. Toxins and other organic poisons, even when circulating in the blood, are probably being constantly eliminated into the alimentary canal, and there they would of course at once lose their destructive power by contact with the bile, the total effective quantity of toxin in the body being thereby reduced. Many people have had occasion, at one time or another, to wonder what the use of bile could be, and even such a recognised authority as Halliburton, speaks of it as being a most elaborate secretion "which is poured into the intestine, and finds apparently little to do." A possible outcome of Professor Fraser's work, therefore, may be a satisfactory explanation of the therapeutic value of cholagogue substances.

Venom Truly Exists in the cutaneous glands of the toad, salamander, triton, and kindred creatures, even the frog being credited by Dr. Hewlett (*Science Progress*) with the production of some small quantity of the poisonous fluid. None of the creatures, however, is capable of voluntarily ejecting the venom, which is secreted only in response to some reflex irritation and has a purely defensive function. The milky fluid is intensely bitter and only exudes on pressure, on electrical stimulation, or after death by chloroform narcosis. Toad venom contains an alkaloid—phrynine or bufidine—the reactions of which recall those of digitalin; the venom of the salamander contains another alkaloid to which the name samandarine or salamandrine has been applied. The venoms of both toad and salamander have a special action on the nerve centres, and it is clear that their active principles are totally different substances from those of snake venom, which are proteid and not alkaloidal in nature. Moreover, the physiological action is not the same in the case of the toad and salamander, for the venom of the salamander differs from that of the toad by its predominant convulsive action, and by its inactivity on the heart. With both animals the venom produced is only fatal to themselves when secreted in comparatively large amounts, though salamandrine is fatal to toads, the venom of the toad is fatal to tritons and *vice versâ*, while the venoms of the toad and triton poison the salamander. Salamander's blood and blood-serum, by the way, are found to act as an antidote towards curare.

The Indian Plague Commission, under the direction of Professor Koch, has issued its report, and in this it is stated, according to the *Standard*, that the plague bacillus has very brief vitality outside the human body or certain animals. Pure cultures with which experiments were made were destroyed immediately by sublimate at boiling temperature, whilst mineral acids produced the same effect in five minutes, a 1 per cent. solution of carbolic acid in ten minutes, and milk of lime, accompanied by exposure to sunlight, in one hour. The duration of the life of the bacillus was found to be from eight to ten days at the most, and it could not develop without the influence of atmospheric oxygen. The results of experiments on animals show that rats are in the highest degree susceptible, and probably responsible for spreading the plague germs and communicating them to human beings. Grey apes are as highly susceptible as rats, while brown apes are less so, but immunity can be established after a lapse of between five and seven days by the use of Yersine serum, and apes thus treated possess a high degree of immunity, being capable of surviving the effects of a large quantity of plague culture. Strong injections of serum have also been proved to be of unquestionable curative efficacy. The Commission observed only isolated cases of illness among people camping in the open, while among those who remained indoors the epidemic continued its ravages without abatement. Professor Haffkine's system of inoculation was applied to fourteen hundred patients and, according to this report, showed undoubted protective results although a number of the patients were taken ill in consequence of the inoculation. Whether or not the effects of the remedy proved worse than the disease is not stated.

That any Chemist and Druggist should find it necessary to notify the public, through the daily press, that medicinal substances purchased on certain days at a shop belonging to him are unsafe to use is probably as severe a blow as could possibly be struck at the credit of the craft. But the thing is so unprecedented that it will probably be disregarded, except by those persons who have been led to purchase articles with which no personal guarantee was given. The assurance of such a guarantee is, after all, the sole reason the pharmacist can logically advance for exceptional treatment as a retailer of drugs, and that assurance he should never fail to give.

REAGENTS, REACTIONS, METHODS AND FORMULÆ, KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 57.)

Hamann's carmine. Add acetic acid to an ammoniacal solution of carmine until a precipitate begins to form, and filter the fluid before using. The addition of 1 to 2 per cent. of chloral hydrate renders the solution more permanent.

Heidenhain's hæmatoxylin method. Dissolve (*a*) hæmatoxylin, 1 Gm., in distilled water, 300 C.c.; (*b*) potassium chromate, 1 Gm., in distilled water, 200 C.c. Small pieces of tissue hardened in alcohol or picric acid are placed in (*a*) for 12 to 24 hours, and then transferred for a similar length of time to (*b*). Wash thoroughly in water, dehydrate in alcohol, and imbed in paraffin.

Heidenhain's neutral carmine. Prepare the solution according to Beale's formula, but with the omission of the alcohol, and render it almost neutral, either by cautiously adding dilute acetic acid or by driving off the free ammonia by warming on a water bath.

Heidenhain's sublimate solution. A solution of sodium chloride (0·5 per cent.) is saturated while hot with mercuric chloride.

Heinrich's solution for the determination of glucose. See Sachsse's solution.

Heller's test for albumin in urine. Urine containing albumin, when poured upon heated nitric acid so that there are two distinct layers, shows a white ring at the zone of contact.

Heller's test for blood colouring matter. Upon boiling urine rendered strongly alkaline with caustic potash solution with the colouring matter of blood, a reddish precipitate of alkaline earth phosphates is thrown down.

Heller's test for glucose. Glucose solutions and urine containing glucose are coloured yellow to reddish-brown upon heating with caustic potash. Compare Moore's test.

Heller-Teichmann's test for blood. Urine containing blood, when heated to the boiling-point with a drop of acetic acid, forms a brownish-red to blackish coagulum. If a little caustic soda solution be added to the boiling-hot liquid, it becomes clear and a sediment of earthy phosphates forms. By the adhering colouring matter of the blood this sediment appears red to brownish-red in diffused light, greenish in direct sunlight.

Henking's examination liquid for ova. Distilled water, 80 C.c. ; glycerin, 16 C.c. ; formic acid, 3 C.c. ; osmic acid (1 per cent.), 1 C.c. ; dahlia, 0·04 Gm.

Henle's stain for nervous tissue. Sections are left in palladium chloride solution (1:300 to 1:600) till they are of a straw colour, then rinsed in water and stained with strong ammonia carmine.

Henneguy's alum carmine. Excess of carmine is boiled in saturated solution of potash alum, and 10 per cent. of glacial acetic acid added on cooling. Allow to settle for some days, and then filter.

Henneguy's permanganate method. Treat sections for 5 minutes with 1 per cent. potassium permanganate solution, then wash in water and stain with safranin, rubin, gentian violet, vesuvin, preference being given to a safranin solution prepared with aniline water.

Hénocque's gold process. Impregnate tissues with a 0·5 per cent. solution of gold chloride, then wash in water for 12 to 24 hours, and reduce with the aid of heat (40° to 50° C.) in a nearly saturated solution of tartaric acid.

Herapath's quinine reaction. Upon the addition of tincture of iodine, alcoholic solutions of quinine yield crystalline precipitates of quinine iodosulphate. This separates in thin plates, which are of a greenish colour at ordinary temperatures, brownish-red at 100° C., and possess strong optical properties. For the microscopical examination of urine, the liquid is rendered alkaline, then shaken with ether, the ether evaporated, and a portion of the residue dissolved on a cover glass in a drop of a mixture of 11·25 Gm. of acetic acid, 3·75 Gm. of alcohol, and 6 drops of dilute sulphuric acid. To this is added a small drop of tincture of iodine.

Herbst's aconitine reaction. Upon carefully concentrating a solution of aconitine in phosphoric acid, a dirty violet colour is produced in the presence of aconine. Pure, crystallised aconitine does not give this reaction.

Hermann-Boettcher's staining process. See Flemming's process.

Hermann's formaldehyde solution. A 1 per cent. solution, obtained by diluting formalin with 40 volumes of water.

Hermann's platino-aceto-osmic mixture. Mix 15 parts of 1 per cent. platinic chloride solution, 1 part of glacial acetic acid, and 2 or 4 parts of 2 per cent. osmic acid.

Hertwig's macerating fluid. Mix equal parts of 0·05 per cent. osmic acid, and 0·2 per cent. acetic acid. Medusæ are treated with this mixture for 2 or 3 minutes, then washed in 0·1 per cent. acetic acid until free from osmic acid. Leave them for 24 hours in the dilute acetic acid, then wash in water, stain with Beale's carmine and mount in glycerin. For Actiniæ use 0·04 per cent. osmic acid and make both solutions with sea water. Wash out with 0·2 per cent. acetic acid, and stain with picro-carmine.

Hesse's test for the presence of allied alkaloids in quinine. These alkaloids are less soluble in ether than quinine, while their sulphates are more readily soluble in water than the corresponding quinine salt. Shake 0·5 Gm. of quinine sulphate with 10 C.c. of water of 50° to 60° C. ; after standing for 15 minutes, filter off 5 C.c., then add 1 C.c. of ether (sp. gr. 0·7203) and 5 drops of ammonia water (sp. gr. 0·96). The presence of quinidine, cinchonine, etc., is indicated by the immediate or gradual formation of crystals in the ethereal layer.

Hessert's method for staining flagella. Fix the film by treating cover-glass preparations with a saturated alcoholic solution of mercuric chloride, wash, and stain for 30 or 40 minutes in a hot 10 per cent. aqueous solution of saturated alcoholic solution of fuchsine.

Heurck's (Van) mounting medium. This is simply monobromide of naphthalin.

Heydenreich's test for foreign oils (cotton-seed oil) in olive oil. Allow a few drops of the oil to be tested to fall upon some pure sulphuric acid which covers a surface about the size of half-a-crown in a porcelain dish. In the case of pure oil the zone of contact is yellowish-green ; with oils derived from seeds it is yellowish-orange to brown.

Heynsius' test for albumin in urine. Boil 5 to 10 C.c. of the filtered urine with a few drops of dilute acetic acid, aud then add a saturated solution of common salt. A white precipitate results in the presence of albumin.

Hickson's eosine-hæmatoxylin method. Stain sections on the slide for 1 hour with a strong solution of eosine in 90 per cent. alcohol, then wash with alcohol and stain for 20 minutes in a weak solution of hæmatoxylin.

Hilger's test for biliary colouring matter. The colouring matter is precipitated by boiling with barium hydroxide, and the yellow precipitate, filtered and washed, gives the following reactions :—Upon treating with alcohol and a few drops of sulphuric acid it is rendered colourless while the solution becomes green. If the precipitate be treated with nitric acid containing nitrous acid, green and blue colours result. See Gmelin.

Himmelmann's arsenic test. See Marsh's test.

Hirschsohn's test for acetanilid in phenacetin. Dissolve 0·1 Gm. of phenacetin in 10 C.c. of water, filter the solution after cooling, and treat with bromine water until a yellow coloration results. The presence of acetanilid causes the solution to become turbid, owing to the formation of *p*-bromacetanilid.

Hirschsohn's test for chloral alcoholate in chloral hydrate. A yellow colour results within 10 minutes if alcoholate be present, on treating 1·0 Gm. of chloral hydrate with 1 C.c. of nitric acid (sp. gr. 1·38) at the room temperature or with the application of gentle heat.

Hirschsohn's test for fatty oils in copaiba. Boil 20 to 40 drops of the copaiba with 1 to 2 C.c. of a solution of 1 part of NaOH in 5 parts of 95 per cent. alcohol. The presence of oils is indicated by a jelly-like mass separating or a turbidity being produced, upon cooling or on the addition of 2 volumes of ether. Pure copaiba should yield a mixture with 3 volumes of 90 per cent. alcohol from which no oil globules should separate within an hour.

Hirschsohn's test for gurjun oil. The addition of 2 C.c. of a solution of concentrated sulphuric acid in acetic ether (1-5) to 3 or 4 drops of gurjun balsam causes a violet coloration. For testing copaiba add 6 or 8 drops of the balsam to a solution of 2 drops of sulphuric acid in 4 C.c. of acetic ether. A violet colour indicates the presence of gurjun oil.

Hirschsohn's test for gurjun oil in copaiba. Boil together 1 volume of copaiba, 3 volumes of 95 per cent. alcohol and 1 Gm. of crystallised stannous chloride until complete solution results.

* After Schneider, Altschul, Lee, Squire, Crookshank, and others.

Admixtures of gurjun oil are shown by the appearance of a red coloration, changing to blue upon standing.

Hirschsohn's test for pine resin in guaiacum resin or balsam of tolu. A very finely powdered sample is shaken for 10 to 15 minutes with 4 to 5 times its weight of petroleum ether. In the presence of pine resin, an aqueous solution of copper acetate produces a green colour in the filtrate.

Histed's reaction for nataloin. If nataloin be dissolved in concentrated sulphuric acid and a small crystal of potassium nitrate be added a green colour is produced, which gradually changes to red and then to blue.

Hlasiwetz's hydrocyanic acid reaction. If an alkaline cyanide solution be warmed with picric acid a blood-red colour results.

Hoehnel's reagent for lignin. A green coloration is produced by phenol-hydrochloric acid, which is a highly concentrated solution of phenol in fuming hydrochloric acid.

Hofer's narcotisation method. Hydroxylamine hydrochlorate (or sulphate) is dissolved in water and the solution neutralised by the addition of sodium carbonate, then diluted to a strength of 1 per cent. It is further diluted as required for use, according to the kind of organisms to be killed.

Hoffmann's blue stain. Dissolve 1 Gm. of Hoffmann's blue in 20 C.c. of rectified spirit and 80 C.c. of distilled water, then add 0·5 C.c. of glacial acetic acid. As a nuclear stain immerse sections for 10 minutes, rinse in water, wash in 90 per cent. alcohol, dehydrate, clear, and mount in balsam. To stain sieve areas, stain sections for 5 to 10 minutes, rinse in distilled water, and mount in glycerin; or dehydrate, clear, and mount in balsam.

Hoffmann's reaction for chloroform. If traces of ammonium chloride and ferrous chloride be warmed with a saturated solution of alcoholic potash and a few drops of chloroform, and the mixture be then diluted with water and rendered acid with hydrocyanic acid, a greenish-blue colorâtion results.

Hoffmann's reaction for phenol. Phenol gives a violet coloration with concentrated sulphuric acid and potassium nitrate.

Hoffmann's reaction for tyrosin. A hot aqueous solution of tyrosin (obtained from the sediment of urine) produces a red precipitate upon the addition of a solution of mercuric nitrate with some potassium nitrate.

Hoffmann's reagent for albumins and phenols. A solution of mercuric nitrate containing a trace of free nitrous acid yields similar colour reactions to Millon's reagent. See Hoffmann's reaction for tyrosin.

Hoffmann's test for primary amines. Upon evaporating an ethereal solution of a primary amine base with carbon bisulphide, dissolving the residue in water, and boiling this solution with silver nitrate, mercuric chloride, or ferric chloride, an odour of mustard oil is given off.

Hoffmeister's mixture for the solution of cellulose. This consists of hydrochloric acid and potassium chlorate.

Hofmann's aniline reaction. Aniline gives with fuming nitric acid a deep blue solution, which becomes yellow upon warming, and finally turns red.

Hofmann's isonitrile reaction for primary amines. These amines yield the characteristic odour of isonitrile upon warming with chloroform and alcoholic potash.

Hoggan's ferric chloride stain. The tissue is first fixed with silver nitrate, which is somewhat reduced by a short exposure to diffused light, then dehydrated in alcohol and treated for a few minutes with a 2 per cent. alcoholic solution of ferric chloride. Next treat with a 2 per cent. alcoholic solution of pyrogallic acid, and when the required depth of colour is obtained, wash in water and mount in glycerin.

Holde's reagent for tarry constituents of lubricants obtained from petroleum. Dissolve in petroleum ether in which the tarry admixtures are insoluble.

Holde's test for unsaponifiable substances in fats. Boil a piece of caustic potash the size of a pea in 5 C.c. of absolute alcohol until completely dissolved, add 3 or 4 drops of the fat to be tested and boil for 1 minute. Upon diluting with 3 or 4 C.c. of water, a turbidity indicates the presence of an unsaponifiable substance.

Hoppe-Seyler's phenol reaction. A spruce shaving is coloured blue when moistened with phenol and hydrochloric acid. In Frommasi's modification, instead of hydrochloric acid, a mixture of 50 C.c. of hydrochloric acid, 50 C.c. of water, and 0·2 Gm. of potassium chlorate is employed.

Hoppe-Seyler's test for biliary colouring matter. The urine is precipitated with milk of lime, the excess of lime precipitated with CO_2, the precipitate filtered and washed with water. If nitric acid containing nitrous acid be dropped upon the precipitate on the filter, the well-known colour reactions are produced if colouring matter from the bile be present. See Gmelin.

Hoppe-Seyler's test for carbon monoxide poisoning. Mix a few drops of the blood to be tested with an equal or double quantity of caustic soda solution in a porcelain capsule. In case of poisoning by carbon monoxide, the blood appears of a vermilion colour in thin layers, while normal blood looks a dirty brownish-green.

Hoppe-Seyler's test for sugar in the urine. This depends upon the formation of indigo when urine containing grape-sugar is heated with *o*-nitro-phenylpropiolic acid. The reagent employed is a 0·5 per cent. solution of this acid in soda lye. On boiling 5 C.c. of this solution with a few drops of urine in the presence of sugar an indigo colour is produced.

Horsley's test for glucose. Glucose solutions, or specimens of urine containing the same, are coloured green upon being boiled with caustic potash and potassium bichromate.

Horsley's test for nitric acid. Pyrogallic acid and sulphuric acid yield a violet colour with aqueous solutions containing traces of a nitrate.

Houzeau's ozone-paper. This is red litmus paper, one half of which has been dipped into a solution of potassium iodide. Since ozone liberates free alkali from potassium iodide, the paper will turn blue in the presence of that gas.

Howie's test for turmeric. Place 0·3 Gm. of the suspected rhubarb or insect powder upon filter paper in the form of a cone, and gradually drop 50 drops of chloroform upon this heap. After drying and removing the powder, a small piece of borax is placed upon the spot and a drop of hydrochloric acid added. The appearance of the well-known red coloration indicates the presence of turmeric. Maisch's test resembles this.

Hoyer's Berlin blue gelatin mass. Freshly precipitated Berlin blue is placed on a dialyser with a little water, and the external water changed until the solution begins to pass through the parchment. Then dilute the solution and filter through paper. Next heat almost to boiling point and add gradually a warm, thin solution of gelatin, until coagulation begins to set in; then strain through wetted flannel.

Hoyer's carmine. Heat 1 Gm. of carmine on a sand bath with 1 to 2 C.c. of strong ammonia solution and 6 to 8 C.c. of distilled water, until the excess of ammonia is driven off. When the solution becomes clear red, allow it to cool, and filter off the precipitate. To the filtrate, which should be quite neutral, add 4 to 6 times its volume of absolute alcohol, and collect the clear red precipitate which is thrown down. When required for use, dissolve this powder in water and add 1 to 2 per cent. of chloral hydrate to make the solution permanent.

Hoyer's carmine gelatin mass. Mix equal parts of concentrated gelatin solution and neutral carmine as above, digest in a water bath until the dark violet-red tint begins to change to bright red, then add 5 to 10 per cent. of glycerin and at least 2 per cent. by weight of chloral hydrate in concentrated solution. Filter through flannel and keep in an open vessel under a bell-glass.

Hoyer's gold stain. A 0·5 per cent. solution of double chloride of gold and potassium is used instead of gold chloride only.

Hoyer's lead chromate gelatin mass. Filter 1 volume of 20 per cent. gelatin solution, add 1 volume of cold saturated potassium bichromate solution, then warm almost to boiling point and add gradually 1 volume of cold saturated neutral lead acetate solution, which has been previously warmed. Or mix the lead acetate solution with part of the gelatin solution, mix the bichromate solution with the remainder, heat the latter mixture, and gradually pour into it the first mixture, stirring continually.

Hoyer's mounting medium. Gum arabic is dissolved in a concentrated solution of chloral hydrate containing 5 to 10 per cent. of glycerin to form a thick syrupy fluid, which should subsequently be filtered through thick swansdown. This form of the medium answers with objects stained with carmine or hæmatoxylin, but if aniline stains be employed the gum should be dissolved in a 50 per cent. solution of potassium or in a solution of ammonium acetate, prepared by neutralising 10 Gm. of caustic ammonia with acetic acid and making up with water to 30 Gm.

Hoyer's shellac injection mass. Dissolve shellac in 80 per cent. alcohol to the consistency of a thin syrup, and strain through muslin of medium thickness. Colour with aniline colours in alco-

holic solution, or by means of vermilion or other pigment suspended in alcohol.

Hoyer's silver nitrate gelatin mass. Mix a concentrated solution of gelatin with an equal volume of a 4 per cent. silver nitrate solution and warm, then add a very small quantity of aqueous pyrogallic acid solution to reduce the silver salt, and add chloral and glycerin as in the carmine gelatin mass.

Hoyer's silver stain. Add ammonia to a solution of silver nitrate of known strength, until the precipitate formed just redissolves, then dilute the solution until it contains 0·75 to 0·50 per cent. of the salt.

Huber's reagent for free mineral acids. An aqueous solution containing 5 per cent. each of ammonium molybdate and potassium ferrocyanide. Mineral acids cause a red turbidity or a brown precipitate in this solution, depending upon the quantity present. Boric and arsenious acids do not give this reaction.

Huebl's iodine number. This serves for the determination of unsaturated compounds in oils, resin, etc., and depends upon the power of those compounds of adding iodine. The iodine number of a substance expresses the quantity of iodine which 100 parts of the substance will take up.

Huebl's solution for testing oils. The solution, which is that used in the "iodine absorption test," is thus prepared :—Iodine, 25 Gm., is dissolved in 500 C.c. of 95 per cent. alcohol ; then mercuric chloride, 30 Gm., is dissolved in a similar quantity of alcohol, and the two solutions are mixed The reagent is thus applied :—About 0·25 to 0·5 Gm., of the oil is accurately weighed and dissolved in 10 C.c. of chloroform in a 250 C.c. stoppered flask, and 25 C.c. of the Hübl reagent is run in. At the same time a blank experiment under similar conditions, but without any oil, is started. After standing in the dark for not less than 4 hours (preferably overnight), 20 C.c. of 10 per cent. potassium iodide solution is added to each, and 150 C.c. of water. The uncombined iodine is then titrated with thiosulphate, the difference between the two flasks showing the amount of iodine absorbed.

Huefner's reagent for urea. A freshly prepared solution of sodium hypobromite, made by adding 25 Gm. of bromine at once to a well-cooled solution of 100 Gm. of sodium hydroxide in 250 Gm. of water. This solution decomposes urea into carbon dioxide and nitrogen, the former being absorbed while the latter is measured in a suitable apparatus such as Knop's azotometer or Esbach's ureometer, and the amount of urea is thus quantitatively determined.

Huehnefeld's turpentine solution for testing for blood. Mix 10 volumes each of turpentine oil, alcohol, and chloroform with one volume of glacial acetic acid, and then add water drop by drop as long as the liquid remains clear. The liquid (urine) to be tested for blood is mixed with a few drops of the turpentine solution and a few drops of tincture of guaiacum are added. A dark blue coloration of the milky mixture indicates blood. According to Schär the test is applied by adding to the suspected liquid a 1 per cent. solution of guaiacum resin in absolute alcohol, and shaking the resulting precipitate, after filtration, with the above-mentioned turpentine solution.

Hume's reagent for arsenious acid. A solution of silver nitrate to which ammonia water is added until the precipitate first formed is just re-dissolved. Arsenious acid produces a yellow precipitate with this solution.

Huppert's test for biliary colouring matter. The urine is treated with milk of lime or with calcium chloride and ammonia, and a yellow precipitate of bilirubin-lime is formed in the presence of biliary colouring matter. By means of hot alcohol containing sulphuric acid this precipitate is dissolved to a green solution. After the administration of senna or rhubarb, the precipitate with lime is of a rose-red colour ; the subsequent solution is orange-yellow.

Husemann's morphine reaction. Morphine is heated with concentrated sulphuric acid, and after cooling a drop of nitric acid is added. A beautiful dark violet colour results, which changes to a blood-red and gradually fades.

Hyatt's shellac method for hard chitinous objects. After a preliminary soaking in alcohol, immerse the object in a clear alcoholic solution of shellac for a day or two, then imbed with plenty of thick shellac solution in a groove in one half of a soft wood cylinder that has been split in two for the purpose. Tie the two halves of the cylinder together with thread and, when the shellac is quite hard, fix the cylinder in a microtome, soak with warm water, and cut the sections.

Ide's imbedding method. Imbed the object in collodion in a tube by Gilson's method, boil the collodion for 40 minutes, next bring for 15 minutes into chloroform heated to 30° C., and containing one-fourth part of paraffin, then place for 10 minutes in pure melted paraffin.

Israel's orcein stain. Mix orcein, 2 Gm. ; glacial acetic acid, 2 Gm., and distilled water, 100 C.c. After staining in this, wash objects in distilled water, and pass rapidly through absolute alcohol to thick cedar oil, in which it should be mounted.

Ittner's hydrocyanic acid reaction. On adding to an alkaline cyanide solution a solution of mixed ferric and ferrous salts, a precipitate of Prussian blue is formed.

Jack's test for sugar in the urine. The sugar is identified by means of phenylhydrazine, with which it forms a difficultly soluble osazone.

Jacob's freezing mass. Dissolve gum arabic, 5 parts ; tragacanth, 1 part, and gelatin, 1 part, in enough warm water, containing one-sixth part of glycerin, to form a thin jelly when cold.

Jacobsen's test for fatty oils. The fatty oil is brought in contact with rosaniline acetate, which is insoluble in neutral fats, but is dissolved by free fatty acids.

Jacqemart's reaction for distinguishing ethyl from methyl alcohol. Upon heating ethyl alcohol with a solution of mercuric nitrate, the mercuric salt is reduced and a black precipitate results upon the addition of ammonia. Methyl alcohol does not give this reaction.

Jacquemin's aniline reaction. Upon treating a dilute aqueous solution of aniline with a solution of chlorinated lime and then adding a very dilute solution of ammonium sulphide, a rose-red colour appears, even in dilutions of 1 : 250,000.

Jacquemin's phenol reaction. Add some aniline to the liquid to be tested, and then a few drops of a solution of sodium hypochlorite. In the presence of phenol a blue colour results, which changes to a red upon the addition of acids.

Jaeger's glycerin medium. Mix glycerin, 1 part ; alcohol, 1 part, and sea water, 10 parts.

Jaffé's test for creatinine. In the presence of creatinine, urine gives, with an aqueous solution of picric acid and a few drops of soda lye, a red coloration which becomes yellow upon the addition of acid. See also Weyl's test.

Jahr's test for determining the melting point of butter. See Drouot's test.

Jakimovitch's silver process. Stain dark brown with silver stain, then expose to light for 5 to 7 days in a mixture of formic acid, 1 part ; amyl alcohol, 1 part, and water, 100 parts. Renew the mixture from time to time, and when all the mixture is dissolved a darker colour is permanently assumed.

James' slide-cleaning mixture. Mix equal parts of benzin, turpentine, and alcohol.

Jansen's carmine blue. An acidified alcoholic solution of Meister, Lucius, and Brüning's "bleu carmin aqueux."

Javelle, Eau de. Potassium hypochlorite solution, prepared by dissolving 8 parts of caustic potash in 100 parts of distilled water, and pass chlorine through to saturation, keeping the solution cool meanwhile with a mixture of ice and salt. Or, mix 20 parts of chlorinated lime with 100 parts of water and, after standing some time, add a solution of 15 parts of caustic potash in 100 parts of water. Filter after standing several hours and use the filtrate. Should any lime be left in solution and form a pellicle of crystalline calcium carbonate, remove by adding a few drops of potash solution and filtering off the precipitate formed.

Johnson's cement for fixing celloidin blocks. Melt together 1 part of beeswax and 2 parts of resin. Drop a little on to the warmed object-holder, then press on to it the perfectly dry celloidin block and allow to cool.

Johnson's platinum hardening mixture. Mix solutions of potassium bichromate (2·5 per cent.), 70 parts ; osmic acid (2 per cent.), 10 parts ; and platinic chloride (1 per cent.), 15 parts, with 5 parts of acetic or formic acid.

Johnson's reaction for sugar in urine. Upon heating diabetic urine with picric acid and potassium hydroxide solution, a deep red colour appears. To remove other reducing substances, Johnson recommends the separation of uric acid and creatinine by means of mercuric chloride ; after standing for some time and filtering, the excess of corrosive sublimate is precipitated with ammonia, and the solution is now tested as described.

(*To be continued.*)

PROCEEDINGS UNDER THE PHARMACY ACTS.

Illegal Sale of Poison.

Pharmaceutical Society v. *Peart.*

On the 16th inst., at the Edmonton County Court, before His Honour Deputy Judge Horace Smith, the Council of the Pharmaceutical Society of Great Britain sued Horace Peart, of 8, Albion Parade, Stoke Newington, for a penalty of £5 for selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. E. Vaughan Williams, instructed by Flux, Thompson and Flux, appeared for the Society. Defendant did not appear.

Mr. Williams stated that the proceedings were taken by the Registrar of the Society under the Act of 1868 to recover a penalty for selling poison. On April 23 last the defendant sold a poison which was included in the Schedule to the Act, viz., morphine, it being contained in a compound called Powell's balsam of aniseed.

Defendant was an assistant to Mr. Wells Wood, a chemist carrying on business both at 8, Albion Parade, Stoke Newington, and Well Street, Hackney, and although he did not possess the requisite qualification, he had been selling poison in such a way as to become liable for the penalty sued for. There had been great difficulty in serving the defendant with the summons, owing to efforts, both by defendant and Mr. Wells Wood, to prevent service, which for a time were successful. The sale complained of took place at 8, Albion Parade. Mr. Partridge went there; he was served by defendant, and the defendant was not at the time acting under the personal supervision or control of any qualified man. There had been an offence by defendant committed at the Well Street shop, but as he could not afterwards be found there, having been removed to the Albion Road shop, another purchase was made of defendant at that shop, and it was in respect of the later offence the Society was suing.

Mr. Partridge examined: I went to the shop at 8, Albion Parade, Stoke Newington, on April 23 last. Defendant served me with a bottle of Powell's balsam. He was in my sight the whole time I was in the shop, and no other person was there.

His Honour: Were you employed by the Pharmaceutical Society?

Witness: Yes.

Mr. Williams: He was instructed by the Registrar of the Society to procure evidence of the offence.

Mr. E. J. Eastes, F.I.C., proved receiving the bottle from the witness, and that on analysis he found it to contain "morphine."

Mr. Williams referred to the judgments in the case of the Pharmaceutical Society *v.* Wheeldon, which was a decision directly in point.

His Honour: I remember the case. It decides that the unqualified assistant selling a poison is liable under the Statute, and it is not sufficient that the qualified master is present in the shop, but he must give active personal supervision and attention to the sale. By selling this poison defendant has committed an offence under the Statute, and I must give judgment for the plaintiffs for the penalty claimed and costs.

Illegal Exhibition of Title.

Pharmaceutical Society v. *McGoun.*

At the County Court, Leicester, on the 20th inst., before His Honour Judge Wightman Wood, the Council of the Pharmaceutical Society of Great Britain sued D. J. McGoun, of 98, Clarendon Park Road, Leicester, for a penalty of £5 for taking, using, or exhibiting the title of "Chemist," contrary to Sections 1 and 15 of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Flux, Thompson and Flux, appeared for the Society; Mr. Harding represented the defendant.

Mr. Grey said the action was brought by the Society under the provisions of the Pharmacy Act of 1868 for a penalty for taking, using, or exhibiting the title of chemist. The preamble of that Statute provides that, for the safety of the public, persons known as chemists and druggists should be persons possessing a competent practical knowledge of their business. Section 1 made it unlawful for any person to assume or use the title of chemist unless such person was a duly registered pharmaceutical chemist or chemist and druggist, and then Section 15 provided for the recovery of a penalty against any person who should take, use, or exhibit such title in contravention of the Statute. In this case defendent owned a shop in Clarendon Park Road, over which were the words "Lytton Drug, Oil, Paint, and Colour Stores, D. G. McGoun, Butler and Son, Chemists," and it is for taking, using, or exhibiting the word "Chemist" or "Chemists" that he has rendered himself liable for a penalty under this Act. The Act was passed prohibiting the use of such title, in order that the public might not be misled from its use by unqualified and unregistered persons. It was clear that what defendant did in this case was to put the title up in such a way as might lead the public to believe he was a chemist. He contended that to take, use, or exhibit the title in any manner whatever was an offence under the Statute. Messrs. Butler and Son were well-known chemists in the town, and looking at the name over defendant's shop it might well be thought that defendant as well as the members of Butler and Son was a chemist. There was no objection to his saying that he came from Butler and Son, but he must not use or exhibit the title in connection therewith. It was proved by the absence of defendant's name from the printed Register that he was not either a pharmaceutical chemist or chemist and druggist, and therefore was not entitled to use any of the titles referred to in Section 15.

Mr. Arthur Foulds, examined by Mr. Grey: Upon instruction received from the Registrar of the Society, went to defendant's shop in Clarendon Park Road, on March 23 and 24 last. It appeared to be a chemist's shop—corner shop. Over one side-window was "Lytton Drug, Oil, and Colour Stores," over the door "D. G. McGoun," and over the other side window "Butler and Son, Chemists."

Cross-examined: The letters were of a large size, the doorway formed an angle, on half the space defendant's name was printed, the other half was blank.

Mr. Grey, having formally put in the Register, said that is my case.

Mr. Harding submitted that the plaintiffs were not entitled to succeed, as they had not proved any authority given to their Registrar to sue.

Mr. Grey submitted that it was not necessary to prove any authority. The Society alone could sue for penalties under Section 15, and their authority must be assumed. The action was rightly brought, the Council suing by their Registrar in the form prescribed by the earlier Statute.

His Honour: I am afraid I cannot assume the authority.

Mr. Grey: No case is proceeded with without proper authority. The authority is in Court, and can be proved.

Mr. H. Moon, examined by Mr. Grey, produced and proved the authority

Mr. Harding said: It is a fact that defendant was for eight years with Butler and Son, chemists. He opened this shop, putting up over one window the words "Lytton Drug, Oil, Paint, and Colour Stores," over the door his name and the word "from," and over the other window round the corner the words "Butler and Son, Chemists." Messrs. Butler and Son thought that their name appearing in one street might be misleading, and suggested that the word "from" should be in conjunction with their name over the side-window. He then had the word "from" painted out over the door and painted up over the window in conjunction with Butler and Son's name. Upon labels used by defendant he stated that he had been eight years with Butler and Son, chemists.

His Honour: A chemist's shop is a drug store.

Mr. Harding: The only thing defendant is restricted from selling is poison, and the only restriction as to title is that he must not describe himself as, or hold himself out to be, a chemist. He submitted that upon the words as they originally stood the Society would appear still to have objection. Section 15 was absolute in its terms, and having regard to the terms of the preamble, he submitted that it clearly meant that the title must be used in such a way as to constitute a holding out as a chemist and druggist, and in no other way could there be liability.

His Honour: How can you say this was not "exhibiting"?

Mr. Harding: The scope and intention of the Act was that there must be a holding out by the person that he is a chemist—and in that he was supported by the terms of Section 12 in the previous Act.

His Honour: Under this Act the terms are much wider.

Mr. Harding: The Section cannot be taken in its absolute and literal sense. If you do so, then any form in which the title appears would be an infringement.

His Honour: He might have been eight years with Butler and Sons, chemists, as shop-boy.

Mr. Harding: That I submit shows you must go to the intention. I shall call the defendant to explain,

His Honour: I do not think it alters the fact.

Mr. D. G. McGoun, examined by Mr. Harding: I was formerly with T. E. Butler and Son, who are chemists and druggists. I started in business last year. I had put up over my shop "Lytton Drug, Oil, Paint, and Colour Store: D. G. McGoun, from Butler and Son, Chemists." Messrs. Butler and Son made a complaint. I had the word "from" painted out over the shop door and put up over the side window in conjunction with their name. The work was done about March 30. After receiving a letter from the Society's solicitors I had everything painted out.

His Honour, in giving judgment, said: I think it is quite clear that defendant did use and exhibit the title "Chemist" contrary to the Act—it makes no difference at all as to the way in which he used it, the use of the word "from," if anything, appears to make the case stronger against the defendant, as it announces that he came from a well-known firm of chemists, and any one seeing that announcement might naturally think it meant that he was a chemist from Butler and Son. Either way defendant did exhibit over his shop the title of "Chemist" within the meaning of this Act, in a way to do the mischief which for the safety of the public the Act is intended to prevent. I must give judgment for the plaintiffs for a penalty of £5 with costs.

NEW REMEDIES.

[The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.]

Digitalin in Pneumonia.—Gingeot and Deguy have found the administration of a large dose of digitalin to have an excellent effect in pneumonia, even in the most severe cases. One milligramme is given in one dose, and no more medicine of any kind is given for five or six days. In other cases a smaller dose is given at daily intervals, but in no instance is a dose of 60 minims of a centesimal solution exceeded in seven days. This treatment is stated to be specially efficacious in the pneumonia of influenza.—*Bost. Med. Journ.*, cxxxvi., 445, after *Sem. Méd.*

Naphthionic Acid in Acute Iodism and in Cystic Disease.—Wafers containing 0·5 Gm. of naphthionic acid, given in six doses at intervals of half an hour, have produced favourable results in acute iodism. For bladder complaints Riegler recommends 3 to 4 Gm. of the acid per diem in doses of 0·5 Gm. If the bladder is syringed with 1 Gm. of naphthionic acid in 1 litre of water, the cure is accelerated. Naphthionic acid is also said to produce good effects applied to cases of poisoning with nitrites.—*Pharm. Zeitg.*, xlii. 284.

Monsonia Ovata, the Cape Remedy for Dysentery.—A very full description, with a good drawing of *Monsonia ovata*, the new remedy for dysentery, which appears to be common throughout the Eastern Province, appears in the *Cape Agricultural Journal*. The fruit possesses the characteristics of the Geraniaceæ, the long-beaked carpophore being a marked feature of the plant. The value of *Monsonia* appears to have been known locally for over a hundred years, and was probably first brought to the notice of early settlers by the natives. It is also used as a remedy in anthrax, and as a demulcent in coughs and chest affections. Another member of the same order, *Pelargonium reniforme*, has even a better local reputation in dysentery than *Monsonia*, and might be worth a scientific trial. Mr. MacOwan, the government botanist, considers that several Cape plants are worth proper therapeutic trial, and enumerates, among others, *Arctopus echinatus*, a remedy for leucorrhœa, *Cluytia hirsuta*, the anthrax cure, and *Pentansia*, an ipecacuanha substitute.—*Cape Agricult. Journ.*, x., 59.

Hydrastis in Bronchitis.—Saenger gives 20 to 30 drops of fluid extract of hydrastis three or four times a day in cases of bronchitis. He has found it superior to any other expectorant, and at the same time, it lessens the cough. The sedative effect is less rapidly manifested than that of opium, but is more lasting.—*Med. Press*, cxiv., 514.

EXTRACTS FROM CONSULAR REPORTS.

Cocaine Factories in Peru number ten; in Huanuco, five; in the Monzon district, one; Puzuzo district, one; in Lima, two; and in Callao, one. Of late the production of cocaine is said to have decreased, which is accounted for by the fact that the cost of extraction is cheaper in other countries, as is proved by the increase of the exports of coca leaves. In 1894 the quantity of cocaine exported was 4716 kilos, value £943,200, as against 3407 kilos, value £600,940, in 1895, a decrease of £342,260, while the quantity and value of coca leaves has steadily increased, the export in 1894 being nearly treble what it was in 1891.

The Consumption of Opium in Peru, on glancing at the table showing the number of kilogrammes imported from 1887 (15,284 kilos) to 1892 (30,683 kilos), appears to be increasing, notwithstanding the fact that the number of Chinese residents is rapidly decreasing. The explanation offered, however, is that the contraband trade which is known to be carried on in that commodity has been checked to some extent.

British Export Trade in Chemicals and Chemical and Medicinal Preparations during the five months ending May 31, 1897, compared with the corresponding period of the previous year, shows an increase in value of £233,786, being £3,769,888 in 1896 and £4,003,674 in 1897. For the month of May alone there was an increase of £35,698, the value in 1896 being £707,812, and in 1897 £743,510. On the other hand the imports of chemicals, dyestuffs, etc., for the same periods show a decrease in the first instance of £328,731, the total import being valued at £3,677,450 in 1896 and £3,348,719 in 1897. During May, 1897, however, the import value was £481,832, an increase of £20,600 over the import of May, 1896, £461,232.

Salted Black Olives, in casks numbering several thousands, are now annually exported from Patras (Greece) to the United States, where that article seems to be growing in favour with the lower classes. Large quantities of the black Salona olives are exported to Russia and all parts of the Levant, but it is said no Greek olives find their way to Great Britain.

Adulteration of Food, according to a recent report, is not unknown in San Francisco, and the attention of the Board of Health having been drawn to the serious extent to which it is carried on in the State, vigorous proceedings have been taken in the matter. Out of thirty-three samples of currant jelly, only nine were found to be pure. Many had no currant juice at all in them, and ten were found to be dangerous as food from the ingredients of which they were composed. The so-called currant jelly consisted either entirely or chiefly of glucose, apple jelly, starch, and acetic acid, coloured with aniline dyes. Of twenty-six samples of tomato catsup analysed, ten were manufactured in San Francisco or its vicinity, and nine of these were impure, although the tomato is one of the most plentiful fruits grown in the State. Not only in food is adulteration found, but the public is warned against potash, concentrated lye, and caustic soda, much of which is said to be abnormally adulterated. The guarantee of "98 per cent." which is upon the packages being of no value whatever, as some of the worst adulterations found—testing only 20 or 30 per cent.—have been from packages marked "98 per cent." Horticulturists are warned that many formulæ used by them in which 98 per cent. is prescribed will entirely fail of expected results when a low grade article is substituted.

Chinese Medicines.—The Province of Ssŭch'uan, says Acting-Consul Tratman, is a great producer of medicines, the export through the customs in 1896 being valued at £84,650. Much that is useful passes out, and much that is as useless as it is extraordinary. In the former class may be placed such products as ginger, calomel, rhubarb, castor oil, liquorice, sulphur, and china-root, whilst under the heading of extraordinary come such things as a fungus (*Cordyceps chinensis*) which grows upon the head of a caterpillar as a disease of the insect, dried centipedes, fossil teeth of antediluvian animals, and ant-eaters' scales. The export of nut-galls shows a heavy fall. These horny bodies are excrescences produced by a small insect which deposits its eggs in the tender shoots of a species of oak. The insects are killed by steaming.

The Ssŭch'uan Opium Export, which has gone on doubling itself since 1893, experienced a serious check in 1896, the decrease being 502,133 lbs., representing a value of £198,546. This fall does not indicate a smaller output. The crop was an average one, and the stocks in hand are large. The demand in 1895 is said to have been abnormal, large supplies being required by the Chinese soldiery employed in the military operations in Manchuria and Formosa. Also the Honan crop was bad, the production being affected by the war.

The Export of Wood-Oil from Hankow (China), though showing a falling-off during 1896, bids fair to improve and become an important factor in the trade. In place of the small boxes in which it was formerly sent forward it is now exported in casks made, or rather re-made, in Hong-Kong, which are much more convenient than the old form of package.

Olive Oil.—Of the 9217 tons of olive oil exported from Genoa during 1896, Great Britain took 449 tons. The total output was an increase on the previous year of 2225 tons, and went mostly to America.

The Danger of Vine Leaves as wrappers for any kind of food has come under the notice of the Italian authorities, and an edict has been issued to forbid the customary use of the vine leaves on account of the danger from sulphate of copper. The vines are dressed with flour-sulphur in the spring and a solution of sulphate of copper later in the season as a preventative against phylloxera and peronospera. Another pest which affects the grape harvest is the ravages of a small insect, called in dialect "bega." This is the larva of a fly, and enters one berry after another, eating out the inside. American vines are said to be proof against phylloxera, but few proprietors have as yet planted them.

The Metric Weights and Measures System seems to have an able advocate in Consul Payton (Genoa). He believes that the greatest impetus which could be afforded by the Imperial Government to British trade abroad would be the legalised adoption of metric weights and measures. He suggests that some practical assistance might be given to British commerce abroad by the establishment, under the several Chambers of Commerce, of a central Information and Advice Bureau, which for certain payments, should do what the average British producer does not seem able to do himself. A British trader desirous of securing a foreign connection would send his price-lists and circulars to the Bureau, where he could obtain a quotation for the cost of drawing them up in foreign languages, currencies, weights and measures, and could also receive the best advice as to markets for his goods and how the price-lists and circulars should be drawn up so as to ensure the greatest attention. Consul Payton believes that such a Bureau might be made self-supporting, but even if not so at first, the good work should not be cramped or shackled by any petty economy.

The Sulphur Industry of Sicily is now largely in the hands of the Anglo-Sicilian Sulphur Company, Limited, of London, which has secured about 70 per cent. of the entire Sicilian production, and has entered into contracts with the mine proprietors, guaranteeing them a fixed price for five years with a further option on the part of the Company of renewing same for a similar period on the expiration of the first term. The Italian Government, with a view to assisting the industry, agreed that on and after October 1, 1896, the sulphur export duty should be abolished on condition that the Company was formed, and that 1 lire per ton was paid to the Government as partial compensation for the loss of duty. The total output of sulphur for 1896 amounted to 133,404 tons, of which 74,039 were duly shipped and 59,365 tons remained warehoused up to December 31. The lowest price recorded at Catania was £2 11*s.* 5*d.* and the highest £3 19*s.* 7*d.*, whilst the average price for the year was £3 7*s.* per ton, *f.o.b.* Catania, taking best thirds brimstone as a basis, being an improvement of about £1 2*s.* per ton over that of 1895.

Electricity in Agriculture.—An essay has been made near Kertch (Russia) to use an electric current for quickening the growth of agricultural products. A piece of ground has been planted with telegraph poles and interlaced with wires, but frequent inspection has failed to reveal any sign of exceptional fertility.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Advertisements and Orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C Cheques and money orders should be made payable to "Street Brothers."

Articles and Reports sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

Correspondents should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for Illustrations should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Queries addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

The Chemist's Club.

Sir,—My attention has been drawn to a letter in your issue of July 10, from Mr. J. C. Hyslop, which certainly requires some notice. I am not concerned to reply to any strictures upon either the policy or administration of the P.A.T.A., that I may safely leave to some abler and more experienced advocate. But, in regard to Mr. Hyslop's remarks as to the Chemist's Club, I conceive that a few lines from me as Hon. Secretary of that Association are not out of place. I regard as distinctly offensive and untrue the charge that the Chemist's Club is demoralising the new comers into the trade, and I am quite within my rights in demanding a public statement of the reasons for such a remark. Again I emphatically repudiate as untrue the statement that the Club is subsidised by quack medicine agency. The Club has every right to expect a public apology for such gross misstatements. I wait Mr. Hyslop's answer before placing the matter before the Committee.

London, July 14, 1897. W. A. Goodall, Hon. Sec.

Trade during Insolvency.

Sir,—I should be glad to have the opinions of some of your readers, with a view to stopping the pernicious habit of firms in business placing orders indiscriminately, knowing full well they are unable to meet their engagements, and which invariably ends in a meeting of creditors being called. One of many cases quite recently came under my notice. Goods were purchased after two excellent references were given on June 9 and 21, and a meeting of creditors was called on the 24th of that month. The printed balance sheet clearly showed a deficiency of 50 per cent. as long ago as last April. In my opinion, the only way to stop this is for the trade in general after a combination to refuse to have any dealings whatever, in any shape or form, with this class of trader. I shall be glad to assist with others in any scheme for the better protection of the trade against such dealings.

London, July 19, 1897. Vincent Wood.

OBITUARY.

Billington.—On July 9, Frederick Billington, Chemist and Druggist, late of Barnsley. Aged 50.

Baker.—On July 12, William Sanders Baker, Chemist and Druggist, Clacton-on-Sea, Essex. Aged 84.

Teeling.—On July 13, Philip Walter George Teeling, Chemist and Druggist, Liverpool. Aged 65.

Taylor.—On July 16, Abraham Taylor, Chemist and Druggist, Eccleshill, Yorks. Aged 66.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

NAME OF SALT.—The crystals you send are those of potassium chlorate. You ought to be able to find out such a simple thing as this yourself. [*Reply to* S. H.—102/18.]

CAPSULE MACHINE.—Probably the firm you refer to is that of J. Digne et Cie., makers of the cachets capelliformes, 2, Winsley Street, W. [*Reply to* L. O.—101/40.]

BOTANICAL.—Your specimens are *Centaurea nigra* and a species of *Stachys*, probably *S. betonica*, but it is difficult to say definitely in the absence of leaves. [*Reply to* H. C. T. G.—102/24.]

SOLUBLE ESSENCE OF LEMON.—Lemon peel shredded fine, 16 ounces; rectified spirit, 24 fluid ounces. Macerate fourteen days, then add glycerin, 2 fluid ounces; terpeneles lemon oil, 2 drachms. Filter bright through powdered pumice. [*Reply to* S. H.—102/17.]

TATTOO COLOURS.—We believe Indian ink is one of the most commonly used colours for tattooing. This gives the bluish-black colour most often seen. For blue, indigo is used, and for red, Indian red. Sepia is also used. [*Reply to* TATTOO.—103/5.]

SYRUP OF SARSAPARILLA FOR BEVERAGE.—Concentrated compound decoction of sarsaparilla, 4 fluid ounces; oil of winter green, 6 minims; oil of sassafras, 8 minims; oil of anise, 5 minims; aromatic elixir, B.P.C., 10 fluid ounces; syrup to produce 80 fluid ounces. Mix and colour to desired tint with fluid extract of licorice. Fruit syrups are so numerous that we must ask you to specify what you require. [*Reply to* W. W.—103/2.]

PERFUMED TABLETS FOR BATH.—Take starch, 24 ozs., and mix with oil of bergamot, 6 drachms; oil of lemon, 1 drachm; oil of lavender, 1 drachm; oil of pimento, 30 minims; heliotropin, 30 grains; oil of lignaloe, 30 minims. Then add tincture of quillaia, 4 ozs. Rub well together, and add sodium bicarbonate, 40 ozs., tartaric acid, 36 ozs. Mix well and stamp into tablets with strong pressure. You can, of course, modify the perfume as you like or to suit customers. [*Reply to* LAVABO.—103/12.]

INSOLUBILITY OF BISMUTH CITRATE IN AMMONIA.—Bismuth citrate is sometimes made by simply boiling the citric acid with the subnitrate, according to the official directions of the U.S.P. If this process be followed and the mixture be not sufficiently boiled, the undecomposed subnitrate is insoluble in ammonia. On the other hand, if the B.P. process be followed and boiling continued too long, a basic oxycitrate is formed, which is also insoluble in ammonia. Most probably the insolubility of your sample is due to the latter cause. [*Reply to* J. G.—101/30.]

DISPENSING QUERY.—The prescription—sodii bicarb.. ℥ij.; spt. ammon. co., ℥vi.; syrup. apomorph. hydroch., B.P.C., ℥iss., aq. ad., ℥xij.—does not give at all an elegant mixture. On adding the sal volatile the peculiar greenish-blue colour reaction of apomorphine is rapidly developed. The mixture is at first somewhat the tint of ferrous phosphate precipitate, but on standing turns to a dirty dark sap green. The prescription—sodii bromidi, ℥vi.; potass. bromidi, ℥iv.; liq. hyoscin. hydrobrom., 1 in 1000, ♏48; liq. arsenicalis, ♏96; tinc. nux vom., ℥iij.; ext. cinchonæ liq., ℥iv.; syrup aurant., ℥iss.; aq. ad., ℥xij.—gives a reddish liquid with a copious light flocculent precipitate. You should send it out labelled "Shake the bottle." The price of the first would probably be about 4*s.*, and of the second at least 3*s.* [*Reply to* STORE BITTEN.—102/9.]

BOOK ON PHYSIOLOGY.—Halliburton's revised edition (the last of Kirke's 'Physiology' is one of the best for your purpose, being well illustrated. It is published by John Murray, 50A, Albermarle Street, London. [*Reply to* T. K.—101/41.]

LAVENDER WATER.—Oil of lavender, 4 drachms; oil of bergamot, 1 drachm; essence of musk, 1 drachm; oil of neroli, 20 minims; otto of rose, 20 minims; rectified spirit to produce 20 fluid ounces. [*Reply to* J. W.—103/2.

'FIRST LINES FOR CHEMISTS AND DRUGGISTS.'—The third edition of Dr. Steggall's book bearing this title, which appears to be what you require, was published by Messrs. J. and A. Churchill, Great Marlborough Street, London, in 1869, and we believe copies can still be procured. [*Reply to* J. B.—102/43.]

POLISH FOR BOOT SOLES.—The substance you send is rather a complex mixture. It is a solution containing 5 per cent. of gelatin, with some borax and free boric acid, having suspended in it about 50 per cent. of the finest levigated yellow ochre, and is flavoured with common citronella oil. The gelatin or size has probably been boiled with the borax until it loses its properties of "setting." [*Reply to* PEAKITE.—96/42.]

TO DISTINGUISH COINS.—The reagents found most useful by bank cashiers are strong nitric acid and aqueous silver nitrate solution. Gold coins are unaffected by nitric acid, but those containing much copper turn green where the acid touches them; silver coins do not reduce silver nitrate, but imitations made from alloys containing lead and other metals turn black where touched by the solution. [*Reply to* X. Y. Z.—103/4.]

MAJOR EXAMINATION.—Even if the Pharmacy Act be amended so that all chemists and druggists shall be eligible for full membership of the Society, those who have passed the Major examination will still retain an exclusive right in the title "pharmaceutical chemist" and the right to exemption from service on juries of all kinds. But the greatest advantage of all will continue to be, as now, proof of the possession of advanced knowledge of subjects of importance to pharmacists. [*Reply to* MAJOR STUDENT.—102/40.]

SOLUBLE ESSENCE OF GINGER.—Strong tincture of ginger, 15 fluid ounces; soluble essence of lemon, 1 ounce; glycerin, 2 ounces; distilled water, 6 fluid ounces. Add the water to the ginger, then add the other liquids. Let stand twenty-four hours, then mix in half an ounce of powdered pumice stone, and add sufficient burnt sugar to colour. If the essence be required more pungent than this, add a little "capsicine" to the tincture of ginger. This makes the preparation hotter, but rather masks the delicate flavour of the ginger. [*Reply to* S. H.—102/17.]

GLYCERITES AND SYRUPS OF FERROUS SALTS.—The preference for a sugar basis for the syrups of bromide and iodide of iron would appear to be purely a matter of fashion and prejudice on the part of prescribers, and of the public. We have prepared the glycerites as described by Arthur (*Ph. J.* [3], xix., 841), and have found them to be excellent, but they have evidently not supplanted the saccharine preparations. The glycerites keep better and are less troublesome to prepare. They are readily miscible with oils, and are not more nauseous than the old-fashioned syrups. The saying, "*De gustibus non est disputandum*," is as true in pharmacy as in other things. [*Reply to* R. H.—102/1.]

PUBLISHERS' NOTICE.

COVERS FOR BINDING.

CLOTH gilt-lettered covers for binding the half-yearly volume of the *Pharmaceutical Journal* are supplied by the Publishers, at a charge, including postage, of 1*s.* 6*d.* each.

ALL ORDERS AND REMITTANCES SHOULD BE SENT TO THE PUBLISHERS, 5, SERLE STREET, LONDON, W.C.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Andrews, Arblaster, Arthur, Batty, Blake, Brazier, Bruce, Bullivant, Chambers, Clarke, Durbar, Ferrall, Flatters, Foden, Ford, Gardner, Gunn, Hallaway, Hogg, Howard, Jones, Mumbray, Naylor, Ough, Remington, Reynolds, Richardson, Russell, Schmidt, Symes, Tayler, Walker, Wallace Wilkinson.

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"THE MONTH."

Sulphantimonites of Potassium. According to Pouget, antimony forms the following sulphantimonites :—A normal sulphantimonite, SbS_3K_3 ; a pyrosulphantimonite, $Sb_2S_5K_4$; a metasulphantimonite, SbS_2K ; and a lower body, $Sb_4S_7K_2$. The normal salt has not previously been isolated, but the author shows that it may be readily obtained by dissolving sulphide of antimony in a concentrated solution of potassium sulphide in the molecular proportions, $Sb_2S_3+3K_2S$. The solution is evaporated, avoiding contact with the air until small, white crystals are deposited ; these, when dried *in vacuo*, are found to be the normal antimonite, SbS_3K_3. They are very deliquescent and rapidly decompose in the air. The metasulphantimonite is prepared in a similar manner, using the component salts in the molecular ratio, $Sb_2S_3+2K_2S$. In the cold *in vacuo*, a salt, which is simply the additive product of these two molecules $Sb_2S_5K_4$ is formed, but on warming this is decomposed thus—

$$Sb_2S_5K_4 = SbS_2K + SbS_3K_3.$$

The former is first deposited as small reddish octahedra, crystals stable in the air, insoluble in cold water, which scarcely affects them, but readily decomposed by boiling water. On continuing the evaporation of the mother liquor, the normal antimonite. SbS_3K_3, crystallises out.—*Comptes rendus*, cxxiv.; 1445.

Phosphorus Iodides. By acting on a solution of phosphorus trichloride in carbon tetrachloride with hydriodic acid, Besson has obtained PI_3 in a pure condition in dark red crystals, melting at 61° C., and entirely decomposed by water, without liberating any free iodine or forming any deposit. In solution in carbon disulphide it is reduced by mercury first into P_2I_4, then with excess of mercury entirely, mercurous iodide and double iodide of mercury and phosphorus are formed. Reduced silver also reacts on PI_3, but the reduction in this case is not complete, only resulting in the diiodide P_2I_4. P_2I_4 melts at 110° C., and undergoes slight decomposition ; under reduced pressure it is dissociated between 100° and 120° C. into PI_3 and amorphous phosphorus. The gradual transformation of crystalline into amorphous phosphorus, by allowing the former to macerate in a solution of iodine in CS_2 or CCl_4, is explained by the intermediate formation of an unstable iodide, P_3I_4, which is decomposed thus—

$$P_3I_4 = P_2I_4 + P(\text{amorphous}),$$

and again reformed—

$$P_2I_4 + P(\text{crystalline}) = P_3I_4.$$

—*Comptes rendus*, cxxiv., 1347.

Solubility of Organic Urates. Dr. K. Goldschmidt classes in two groups the organic bases which form urates soluble in water. The bases forming urates soluble in hot water are very numerous, including methylamine, benzylamine, nicotine, tetra-hydroisoquinoline: piperazine may also be added, though its urate is but slightly soluble in water. Among the bases forming urates soluble in cold water are piperidine, ethylamine, propylamine ; the first of these is poisonous, and the last being very costly, ethylamine appears to be most suitable for use in the treatment of gout. The relatively sparing solubility of methylamine urate as compared with its higher homologues is remarkable, and apparently the solubility of the urates containing primary aliphatic amines increases in proportion to the number of methyl groups in the molecule.—*Chemiker Zeitung*, xxi., 544.

Oxidation of Organic Matter. Villiers applies the manganese salts, on the oxidising properties of which he has lately reported, for the purpose of destroying organic matter in the course of toxicological analysis, instead of chlorate of potassium, since they are as effective, and the process is more easily conducted. The organic matter is introduced into a flask fitted with a tapped funnel, and with a gas delivery tube ; pure hydrochloric acid diluted with two or three volumes of water is added. A solution of a salt of manganese is then run in, followed by a little nitric acid, a further small quantity of which is added as action slackens, as it is used up in the process of oxidation. The mixture is gently warmed according to the activity of the disengagement of gas, to regulate which a few fragments of gas carbon are introduced into the flask. Such organs as liver, spleen, and lungs are disintegrated in a few minutes, and muscular fibre is dissolved up in the course of an hour.—*Comptes rendus*, cxxiv., 1458.

Coleopterine. By extracting the elytra of the ladybird, *Cocinella septempunctata*, and those of *Pyrochroa coccinea* and *Lina populi* with boiling ether and alcohol and purifying by resolution in alcohol, and subsequently evaporating to dryness, Griffiths has obtained an amorphous red pigment, corresponding to the formula $C_7H_5NO_5$. It is soluble in alcohol, ether, carbon disulphide, and acetic acid. As isolated by solvents, it is decolorised by light, and its solutions give no characteristic absorption bands. It is a luteine or lipochrome.—*Comptes rendus*, cxxiv., 1461.

Lithium Borates. These salts have been studied by Chartelier, in the hope that they might furnish some useful data to determine the correct position of lithium in the elementary groups, since the metal and its other salts have somewhat ambiguous properties. Thus the specific heat of lithium and the fusibility of its compounds bring it near to the alkalis, while the characters of the carbonate, phosphate, and fluoride, and the hydration of the chloride and nitrate are analogous to similar salts of the alkaline earths. Fused boric acid forms, with carbonate of lithium, monobasic lithium borate, $Li_2B_2O_4$, as sodium does. On treating this with water the hydrated salt, $Li_2B_2O_4 16H_2O$ is formed, which crystallises in fine rhombohedric crystals. On treating an aqueous solution of boric acid with lithium carbonate, the tetraborate, similar to borax, is formed, but is so soluble that it could not be obtained in a crystalline form. Calorimetric determinations show that the salt closely resembles the similar sodium salt.—*Comptes rendus*, cxxiv., 1093.

Manganese in the Living Organism. The researches of Bertrand, Villiers, and other French chemists on the peculiar property of salts of manganese in acting as carriers of oxygen tend to show that the part played by this metal in the living body may be far more important than has hitherto been suspected. It is found that all salts of manganese have this property, but that the most active are the organic salts of high molecular weight, which have radicles of weak affinity for the base. It is assumed that the salts undergo hydrolysis, giving free acid and manganous oxide, which in its turn combines with one atom of the molecule of atmospheric oxygen, and liberates the other. The manganese dioxide thus formed again combines with the free acid, liberating oxygen, and so the process is continuous. In the living organism manganese is almost universally distributed as combinations with albuminoids forming special ferments termed oxydases, which probably owe their oxidising properties to the metal they contain. —*Comptes rendus*, cxxiv., 1355.

Manganese Salts as Oxidising Agents.

Villiers finds that when an oxidisable body is placed in a medium capable of supplying oxygen, but under such conditions that oxidation takes place slowly or not at all, that on adding a trace of a manganese salt, action rapidly sets in. Sucrose, glucose, and carbohydrates generally, are rapidly oxidised under certain conditions in the presence of traces of manganese, a fact that may indicate a useful application of salts of that metal in medicine, for the treatment of those diseases, such as anæmia, arthritis, and diabetes, which result from defective physiological oxidation.—*Comptes rendus*, cxxiv., 1349.

Mentho-Glycol from Citronellal.

When pure citronellal is agitated for six hours with ten times its weight of 5 per cent. sulphuric acid, the aldehyde becomes viscous and develops a strong minty odour. From this three definite bodies have been isolated by Barbier and Leser. The first, boiling at 88° to 89° C. under pressure of 10 Mm., proved to be isopulegol. The second fraction, distilling at the same pressure between 144°-145° C., was a viscous, almost colourless fluid, which on cooling solidified to a crystalline mass. The purified crystals melted at 81°-81°·5 C., and had the formula $C_{10}H_{20}O_2$. Treated with acetic anhydride at 100° it gave the acetic ester $C_{10}H_{19}O(C_2H_3O_2)$; but when heated to 150° C. with acetic anhydride and anhydrous sodium acetate, the body $C_{10}H_{17}(OC_2H_3O)$ was formed. Hydrochloric acid gas, passed into a solution of the substance in glacial acetic acid, gave the compound $C_{10}H_{18}Cl(OC_2H_3O)$. The body $C_{10}H_{20}O_2$ is regarded as a glycol and has been called mentho-glycol. This has been confirmed by its reproduction from isopulegol by the introduction of a molecule of water. By the abstraction of a molecule of water, mentho-glycol is reconverted into isopulegol. The third substance obtained was a small quantity of a body boiling at 185° C. (10 Mm.), and had the composition $C_{20}H_{34}O$. It is considered to be a condensation product of two molecules of citronellal with the elimination of a molecule of water.—*Comptes rendus*, cxxiv., 1308.

Phosphorescent Strontium Sulphide.

Mourelo finds that the phosphorescence of strontium sulphide varies considerably in intensity with the method by which it is prepared; the following process gave a product having a fine greenish blue glow, so intense that it is visible even in the shade. Two hundred and eighty-five grammes of impure commercial strontium carbonate, 62 grammes of flowers of sulphur, 4 grammes of crystallised sodium carbonate, $2\frac{1}{2}$ grammes of sodium chloride, and 0·4 gramme of bismuth subnitrate are packed together in an earthen crucible and covered with a layer of starch powder, about 2 Cms. deep. The whole is then heated to bright redness in a coke fire for five hours, then allowed to cool slowly for ten or twelve hours, after which the crucible is withdrawn, and the whitish granular friable mass is found to possess a powerful phosphorescence, which the least exposure to light is sufficient to excite. The author confirms the statement of Verneuil that most of these sulphides of strontium lose their phosphorescent power on powdering.—*Comptes rendus*, cxxiv., 1025.

Atomic Weight of Cerium.

By a series of experiments with cerium sulphate $(CeSO_4)_3 8H_2O$, a very easily crystallised, stable salt, which is readily rendered anhydrous, and when heated to 450°C., parts with the whole of its sulphuric acid, being converted into Ce_3O_4, Wyrouboff and Verneuil find that the atomic weight of cerium is approximately 92·7. —*Comptes rendus*, cxxiv., 1301.

Cerotic Acid and Ceryl Alcohol.

To remove the uncertainty existing as to the formulæ of these bodies Henriques has determined the acid number of pure cerotic acid, and finds that it agrees better with the formula $C_{27}H_{52}O_2$, than with any other. In the titration alcoholic solution of hydrochloric acid must be used, because cerotates are readily decomposed by water, and consequently the use of aqueous acid would give incorrect results. The acid was prepared from ceryl cerotate which constitutes the chief part of Chinese insect wax by saponifying the purified ester melting at 81°·5 in petroleum spirit solution with alcoholic soda, evaporating the solvents and precipitating the dilute solution with calcium chloride. The mixture of ceryl alcohol and calcium cerotate thus obtained was washed, dried, and extracted with acetone to separate ceryl-alcohol. The residual calcium cerotate was decomposed by acid and the cerotic acid purified by recrystallisation from petroleum spirit or glacial acetic acid. Thus prepared the pure acid has a melting point of 78°·5 C. Alcohol cannot be used for recrystallisation because some ethyl cerotate is always formed, and the product has a lower melting point. As ceryl alcohol is convertible into cerotic acid by heating with soda lime, it must belong to the same series as that acid, and that view was confirmed by the saponification number of the acetic ester, melting at 63°·5 C. Consequently the formula of ceryl alcohol is $C_{26}H_{54}O$, and that of ceryl cerotate, $C_{26}H_{51}O_2 \cdot C_{26}H_{53} = C_{52}H_{104}O_2$.—*Berichte*, xxx., 1415.

Thebaine, $C_{19}H_{21}NO_3$.

The *Berichte* (No. 11) contains an interesting paper by Martin Freund describing an investigation undertaken to ascertain the constitution of this base and the relations it bears to the alkaloids morphine and codeine.

Menthol Determination.

Dr. C. Kleber finds L. F. Kebler's modification of the process (see *Pharm. Journ.*, lviii., 367) devised by Dr. F. Power and himself less practical in use than the original. Kebler acetylises a weighed quantity of peppermint oil and saponifies the product, after washing and neutralising it, whilst Power and Kleber acetylise an arbitrary quantity and saponify an exactly weighed portion of the acetylised oil, after washing, drying and filtering. Kebler claimed that his process could be completed in three hours, but Dr. Kleber asserts that twenty to thirty minutes suffices to carry out the original method. The latter now publishes the following quick approximate method :—Mix five grammes of the oil with five cubic centimetres of acetic anhydride, in a flask connected with a glass-ground condenser tube, and boil for thirty minutes. An equal quantity of the anhydride is titrated with normal caustic soda and phenolphthalein. After cooling the boiled mixture, remove the condenser and wash with water which is afterwards added to the acetylised mixture, and then titrate the latter with normal caustic soda. The difference in the number of cubic centimetres in the two titrations, multiplied by 0·156, gives the amount of menthol in the quantity of oil taken. An inconvenience of this method is that comparatively large quantities of normal solution are required, whilst the desired amount must be calculated from the difference of the two titrations. This naturally makes the result less exact, but the whole of the operations can be completed in fifty minutes.—*Pharm. Review*, xv., 135.

Iodoformin.

The preparation described under this name as being made by Marquart (see *Ph. Journ.*, lv., 455) contains iodoform, and is stated by Eichengrün to be prepared by adding an alcoholic solution of iodoform to an alcoholic solution of hexamethylene tetramine. The iodoformin of Trillat is a different compound, and is prepared by mixing a solution of hexamethylene tetramine with an alcoholic

solution of iodine or a water solution of potassium iodide. It is a yellowish-brown crystalline powder of a reddish tint, and it contains 80 per cent. of iodine, its composition being represented by the formula $C_6H_{12}N_4I_4$. Boiling water decomposes it into iodine and formic aldehyde, and at 40°C. it is slowly decomposed by weak alkalies. Iodethyl-formin, $C_6H_{12}N_4\cdot(C_2H_5I)_2$, is prepared by adding ethyl iodide to a dilute alcoholic solution of hexa-methylene tetramine. It is crystallisable, very soluble in water, and yields formic aldehyde by the action of sodium carbonate or strong acids. Bardet has employed iodethyl-formin for internal administration in place of iodides.—*Bocquillon-Limousin Formulaire*, 1897.

Solubility of Sublimate in Ether.

Madsen points out that the statements as to the solubility of sublimate in ether are frequently incorrect. The Danish Pharmacopœia states that it is soluble in four parts of ether, and similar statements occur in several other pharmacopœias and manuals of chemistry. The British Pharmacopœia states that, relatively to alcohol, corrosive sublimate is still more soluble in ether than it is in water. Madsen, however, has ascertained that a saturated solution of corrosive sublimate in ether contains one part of sublimate in 8·8 parts of the solution. —*Arch. for Pharm. og Chemi*, 1897, No. 12.

Euquinine.

The bitter taste of quinine and the undesirable secondary effects it sometimes produces are not unfrequently serious obstacles to its use, and on that account the compound introduced by Zimmer and Co. under the name of euquinine is of interest, as it is almost tasteless and, according to the report of Professor C. v. Noorden, has been found to give good results when administered medicinally, without the disadvantages attending the use of ordinary quinine salts, and it is, therefore, distinguished by the prefix (εὐ=good). Euquinine is analogous in composition to quinine chlor-carbonate, which is produced by the reaction of phosgene gas with quinine, and is represented by the formula— $CO<^{Cl}_{C_{20}H_{23}N_2O_2}$ In like manner the reaction of alkyl esters of chlor-carbonic acid with quinine yields corresponding products having the general formula— $CO<^{OC_nH_{n2}+1}_{OC_{20}H_{23}N_2O}$ The ethyl compound—euquinine—is crystalline, melts at 95° C., sparingly soluble in water, and freely soluble in alcohol or ether. Therapeutically it has been found equivalent to half the quantity of quinine, and the doses must be adjusted in that proportion. Euquinine can be given to children in milk, cocoa, or soup.

Quinaphtol.

This compound of quinine with the powerful antiseptic β-naphthol-sulphonic acid, has been recommended by Professor Riegler as useful in the treatment of typhus, intestinal tuberculosis, dysentery, and acute articular rheumatism, as well as in puerperal conditions. Quinaphtol is very sparingly soluble in water or alcohol. It is not acted upon by acids, and passes through the stomach without change, but is split up in the intestines by the alkaline contents. The ordinary daily dose is from 32 to 48 grains, given in quantities of 8 or 10 grains, but in cases of exceptional high temperature as much as 80 grains has been given in the course of the day.—*Merck's Report* for 1896.

Isomerism of Pilocarpine and Pilocarpidine.

Petit and Polonovski have succeeded in converting pilocarpine into pilocarpidine by heating with caustic soda or by fusion of the hydrochloride, and they have ascertained that the change takes place without any formation of methyl alcohol by the elimination of a methyl group. Consequently these bases cannot bear the relation indicated by the formulæ hitherto accepted.—*Bulletin Soc. Chim.*, xvii., 702.

Alkaloids of Jaborandi.

A. Petit and M. Polonovski describe two bases which they have obtained from the kind of jaborandi named by Holmes arocati (*Pilocarpus spicatus*). The leaves yielded about ·3 per cent. of a mixture of bases which formed a nitrate, crystallisable from alcohol, and having a melting point of 140° C., but it was found to be a mixture of the salts of two bases which were separated by adding caustic soda and shaking with chloroform, one of the bases being dissolved by the chloroform, while the other remained in the alkaline solution. Pseudo-jaborine, the base dissolved by chloroform, does not combine with alkalies, and it has the form of a colourless syrupy liquid, is very alkaline and freely soluble in water, alcohol, or chloroform. The nitrate crystallises in large thin laminæ, soluble in water, sparingly soluble in alcohol, and melting at 158° C. The hydrochloride forms small prisms melting at 222° C. Both the base and its salts are optically inactive. Pseudo-pilocarpine, the other base, resembles pilocarpine, but is optically inactive. The nitrate crystallises in small needles, melting at 142 C. The hydrochloride forms small prisms, melting at 198°–199° C. Both bases have a molecular weight near 200 (*Journ. Pharm.* [6], v., 369). Petit and Polonovski have evidently obtained the two alkaloids first described by Paul and Cownley (see *Ph. J.*, lvii., 1) as existing in the leaves of *P. spicatus*, thus confirming their conclusions as to the undefined multiplicity of the pilocarpus alkaloids. In naming the two alkaloids pseudo-jaborine and pseudo-pilocarpine Petit and Polonovski have not added to our knowledge of the subject, nor can that be done until something more definite is known about the several alkaloids of jaborandi leaves. We are still met with the question, What is pilocarpine?

Caffeine in Tea.

Kellner has examined various samples of Souchong-Congou teas with reference to the proportion of caffeine contained in them. He finds that the amount diminishes in leaves with their growth, so that young leaves contain more caffeine than old. This is borne out by the fact that cheap commercial varieties contain from 2·82 per cent. of caffeine against 4·09 per cent. in the highest-priced teas. The alkaloid was determined by the following method:—5 grammes of finely ground tea were extracted by boiling four times with 250 C.c. of water. Each extract was set aside and filtered while hot in such a manner as to prevent any insoluble matter passing on to the filter. The united extracts were mixed with basic lead acetate in excess, and boiled for a short time in order to precipitate the tannins. The resulting precipitate was filtered while hot and washed with hot water. The filtrate was cooled, and again filtered. This filtrate was then mixed with a little hydrochloric acid and sulphuretted hydrogen passed through the precipitate. The sulphide lead was filtered off, the fluid concentrated to about 40 C.c., and filtered hot into a separating funnel, washed with hot water to bring the volume up to about 80 C.c. This was shaken out when cold four times with 80 C.c. of chloroform. The chloroform extracts were filtered into a tared flask by means of paper moistened with chloroform. The solvent was then distilled off on the water bath and the residue dried at 98° until the weight remained constant. All the caffeine can be extracted from the aqueous solution by shaking out four times for thirty minutes. The alkaloid obtained was slightly yellow and contained only traces of impurity. The proportions of caffeine varied from 2·96 per cent. in the cheapest sort to 3·53 per cent. in the highest priced Souchongs, and in Congou teas from 2·82 per cent. to 4·09 per cent. —*Forschungs Berichte*, iv., 88.

A New Alkaloid of Coffee.

Forster and Riechelmann have discovered in the aqueous decoction of coffee extracted with chloroform a body which is not removed by that solvent, and which does not give the murexide reaction, but gives a precipitate with phospho-molybdic acid. This precipitate was mixed with water and milk of lime; the mixture was then dried by the addition of plaster of Paris (in order to avoid evaporation in an alkaline fluid), the dry residue was extracted with pure alcohol, the solution filtered and evaporated. In this way a brown oil, crystallising with difficulty, was obtained, which is stated to be an alkaloid. It differs from caffeine in giving a precipitate with picric acid and by its insolubility in chloroform, also in not giving the murexide reaction. The authors determine the caffeine by the following method:—20 Gm. of ground roasted coffee are extracted by boiling four times with 200 C.c. of water, then diluted to 1000 C.c. and filtered; 600 C.c. of the filtrate are then made alkaline with soda and extracted with chloroform. The chloroform extract is introduced into a Kjeldahl flask, the solvent distilled off, and the nitrogen determined by Kjeldahl's method. From the amount of nitrogen obtained the caffeine is calculated.—*Pharm. Zeit.*, xlii., 309.

Essential Oil of Buchu.

Kondakoff and Bialobrzeski find in buchu oil, after separating the solid diosphenol, two other constituents. One of these is a hydro-aromatic ketone closely resembling menthone, boiling at 207°-209° under 757 Mm. pressure and at 97°-99° at under 20 Mm. pressure. The specific gravity at 18°·5 is 0·8994, its specific rotation is $x_D - 6·12$. It forms an oxime and combines with three molecules of bromine, the resulting compound decomposes spontaneously. The second liquid constituent is an hydro-aromatic hydrocarbon, boiling at 174°-176° and having a specific gravity of 0·8648 at 18°·5 C. This hydrocarbon has an odour resembling that of peppermint and a specific rotation of $x_D + 60°·20$.—*Journ. Chem. Soc.*, lxxii., I., 227, after *J. Pr. Chem.*

Active Principles of Arum.

Herbert and Heim find that *Arum maculatum* and *A. italicum* contain a minute trace of a liquid volatile alkaloid which in general characters agrees very closely with conine. By operating on 100 kilos of the fresh herb, 4 or 5 grammes of crude alkaloid were obtained as a brown oily liquid having a strong mousy odour, fuming with hydrochloric acid, and giving a crystalline hydrochloride. The chief difference observed between this alkaloid and conine was its physiological action, which was less potent than that of the latter. The post-mortem appearances were, however, very similar. The authors have also detected a saponin in arum, which is present in the greatest quantity in the resting tuber. This is also less toxic than typical sapotoxin, and does not appear to exert the same influence on the cardiac contractions. Hydrocyanic acid was not detected in any portions of the plants examined.—*Comptes rendus*, cxxiv., 1368.

Chemistry of Castor Oil.

According to Meyer the active constituents of castor oil are ricinolic acid and ricinelaidic acid. He states that chemically pure ricinolic acid treated with nitric acid furnishes ricinelaidinic acid and ricineladin, which are both inactive. In solutions or emulsions, however, they are said to have a strong aperient action. Dioxystearic acid, discovered first by Juillard and afterwards confirmed by the author, is also inert. By heating ricinolic acid, with glycerin in a stream of carbonic acid to 280 to 300°, an almost chemically pure body, triglyceride of ricinolic acid, was obtained, which forms an almost colourless neutral oil of a viscosity corresponding to the natural oil. The taste is also acrid and disagreeably flat; the aperient action is equal to that of ordinary castor oil. It dissolves readily and completely in its equal volume of alcohol of 96 per cent. The specific gravity is 0·959 and 0·984 (ol. ricini, 0·950-·970). This pure triglyceride would appear to be an artificial castor oil. Juillard obtained a similar oil at an earlier date, but he described same as a mixture of 2 mol. of triricinolein and 1 mol. of diricinolein.—*Pharm. Zeit.*, xlii., 326.

Chemistry of Male Fern.

Bohm claims to have isolated the following bodies from male fern:—*Aspidin*, $C_{23}H_{28}O_7$, in yellowish prisms insoluble in water, soluble in hot alcohol. *Albaspidin*, $C_{22}H_{28}O_7$, in colourless needles melting at 148° C. *Flavaspidic Acid*, $C_{23}H_{28}O_8$, in golden yellow prisms insoluble in water. *Aspidinin*, in colourless rhombic tables melting at 110° C., and *Aspidinol* $C_{12}H_{26}O_4$, crystallising in long needles or in rhombic prisms melting at 143° C.—*Annales de Pharm.*, iii., 283, after *Apoth. Zeit.*

The Chemistry of Ergot

C. Jacobi has given the name of sphacelotoxin to a substance of a resinous nature which he has obtained from ergot, and regards as the specifically active constituent of the drug. It is present in very small amount but is extremely potent, and as it is capable of combining with basic neutral or feebly acid substances, Jacobi is of opinion that a small admixture of this substance may be the cause of the activity of the various products that have been extracted from ergot. In Jacobi's examination of ergot the fat was first separated by treatment with petroleum spirit, and the residue extracted with ether. The concentrated ether extract mixed with petroleum spirit deposited a yellow precipitate, which was purified by solution in ether and re-precipitation with petroleum spirit, and then had the characters of Kobert's sphacelic acid. From the ethereal extract precipitated by petroleum spirit acetic acid extracted a basic substance of considerable activity, leaving an inactive yellow substance. An ether solution of the base mixed with some alcohol and with petroleum spirit until it became turbid deposited crystals that were quite inactive, but adhering to them were some particles of resin which had a very powerful action. This resinous substance is Jacobi's sphacelotoxin, and the yellow substance he calls ergochrysin, the inactive crystalline base secaline, the active yellow substance chrysotoxin, and the active amorphous basic substance secalintoxin. Sphacelotoxin is readily decomposed in the free state, but durable when combined with either ergochrysin as chrysotoxin, or with secaline as secalintoxin. CHRYSOTOXIN is obtained by precipitation from the ether extract of ergot (after separating fat) with petroleum spirit. It is yellow powder, without smell or taste, readily soluble in ether, chloroform, alcohol, or benzene, insoluble in water, petroleum spirit, or dilute acids. By long contact with alkalies it is converted into an inactive acid—ergochrysinic acid. Chrysotoxin crystallises, but is difficult to obtain in that state. Its composition is represented by the formula $C_{21}H_{24}O_{10}$, and Jacobi regards it as a phenolic substance, probably related to anthracene or phenanthrene. An ether solution gradually mixed with an absolute alcohol solution of an alkali deposits an alkali compound in yellow flocks. The sodium compound is soluble in water. SECALINTOXIN was obtained by shaking the ether solution of the first precipitation by petroleum spirit with dilute acetic acid. On addition of sodium carbonate grey flocks separated, which could be obtained in the state of an almost colourless powder that was nitrogenous, freely soluble in alcohol, acetic ether, benzene, or chloroform, less soluble in ether, and insoluble in petroleum spirit.

Analysis gave the formula $C_{13}H_{24}N_2O_2$. ERGOCHRYSIN is physiologically inactive. SECALINE, $C_{29}H_{55}N_6O_{14}$, is crystallisable, freely soluble in chloroform, sparingly in ether, alcohol, or benzene, almost insoluble in petroleum spirit, water, dilute ammonia, or alkaline solutions. It is physiologically inactive. Jacobi suggests that Tanret's ergotinine may be a compound of the crystallisable inactive base with sphacelotoxin, and that this substance might be combined with Kobert's cornutin so as to produce the action peculiar to both constituents.—Through *Apoth. Zeit.*, xii., 494, *Arch. exp. Path.*, xxxix.

Oil of Ergot.

Mjoen states that the fixed oil of ergot consists chiefly of glycerides of oleic and palmitic acids, but finds that there is also another fatty acid of high molecular weight present, which is considered to be an oxyacid; further research on this body is promised.—*Archiv der Pharm.*, ccxxxiv., 321.

Chemistry of the Myroxylon Pareiræ Fruits.

According to Germann the seeds of *Myroxylon pareiræ* often have crystals of coumarin on the surface, but this body does not occur in the interior of the seeds. The integuments contain myroxocerin, $C_{12}H_{20}O$, an indifferent body soluble in hot alcohol, insoluble in cold alcohol. After the removal of this body the residue obtained on distilling off the alcohol, when extracted with 1 per cent. potash solution and precipitated with concentrated potash, gave on repeated recrystallisation a pure compound, myroxofluorin, $C_{42}H_{64}O_{10}$. An alcohol, myroxol, $C_{46}H_{68}O_{10}$, was also found, and the ethereal extract gave a body, myroxin, $C_{26}H_{36}O$. The nucleus of the seeds contain the fats—olein, palmitin, and stearin. —*Arch. Pharm.*, ccxxxiv., 641.

Oleum Terebinthinæ Rectificatum.

A good commercial oil distilled with lime water furnishes about 90 to 92 per cent. of a neutral, resin free distillate, while the German Pharmacopœia directs that only about 75 per cent. of the oil is to be collected. This means a loss of 15 to 17 per cent. compared with what may be obtained. In order to determine the value of this 15 to 17 per cent. of oil, several samples of crude oil of various origin were distilled in three fractions, so that the first resulted in 50 per cent., the second 25 per cent., and the third 15 to 17 per cent. It was ound that the specific gravities and boiling points rise slightly with the fractions. The boiling points of the various fractions differ considerably. The directions of the German Pharmacopœia should therefore be altered to state that, instead of three-quarters, about nine-tenths of the oil may be recovered during the rectification progress; the boiling point should be stated to be between 150° to 190°, or else that the greater quantity of the oil distils over between 150° to 160°. The limits of the specific gravities of the raw and rectified oil might also be increased by a few degrees. —*Pharm. Zeitg.*, xlii., 430.

Ozonised Oil.

All kinds of oil and fat consisting of unsaturated compounds, such as those containing oleic glyceride, are capable of entering into combination with ozone, and they then give most of the reactions characteristic of ozone, or when brought into contact with finely divided substances, such as platinum black or blood corpuscules, they give off ozone in a free condition. Such a compound is prepared with olive oil by Spranger, in Berlin, under the name of "Electron," and it generally contains one hundred volumes of ozone. Cod-liver oil can take up twice as much ozone, and by that means it is deprived of its offensive smell and taste. All kinds of camphor take up ozone and retain it for a long time.

Extract of Male Fern.

H. P. Madsen has analysed a number of samples of male fern extract, and found that they differed very considerably in the amount of filicic acid they contained, the percentage generally ranging from 0·71 to 9·59, while in one sample it was as much as 13·07. This extract was prepared from roots collected in autumn and kept in a cellar until used. *Arch. for Pharm. og Chemi*, 1897, No. 12.

Capsules of Eucalyptol.

Having found some capsules of eucalyptol of Belgian make which were not satisfactory, Schamelhout has devised the following simple test, based on the low bromine absorption of pure eucalyptol as compared with terpenes and other bodies which may be substituted for it. A reagent is made by adding 10 drops of bromine from a dropping tube to 10 C.c. of chloroform. Five minims of the contents of the capsule are then treated with the bromine solution until a reddish yellow tint is attained. With eucalyptol this is reached with 8 drops of the reagent, with eucalyptus oil with 95. Eucalyptol containing 2½ per cent. of oil of eucalyptus required 8 drops; with 5 per cent., 12 drops; with 2½ per cent. of oil turpentine, 23 drops. Oil of eucalyptus containing 2½ per cent. of turpentine required 135 drops.—*Ann. de Pharm.*, iii., 256.

Tannin in Fruits.

From experiments on the fruit of *Diospyros kaki*, Gerber concludes that one of the chief functions of tannin in fruits is to hinder pectic changes and prevent the fermentation of the saccharine matter contained in their tissues. From the fact that the fruits under observation gave off by transpiration less carbonic acid gas than the quantity of oxygen absorbed, whereas, when tannin is converted into carbohydrates, a greater amount of carbonic acid is evolved than oxygen is absorbed, the author concludes that the theory that tannins are converted into carbohydrates in fruits is incorrect, and maintains that it disappears by complete oxidation without forming any carbohydrates.—*Comptes rendus*, cxxiv., 1106.

Tyrosin in Trifolium Pratense.

Tyrosin has been found to exist in clover. An aqueous extract from the plant was either precipitated first with lead acetate, the excess of lead removed by sulphuretted hydrogen or by sulphate of sodium, or the tyrosin was directly precipitated with mercuric nitrate solution and filtered. On standing, but especially on being slightly warmed, the fluid and resulting precipitate were coloured rose red. In appearance the precipitate was similar to that of tyrosin prepared from keratin. Mixed with H_2S a substance resulted which dissolved in ammonia. The circumstance that other amido acids were found in the plant make it probable that the reaction is due to tyrosin. The insufficient material, however, did not allow of a thorough determination of the matter.—*Pharm. Zeitsch. f. Russ.*, xxxvi., 214.

Orange Culture.

Some useful hints on fruit culture are published by H. J. Webber, who shows that by a proper combination of the various elements used in fertilisation it is possible largely to govern the quality and flavour of oranges. To obtain fruit with a thin rind, nitrogen from inorganic sources should be used in moderate quantities, with much potash and lime. Sweetness can be obtained by using ammonium sulphate freely and decreasing the amount of potash, while acidity may be secured by increasing the supply of potash and using nitrogen from organic sources. To increase the size of fruit requires the application of a comparatively heavy dressing of organic nitrogen, with a slight decrease of the other elements.—*Bull. Bot. Dept. Jamaica*, iv., 49.

Maize Proteids. T. B. Osborne and R. H. Chittenden published the results of an extended investigation of the proteids of the maize kernel a few years ago (see *P. J.* [3], xxii., 898) and the former now records the results of some additional researches. The proteids are distinguished according to their solubilities : (*a*) proteid, soluble in pure water, having some of the properties of proteose ; (*b*) globulins, insoluble in pure water, but soluble in salt solutions; (*c*) proteid, insoluble in water and salt solutions, but soluble in alcohol of sixty to ninety-nine per cent. ; (*d*) proteid matter, insoluble in water, salt solutions, and alcohol, but soluble in dilute alkalies and acids. The results of the examination of these groups are now published. It seems quite certain that no true albumin exists in the maize kernel ; the globulin formerly designated "maize myosin" is now termed "maysin," another which seems to be identical with the "albumin" formerly obtained by precipitation is referred to as "maize globulin," and a third, formerly designated "maize vitellin" appears to be identical with edestin which has been found in various seeds. The proteid soluble in dilute alcohol consists of "zein," which dissolves abundantly in ethyl alcohol of sp. gr. 0·820, forming solutions which, on evaporation in thin layers, leave perfectly transparent sheets of the proteid. In absolute alcohol, as in water, zein is wholly insoluble. It is freely soluble in concentrated glycerol, on heating to about 150° C., also in crystallised phenol, glacial acetic acid, and caustic potash solution. The total quantity of soluble proteids in one hundred grammes of finely ground maize was found to be 8·5969 Gm., and deducting from this the sum of the several proteids previously determined, viz., zein, 5 Gm., globulins, 0·39 Gm., and proteose, 0·06 Gm., there remains 3·1469 Gm. of proteid insoluble in salt solutions and alcohol, but soluble in dilute potash water. The mean percentage of nitrogen in maize proteids is 16·057. —*Journ. Am. Chem. Soc.*, xix., 525.

Amygdalin and Emulsin in Seeds. Lutz finds that amygdalin and emulsin exist together in the seeds of the genera *Malus*, *Cydonia*, and *Sorbus*, but are not found in *Pyrus*, *Crataegus*, and *Mespilus*. One hundred grammes of the seeds of *Sorbus aucuparia* gave 32 Mgm. of HCN. Emulsin only occurs in the cotyledons, but amygdalin in all parts of the embryo, and the localisation of these bodies is not affected by germination. —*L'Union Pharm.*, xxxviii., 197.

Formalin for Museum Specimens. Kanthack and Shaw state that they have found the following methods for preserving the colour in museum specimens extremely useful. The natural colours of the specimen are well preserved. (1) The specimen should be first rinsed in cold tap water in order to remove blood, mucus, or other secretions from the surface. (2) It is placed in the following solution :— Formalin, 6 ; tap water, 100 ; sodium chloride, 1 ; sodium sulphate, 2 ; magnesium sulphate, 2. Great care should be taken in arranging the specimen in this solution so as to preserve its natural shape. This should be done by supporting it with cotton wool, or, as in the case of the kidney or liver, by hanging it up in the solution by means of a thread drawn through the surrounding loose cellular tissue, not through the substance of the organ. Nor should the specimen be allowed to touch the sides of the vessel in which it is suspended. (3) If the original or cut surface of the specimen is to be preserved it should be left in the formalin solution for about forty-eight hours, and then transferred to pure methylated spirit (No. 1) for about ten minutes. (4) It should then be removed to fresh methylated spirit (No. 2), and carefully watched. The colour, which has disappeared to a great extent, gradually returns, but within an hour it begins to fade again. (5) The specimen should be taken out immediately this occurs, and put into a mixture of glycerin and distilled water (equal parts) to which a dash of pure formalin should be added. (6) In this mixture the colour regains much of its natural appearance. This glycerin mixture should be used for finally mounting the specimen. With this method the most satisfactory results have been obtained, surpassing anything ever obtained with older methods of preservation. *Kaiserling's Method.*—Proceeding as before, the following solution should be used :—Formalin, 750 C.c. ; water, 1000 C.c.; potassium nitrate, 10 Gm. ; potassium acetate, 30 Gm. The specimens are hardened in this solution more quickly, owing to the larger proportion of formalin, and more satisfactorily than with the former. The specimens should be left in Kaiserling's solution for twenty-four hours. (2) Then transfer to methylated spirit (80 per cent.) for sixteen hours overnight, till the original colour is restored. (3) They should now be put in pure spirit for two hours, and (4) Finally in a mixture of glycerin, acetate of potash and water only, with perhaps a dash of formalin added to the diluted glycerin. Though the colour may not be quite natural the method has altogether given the most remarkable results.—*Therapist*, vii., 59.

Solenoid Electro-Magnet. H. N. Warren describes an electro-magnet said to be capable of suspending a weight of ten tons, and yet requiring no more current to excite it than is obtainable from twenty-five boron-carbon cells. The core is 36 inches long by 4½ inches in diameter, and the weight of the primary is 112 pounds. The voltage required for this magnet was 50. A smaller magnet, with core 2 inches by ¼ inch, and primary weighing 4 ounces, required a voltage of 6, and supported a weight of 8 pounds. The large magnet differs from others in the construction of the iron core, the metal for which was obtained from iron oxides free from sulphides, silicates, and carbonaceous matter. The oxides were reduced in an atmosphere of hydrogen ; the resulting metal was puddled through a hot-blast Siemens furnace and drawn into bars ; these bars were next imbedded in quicklime, brought to a full white heat, and allowed to cool in the quicklime. Each limb of the magnet is drilled to receive an iron projection on the keeper, so that not only is the magnetic power fully utilised, but any side-slipping of the keeper is rendered absolutely impossible. No. 14 double cotton-covered wire was used to wind the magnet, and afterwards covered with paraffined insulating material, thread being wound upon this, and a layer of shellac varnish applied over all. —*Chem. News*, lxxvi., 39.

Ergographic Experiments with Beverages. Experimenting with coffee, tea, maté, guarana, and coca by means of Mosso's ergograph, Lombard finds that all have considerable influence in increasing the power of the organism to resist muscular fatigue. This action differs in intensity with the various substances employed, and the dymagenic effect is very variable. Coca is the most powerful, then follow in their respective order coffee, tea, guarana, and maté. Coca stimulates the muscular energy, maintains its action for a longer period, and its use is not followed by either nervous or muscular exhaustion. Infusions of coffee, tea, and maté appear to possess a tonic rather than a stimulant action on muscular energy, and this tonic effect of coffee is apparent for about an hour after its ingestion, while the effect of tea, maté, and guarana lasts for half an hour only. —*Bull. Gén. de Thérap., sec. Pharm.*, ii., 193, after *Med. Oboz.*

British Pharmaceutical Conference.

What to See in the Commercial Capital of Scotland.

GLASGOW will shortly be visited by many who follow the profession of pharmacy, some of whom will be able to recall the details of a similar occasion twenty-one years ago, though a larger number will doubtless come to Scotland's commercial metropolis as strangers. That all will find much to interest them it is needless to say, but the time available for sight-seeing by those who propose to spend but a week or less in the district will necessarily be limited, and the following sketch is therefore submitted with the idea of showing what is best worth seeing.

The city of St. Mungo is situated on the banks of the Clyde, in

the north-west corner of Lanarkshire, and its boundaries extend into Renfrewshire. The Romans had a station hereabouts and, prior to that, the Druids are supposed to have had a temple where Glasgow Cathedral now stands. Early in the sixth century St. Kentigern, popularly known as St. Mungo, founded the see of Glasgow, but little is known of it until the reign of David I., when the see was re-established. William the Lion granted a charter for holding a market in 1176 and, shortly afterwards, erected it into a burgh of barony under the bishop's rule. Much later, it was raised to the dignity of a royal burgh by Charles I., and the privilege of choosing its own civic rulers was acquired from William and Mary, in 1690, since which time the commercial prosperity of the city of Glasgow has been uninterrupted.

The place is rich in historical associations, the names of Wallace, Percy, Montrose, Cromwell, Claverhouse, and Rob Roy at once suggesting themselves as amongst those who have broken in upon its civic calm. But the growth of its population from little more

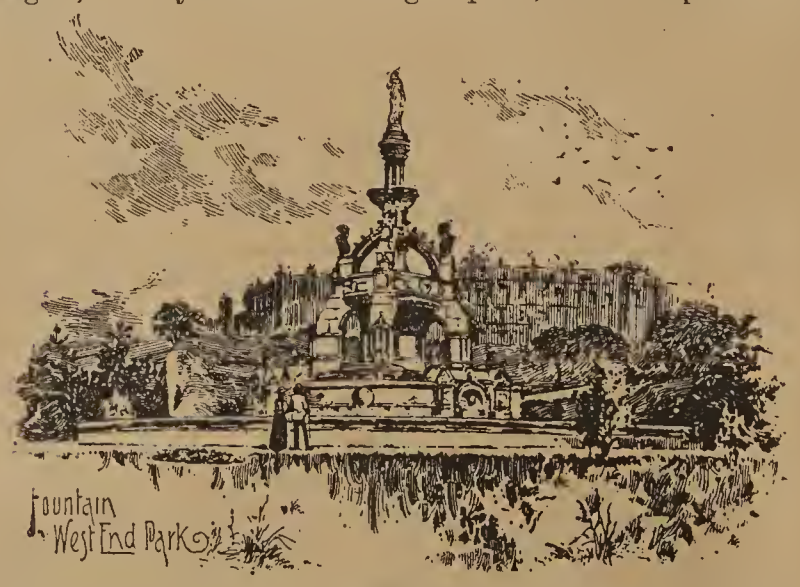
than 80,000 in 1801 to nearly ten times that number at the present day has been dependent upon causes which had little or nothing to do with the struggles in which those and other fighting men of the past were engaged. The coal-field rich in seams of ironstone over which Glasgow is built may be placed first among the factors which have contributed to the rapid industrial growth of the city,

and next comes the River Clyde, that noble waterway on which huge war vessels can now float with ease, though a century ago it was little more than three feet deep at high water. The heavy iron-founding and engineering trades find what may be termed a natural habitat in the district, and blast furnaces, chemical works, ship-building, and locomotive works, etc., are very much in evidence.

Like Liverpool, the place which disputes with it the proud pre-

eminence of being the second city of the empire, Glasgow may be reached either by sea or land. Regular services of steamers run from London and other seaports to Glasgow, whilst three great trunk lines serve for the traffic on wheels. Arriving by rail, the visitor finds himself at one of four stations—Buchanan Street, Queen Street, St. Enoch, or the Central Station. In any case it is but a

short distance to the Grand Hotel, the Conference headquarters, and having reported there, the visitor who arrives early may desire to look around him. The excellent service of tramcars will enable him to survey the city roughly in a comparatively short time, and the excellent map in the Glasgow Corporation Tramways Guide* to the principal streets and public parks should prevent him going astray at any point. Moreover, the ubiquitous policeman is always prepared to act as an animated guide-post. Adopting the plan of Mr. Robert Ford, who has recently set himself to show, in the pages of the *People's Friend*, how a day can best be spent in Glasgow, we may start from George Square, which is practically



the centre of the city, and forms an excellent basis from whence to operate. Mr. Ford's description of the route, which is based on the Corporation Guide already referred to, has been largely utilised for this sketch, as it is both attractively written and accurate.

George Square, the starting point of our excursion, is surrounded by imposing buildings and studded by monuments of national interest, prominent among which stands that of Sir Walter Scott, a colossal statue on a fluted Doric column eighty feet high. There are also equestrian statues of the Queen and Prince Albert by Marochetti, Chantrey's exquisite statue of James Watt, Flaxman's Sir John Moore, Foley's Lord Clyde, Mossman's Sir Robert Peel, David Livingstone, and Thomas Campbell, whilst near the latter stands the people's statue of Robert Burns. The chief buildings in the Square are the General Post Office, occupying half the south side of the Square, and the Merchants' House on the upper west side, the headquarters of the Chamber of Commerce, "a richly furnished and decorated building, the inside walls of which are adorned with the portraits of those commercial princes who have been chiefly responsible for Glasgow's growth and prosperity since the beginning of the century." The Royal Bank of Scotland, "in all the glory of its Grecian design," is also situated on the west side of the Square. Leaving the Square by the south-west corner, the Royal Exchange may be seen on the right, fronted by a superb equestrian statue of the Duke of Wellington, the panels on the pedestal of which will reward minute inspection. The Royal Exchange was designed by David Hamilton, and is remarkable for the elaborate use of gigantic Corinthian pillars, and "the fact that the moneyed men of Glasgow daily congregate within its ample walls." Returning to George Square, the entire east side is seen to be occupied by the Municipal Buildings, which are claimed to be the largest and

finest in the land. "The style is Venetian Renaissance, and in the structure, seen and hidden from sight, are embedded 350,000 cubic feet of stone, the entire cost of the site and structure exceeding £520,000. With the exception of one building in Italy, and perhaps the Grand Opera House in Paris, it is commonly acknowledged there is no grander and more artistic interior to be seen anywhere. It embraces a Council Chamber, a Banqueting Hall, and numerous offices for the conduct of the city's municipal business. Every day when the Council is not sitting the building is open for visitors between the hours of 10 and 11 a.m., and between 3 and 4 p.m." A guide shows visitors round and, satisfactory to relate, no gratuities are accepted. Among the internal decorations of the buildings, the marble work on the Banqueting Staircase and Council Chamber Staircase, fitted up at a cost of over £16,000, are exceptionally fine.

The next object of attraction is the Cathedral, ten minutes' walk distant in a north-easterly direction, and by a slight detour to the south, one can pass along Ingram Street, in which are situated the historic Ram's Horn Kirk and Kirkyard, where the unfortunate lover of Madeline Smith was buried; and near Candleriggs, where are the City Hall and large Fruit Bazaar, specially busy on Tuesdays and Fridays. In College Street, which is immediately contiguous, are the headquarters of the City Fire Brigade, and directly opposite the eastern extremity of this short street is the scene of the Old Glasgow College, now occupied by a railway goods and passenger station, partly in possession

* Copies of this guide will be presented to those attending the Conference by the local committee.

of the Glasgow and South Western and North British Railway Companies. The site is redolent of historic memories, and had the City Corporation cherished them as they deserved, the scene would not have been unmarked by the preservation of any portion of the ancient building. Here also, on the south of the old College, stood the Monastery of the Black Friars, in which King Edward resided when he visited the city. Duke Street Prison, on the right, is the largest civilising institution for female law-breakers in the land. The commanding buildings on the left are the City Hydraulic Pumping Works. Next, the visitor finds himself unexpectedly in a little square, adorned by a statue of the late Dr. Norman Macleod, near which stood the veteran preacher's church, for which he claimed distinction as being the ugliest kirk in Scotland. The Royal Infirmary is in front, and to the right is the Cathedral, behind which, and beyond the Bridge of the Molendinar, locally known as the Bridge of Sighs, there rises the Necropolis, which from its character and situation has been compared to Père la Chaise in Paris.

The Cathedral, besides being the oldest building in the city, is perhaps the best example of Pre-Reformation Church architecture in Scotland, and though situated in a busy and populous city, it has the appearance of the most sequestered solitude. It is open to visitors every day in the week—free, with the exception of Tuesdays and Saturdays, when a nominal charge of twopence is made for admission. The building is in the form of a cross, and measures 319 feet in length by 63 feet in breadth, while in the centre the tower and spire rise to a height of 225 feet. The nave contains a number of monuments, and is separated from the choir by a grotesquely carved screen representing the seven deadly sins. In the choir, which is of a more elaborate character than the nave, the congregation of the High Church meets. Behind the choir is the Lady Chapel, with its beautifully-carved windows, while adjoining is the Chapter House, in which is a monument to the Scottish soldiers who fell at Tel-el-Kebir. Below the choir is the crypt, the gem of the whole building, showing such solidity of construction, such richness of groining, and such beauty of detail in the pillars and varied capitals as render it artistically of the highest value. In the Cathedral there are no fewer than 147 pillars, while the series of 150 stained glass windows chiefly executed in Munich and Milan, make it one of the most richly decorated churches in the kingdom. There are comparatively few mediæval monuments in the Cathedral, but several stone coffins have found a resting-place under the floor of the choir, and two empty ones stand on the floor of the crypt. A recumbent effigy, long supposed to be that of St. Mungo, is in reality that of Bishop Wishart, or Wiseheart, a Scottish patriot, who died in 1316. Edward Irving, the great preacher, and early friend of Carlyle, is buried in the crypt, a brass tablet marking his grave. Near by is "Rob Roy's Pillar," behind which the bold outlaw is reported to have concealed himself on one occasion.

Entering the Necropolis the Jew's burying ground is seen on the left, and in other parts of the Necropolis are monuments to William M'Gavin, author of "The Protestant"; Sheridan Knowles, the dramatist; Michael Scott, author of "Tom Cringle's Log"; Motherwell, the poet; William Miller, author of "Wee

Willie Winkee"; Alexander Rodger, the author of "Robin Tamson's Smiddy"; Edward Irving, Dr. Wardlaw, and many other famous Scotsmen. Occupying the highest point is a strikingly impressive monument of John Knox, from the base of which a fine view of the city is obtained. Leaving the Necropolis and proceeding south by John Knox Street, a west-going car will convey the visitor through many of the finest portions of the city, and set him down at the gate of the Botanic Gardens in the extreme West End, passing George Square, Buchanan Street, Sauchiehall Street, and Cambridge Street *en route*. Near the junction of Cambridge Street with New City Road will be seen the Free Normal College. The ecclesiastic structures include St. Mary's Episcopal on the right, Woodside Parish Church on the left, and near to Kelvin Bridge, again on the right, Lansdowne U.P. Church. The Botanic Gardens cover a space of twenty-eight acres, and here are found specimens of a large number of rare and attractive plants. The Gardens are Corporation property and free to visitors. The grounds are attractively laid out, and an important feature is the Kibble Crystal Palace—"a stately pleasure-house of glass capable of accommodating 5000 people," whilst the rows of hothouses also command attention.

Returning by way of Bank Street, the visitor soon reaches the University and Kelvin Grove Park. The University buildings occupy a commanding situation on the high ground of Gilmorehill. The Bute Hall was erected at a cost of £60,000 by the Marquis of Bute; the Randolph Hall and Staircase was erected at a cost of £46,000, defrayed from a bequest by Charles Randolph, the eminent shipbuilder. The Library is rich in works of theology and philosophy; and the Hunterian Museum contains anatomical specimens of supreme interest, besides some fine pictures by old masters, illuminated missals, specimens of the works of early printers, and a valuable collection of coins and medals. It is open daily from 10 a.m. to 3 p.m., and here again there are no admission fees. "Having seen round the University, the visitor should proceed to view the West End Park, noting the new Art Galleries in course of erection; the bridges that span the Kelvin, running about midway through the grounds; the splendid Stewart Memorial Fountain, surmounted by a statue of the Lady of the Lake, and erected to commemorate the introduction of Loch Katrine water to the city, and the services of Lord Provost Stewart and others in accomplishing the work. The old mansion of Kelvin Grove, which has been formed into a museum, and a wing added to it, should not be overlooked. Immediately beside this, in the open, the old engine, said to be Watt's first, stands erected; and also the engines of the 'Comet,' the first steamer that sailed on any European river." A ten minutes' walk will bring the visitor to Charing Cross, where a car should be boarded for top of Union Street, a continuation of which is Jamaica Street, at the foot of which in turn is the Broomielaw, where at times the wharves are crowded with merchandise destined for every village in the Scottish Highlands and Islands accessible by steamer, and to convey which a lively flotilla of steamboats is kept constantly employed.

From this point it is recommended that one of the little river steamers should be boarded for Whiteinch Ferry, an opportunity being thus afforded for viewing the immense shipping and shipbuilding industries for which the Clyde has deservedly a European fame. Whiteinch possesses an admirably laid-out public park, which embraces a fine model yacht pond, and to geologists in particular a great attraction rests in what is known as the Fossil Grove, "a collection of fossilised tree-roots discovered some years ago, all in perfect condition, and the age of which no scientist has dared to indicate." From Whiteinch the little steamer should be taken back as far as Govan on the opposite side, from whence St. Enoch's Square can be reached by subway in a few minutes. Issuing from the subway a few steps straight ahead bring us into Argyle Street, where a car running westwards may be boarded for Crosshill. The journey, which is by Jamaica Street, Glasgow Bridge, and Eglinton Street, affords a view of what is perhaps the busiest part of Glasgow. The car stops at the gate of the Queen's Park, and the visitor should dismount and enter. "From the highest point of these large and beautifully terraced grounds one of the finest views conceivable is obtained—the Campsie and Kilpatrick Hills, and on a clear day Ben Lomond and the hills of Loch Long. From here also may be had the most extensive view of the ever-smoky city, while to the south lies the famous battle-field of Langside, and the rapidly growing village of Cathcart, with its Old Castle nestling among the sweetly undulating Cathkin Hills."

If a Maryhill car be taken, Mount Florida, and Govanhill will be passed on continuing the ride, and the car shortly reaches Albert Bridge, spanning the Clyde at the foot of the historic Saltmarket, redolent of Bailie Nicol Jarvie, and much that is most interesting in Old Glasgow life. "To the right appears Glasgow Green, one hundred and forty acres in extent. As far as the unaided eye can reach along the northern bank of the river its conspicuous adornments are Nelson's Monument, towering in the centre, and the Doulton Fountain, presented to the city subsequent to the Exhibition of 1888. The massive buildings on the left are the principal Court Houses, where the Lords and 'Commons' meet by invitation four times a year." Close by here is Glasgow Cross, and the Salt Market. The tower in front with the clock marks the scene of the Old Tolbooth, which the genius of Sir Walter Scott has associated universally with the humorous adventures of Rob Roy and his kinsman the Bailie. Turning a corner, we are in the Trongate, and there immediately on the right—now converted into a drapery warehouse—is the veritable building which embraced the once famous Tontine Hotel. Further west on the left is passed the venerable but hideous Tron Steeple, "sad and lone looking, as if conscious that the brush of the vandal improvement may sweep it into the gutter any morning." At Stockwell, Trongate ends and Argyle Street begins, the latter being as already noted, the busiest street in Scotland. In another minute the car reaches the foot of Queen Street, and the journey is ended. From here to the Grand Hotel is but a short walk, or, proceeding by way of Renfield Street and Sauchiehall Street, the Crosshill to Overnewton cars will convey us past the Corporation Galleries of Art to our destination. The Corporation Galleries, it may be noted, will serve as the first place of assembly at the approaching Conference, for the Reception by the President, and the subsequent Conversazione are to be held there. The Galleries contain a very fine collection of Dutch, Flemish, and Venetian pictures, which have been described by an authority as "the most interesting and valuable provincial public collection of such works in the Kingdom." There is also a display of sculpture, including a statue of Pitt by Flaxman.

Concerning the many other places of interest in and about Glasgow, intending visitors must perforce be referred to the official guide already mentioned, and to Black's handy 'Guide to Glasgow and its Environs' (London: Adam and Charles Black. 1*s.*). Those desirous of proceeding further afield should not fail to consult MacBrayne's 'Summer Tours in Scotland,' which fully describes the various tours from Glasgow to the Highlands, and may be purchased (6*d.* and 1*s.*) at most railway bookstalls throughout the Kingdom.

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THE IMPORTANCE OF LOCAL ORGANISATION.

UNION and efficient organisation are generally admitted to be essential elements of success in effecting reforms involving the removal of evils that vex and harass the members of any class, for, as pointed out by Dr. SAMUEL WOODCOCK, in his presidential address to the Lancashire and Cheshire Branch of the British Medical Association, "Parliament, like HANS BREITMANN, 'doesn't think much of people that goes mit themselves alone.'" But while it is combination and union that tell, that fact is too frequently insufficiently acted upon. Medical practitioners have formed the British Medical Association—"the largest, the richest, the most extensive medical association the world has ever known," but as at present constituted, "the most clumsy, and awkward, and inefficient piece of machinery ever put into operation." The objects of the Association are two—one scientific, the other professional, viz., "the promotion of medical and the allied sciences, and the maintenance of the honour and the interests of the medical profession." But whilst in Dr. WOODCOCK's opinion the first object has been successfully worked, the second has been badly managed. In fact, he asserts that not only has the maintenance of the honour and interests of the profession not been kept clearly in view, but the matter has been lost sight of altogether by those responsible for the management of the Association. The position is thus stated: "Those in front—weighted with the responsibilities of office, gratified by, and proud of, the achievements in one direction seeing nothing but the possibilities of failure, and perhaps the danger of precipitancy, in vigorously following the other—maintained consistently a policy of 'masterly inactivity.' Those in the rear—feeling the pressure of injustice, daily exposed to the abuses of irregular practice, and harassed by unfair competition—growing dissatisfied with the general result of the operations and vehemently clamouring for a forward policy. But those behind cried 'forward,' and those before cried 'back.'" Both parties, it is acknowledged, have perhaps merited the ancient rebuke to one-sidedness, "these things ye ought also to have done, and not have left the others undone."

It is clearly apparent that the political line of the Association cannot be successfully worked under existing conditions, if they are as described, and as Dr. WOODCOCK is not merely a destructive critic, he proceeds to offer suggestions with a view to remedying the alleged defects in the organisation of the Association. These suggestions are extremely valuable, the more especially as they are eminently practical, and they deserve the careful attention of everyone interested in the advance of pharmacy as a profession, no less than that of the sister profession of medicine. The keynote to the reform which, as Dr. WOODCOCK remarks, must come or leave the way open for revolution, is the strengthening of branch associations. The danger of too much centralisation is well understood, and the only effectual way of averting that danger is by what has been called "the process of devolution." Local government, it is pointed out, has had much to do in contributing to the growing contentment and increased prosperity of the people during the present reign, and it may be observed, parenthetically, that such success as has been attained by the British Medical Association is probably due in greater measure to the activity of its branches than to any other cause. But all members of the Association are not attached to branches, and as units they are able to do but little in the way of influencing the executive body. What is required, therefore, is increased and improved local government in the Association, as by strengthening the branches the methods of administration will be improved. Branch councils, it is urged, are, *ipso facto*, the ethical committees of the Association, whose province it is to maintain a high standard of honour on the part of its members, and they ought, therefore, to be representatives of localities, whilst men ought to be elected to the councils who have intimate knowledge of the districts represented.

The National Union of Teachers, an association which was established so recently as 1870, is instanced as affording an admirable example of what may be accomplished by efficient local organisation. It includes 424 local associations and nearly 33,000 members. Out of a subscription of less than 10*s.* per annum the Union is served by a competent staff of permanent officials, three standing counsel, a general solicitor, and 300 local solicitors of repute. Moreover, there is a local agent in every parliamentary division, and ample funds are available for benevolent, legal, and parliamentary purposes. More than 90 per cent. of certified male teachers are members of the Union, and all are obliged to enter through the local associations. Dr. WOODCOCK proposes that a similar rule should prevail in connection with the British Medical Association, all new members being compelled to join through the branches, which would thus be strengthened, enlarged, and invigorated to such an extent that the Association would receive the required impulse to move it onward to the position of influence it ought to hold as the great representative organisation of the medical profession. If, too, each local council were composed of representatives from the parliamentary divisions within the sphere of operations of the branch, in every constituency there would be a man in touch with the organisation on the one hand, and with a member of Parliament on the other. He could, when necessary, act as convener of any meeting of medical men in the division, and they would probably be able to influence the parliamentary representative. In this way the Association would be in touch with Parliament to an extent and degree not hitherto experienced, and if the profession were agreed upon any measure, it would be able to exert an irresistible influence. Nor would the exercise of that influence be in any degree detrimental to the public interests, for Parliament is only an instrument for giving effect to the will of the people, and Dr. WOODCOCK is quite right in maintaining

that the best interest of the medical profession and the best interests of the public are in no sense antagonistic.

The same is true with regard to pharmacy, and it is a question for serious consideration whether some similar scheme to that so ably outlined by Dr. WOODCOCK might not be applied with advantage in our case. The advocates of territorial representation and the federation of pharmaceutical associations have all had a dim appreciation of the truth which Dr. WOODCOCK has now so fully unveiled, and to go much further back, it may be suggested that the original idea of maintaining branches of the Pharmaceutical Society was based on the same incontrovertible facts. The success of the North British Branch has proved the great value of the process of devolution in the case of one part of the kingdom, and there is good reason to believe that an extension of the plan would yield not unfavourable results. But for the fact that the discussion of matters of such directly personal interest to chemists and druggists is barred by the rules of the British Pharmaceutical Conference, such a topic might well have found a place in the Glasgow programme. As it is, opportunities should be sought to deal with the matter, which is of the utmost importance at the present time, and on an early occasion it is proposed to revert to the subject in these columns. Meanwhile, readers are urged to give some little attention to this idea of increasing local action, and of strengthening, enlarging, and invigorating local pharmaceutical associations.

CARL REMIGIUS FRESENIUS.

AT a recent sitting of the Berlin Chemical Society, Professor FISCHER gave the following account of the career of FRESENIUS :—He was a native of Frankfurt-on-the-Main, and after leaving the gymnasium was apprenticed to an apotheker in the city. While thus engaged he attended the chemical lectures given by BÖTTCHER, and in 1840 became a student of pharmacy at the University of of Bonn. At that time there was no laboratory for practical instruction connected with the University, and young FRESENIUS obtained admission to the private laboratory of Apotheker Marquart. In the course of his studies, and for his own instruction he there drew up a plan of the work on qualitative analysis which subsequently came into such general use, and at the suggestion of MARQUART he had it printed. Soon afterwards FRESENIUS went to Giessen, and under the influence of LIEBIG took up the special study of chemistry. After acting some time as LIEBIG's assistant, and taking his degree he became *privat docent*. Towards the end of 1845 he accepted an invitation to take the position of professor at an agricultural institute near Wiesbaden. Being unprovided with a laboratory and unable to induce the government authorities to provide one, FRESENIUS decided upon establishing one himself in the town of Wiesbaden. Commencing in the early part of 1848 with EMIL ERLENMEYER as his assistant, and five pupils, the numbers rapidly increased, and the institute has been carried on ever since for the practical training of students, and for conducting the investigation of questions relating to a great number of subjects. Up to the time of his death FRESENIUS was actively engaged in directing the work of the institute, and in contributing to the advance of analytical chemistry by his works and by numerous memoirs published in scientific periodicals.

ANNOTATIONS.

THE GLASGOW CONFERENCE ARRANGEMENTS are now practically complete, and we are asked to notify that there will be a meeting of the Executive Committee of the B.P.C. at the Grand Hotel, Glasgow, on Monday, August 9, at 6.30 p.m. Those who have not yet applied for tickets or engaged rooms should do so at once, or they will risk disappointment. The No. 1 book of tickets, price half a guinea, will admit the holder to the reception, luncheons, smoking concert, afternoon teas, and the excursions on Tuesday and Wednesday; No. 2 book, also half a guinea, includes a first-class return ticket to Greenock on the Thursday, the day's cruise on the s.s. "Glen Sannox," together with luncheon, dinner, and tea on board. These tickets must be procured before Wednesday next, August 4, or the local committee will be hampered in making the necessary arrangements. Applications should be addressed to Mr. J. Anderson Russell, 212, New City Road, Glasgow, who will also be glad to have early intimation from anyone requiring bedrooms at an hotel or private apartments. The Grand Hotel is now full up, but applications are still pouring in, and those who come last must of necessity expect to be less conveniently accommodated than others who write and engage rooms more promptly.

AS REGARDS CONTRIBUTORS OF PAPERS, it is to be feared they are incorrigible in their tendency to procrastination. Every year, as the date of the Conference approaches, the same appeals are made by the Hon. Secretaries, and tardy responses are received. The official intimation that manuscripts should be sent in "at least ten days before the meeting" appears to be taken to mean "not more than ten days before the meeting," and the result is that the Hon. Secretaries are worried quite unnecessarily at a time when they most need assistance, by having to write repeatedly to those who have offered papers, asking them to hasten delivery. It would almost seem as though the old idea of holding a Conference for reading papers prepared deliberately during the preceding twelve months had become eclipsed in an exceedingly absurd travesty, viz., writing papers at the last minute merely for the sake of reading something at a Conference. The difference between the two methods is very great, and for the credit of the Conference as an organised body of British pharmacists, it is to be hoped that the old idea may not be quite lost sight of. Otherwise, the gathering will be doomed as a scientific and technical meeting much earlier than its most pessimistic critics have ever prophesied.

THE DISPENSING OF MEDICINE by chemists ought to be beyond reproach, but discrepancies that are noted from time to time indicate that sufficient care is not invariably taken in dealing with prescriptions. In many instances, of course, chemists are unfairly credited by public authorities with errors and careless work that are in reality attributable to pseudo-druggists, stores, etc., and in some of the cases referred to at a recent meeting of the Birmingham Health Committee, when a report was presented by Dr. Hill on the analysis of medicines recently dispensed by "chemists" in the city, it may be that the purchases were not made at the premises of registered chemists. In all some two dozen samples had been taken, of which nineteen were understood to be satisfactory. In the remaining five there were certain irregularities which, it is stated, were due more to carelessness than to any attempt to evade the law. In one or two cases, indeed, there was an excess of the most expensive drugs: others, however, did not come up to full strength. It is a not uncommon experience of public analysts to find more than the prescribed amount of medicaments in mixtures, and

there is little doubt that this is due to omission on the part of dispensers to make up the finished preparation to the specified amount. Nothing is more probable than that a bottle nominally containing six fluid ounces should actually be short of that capacity, and if in such a case, instead of diluting the mixture to the proper quantity in a graduated measure, the dispenser simply fills up the bottle with water or infusion, the medicaments are certain to be proportionately in excess. Such careless work would not be passed in the examination room, and chemists who value their reputation for accuracy should absolutely forbid it in their pharmacies.

Coroners sometimes show a want of acquaintance with the provisions of the Pharmacy Act, which is much to be regretted as tending to encourage a continuance of practices which that Act is intended to prevent. An instance of this kind is furnished by the account given of an inquest on a child who died the day after his mother had given him a "cooling powder," which the medical witness described as containing tartar emetic, and as having accelerated death by its depressing effect. Though tartar emetic is an article included in the first part of the poison schedule, the coroner is reported in the *Lancet* (July 24, p. 235) to have said "that as the powders were a patent medicine and bore a Government stamp they evaded the Poisons Act." In view of the recent decision in the Piper case, such a misconception is remarkable, and the statement was not a very appropriate response to the juryman who remarked that it was "a shame that poison could be sold to anyone who asked for it." As an inference apparently from the Coroner's misleading statement, the *Lancet* remarks "that the Medicine Stamp Act ought to be repealed," overlooking the fact that the removal of the duty upon proprietary medicines would tend to promote the trade in them with more mischievous results than at present. The only way of accounting for such a mistaken suggestion is by supposing the writer to be impressed with the equally fallacious idea that the Government stamp on proprietary medicines is a recommendation and not merely a sign that the tax imposed upon secret medicinal preparations has been paid.

The Dangers of Potassium Chlorate in compressed tablets, when used to excess, have been exemplified in a recent case at Alnwick. A chemist's apprentice, aged fifteen, had a medical man called in to see him, and when asked if he had taken anything to disagree with him, he said he had taken potassium chlorate pellets on the previous Sunday to clear his throat, as he was going to sing at the Wesleyan chapel anniversary. He died about 11 a.m. on the Wednesday from syncope, caused by the amount of chlorate taken. Deceased said he had taken about two-thirds of an ounce, sucking the pellets one by one. That quantity, the medical attendant remarked, would cause a fatal result from its action on the heart and kidneys, and as some people were susceptible to the action of the drug, it was to be regretted that there was no provision for warning purchasers of the excessive doses of that and other similar preparations.

The Paraffin Hair Wash Case, in which a lady was so severely burned whilst having her hair shampooed in a hairdresser's shop, was fortunately one that excited the lively sympathy of people in authority, on account of the high social position of the victim. It is alleged that the "pétrole" or dry shampoo used was composed of rectified petroleum spirit and ether, and if that be so, the wonder is that there are not many such accidents when the preparation is used. At any rate, it appears likely that the law dealing with the sale of such dangerously inflammable preparations may be amended before long, for even the Home Secretary has felt impelled to say, in the House of Commons, that the present law with regard to petroleum is in a very unsatisfactory state. Further, it is announced that Mr. Wootton Isaacson intends to bring in a Bill forthwith, providing that all patent and proprietary medicines, and all such chemical compounds as are used for remedial purposes, shall have an exact analysis of the contents of each bottle, parcel, or box, as the case may be, distinctly stated outside, either on the label or printed on the receptacle which contains the article. The effects of such a law would be much more far-reaching than the mere prevention of paraffin explosions in hair-dressers' shops, and chemists should sympathise with the objects of the Bill, which may be described as being in their best interests in particular as it is in those of the public in general.

Calcium Carbide is the subject of another communication from the Home Office, in which it is stated that since the Order in Council of February 26 last, in virtue of which certain parts of the Petroleum Acts, 1871 to 1881, were applied to calcium carbide, the question of the expediency of exempting small quantities of this substance from the operation of the Order has occupied the attention of the Home Office. The Secretary of State has been advised that such exemption might safely be extended to quantities of calcium carbide not exceeding five pounds, when kept in separate substantial hermetically closed metal vessels containing not more than one pound each, and an Order in Council was therefore made on July 7 authorising the keeping of not more than five pounds of calcium carbide in vessels as above described without a licence. The original Order of February 26 has been amended accordingly, and the amending Order appeared in the *London Gazette* of July 9. It is to be observed that where the calcium carbide is not kept in vessels as above described no quantity may be kept without a licence. Chemists should pay particular attention to this point.

Xylopes are Theoretical Individuals, whose existence in the future is predicted by M. Gaston Moch in a paper in the *Revue Scientifique*. He assumes the possibility of persons being specially gifted with the faculty of seeing countless vibrations of rays of light, and seems to think that the development of the application of X rays will lead to the discovery of many beings gifted with this peculiarly piercing sight. To such persons, he observes, the most beautiful human countenances would appear repulsive, as they would appear as skeletons covered with a sort of gelatinous matter. Needless to say, M. Moch expresses pity for the hypothetical persons whom he calls xylopes, and he appears to ignore the fact that if such beings as he imagines were to exist their standard of beauty would be based on their own experience, and not on the impressions of individuals gifted only with average sight.

The New Telegraphy continues to excite attention and, marvellous as are the effects produced, still greater marvels are predicted as the outcome of Marconi's work in the immediate future. We are sagely informed by the inevitable Reuter, that it is not anticipated that Signor Marconi's discovery will at once revolutionise modern telegraphy, though the latter will undoubtedly be greatly benefited. As already stated in these columns, in communication between vessels, or between a vessel and the mainland, the Marconi system has proved an undoubted success, the more so as the transmission of signals is in no way affected by atmospheric conditions, but further experiments are required to determine the exact distance which the signals can traverse, and whether it will be possible to transmit messages to the bottom of a mine or the middle of the ocean. Generally speaking, remarks Reuter's agency, "Signor Marconi's discovery is calculated to pro-

duce surprising results. In addition to the possibility of exploding gunpowder magazines on board ship from a long distance off, Signor Marconi foresees that he will be able, by means of the waves in the air, to set automatically and simultaneously all the watches in the pockets of the inhabitants of a town, by timing them from one central clock with a daily electrical discharge at noon." It is much to be feared that the ingenious inventor may shortly find his reputation too great to live up to, though perhaps these rumours may only be set afloat to prepare the way for the formation of a joint-stock company.

The British Medical Association holds its annual meeting in Canada this year, but the business part of the meeting was held in Exeter Hall, London, this week, for the discussion of the reports of the Council and of the various committees, and for other business. The gold medals of the Association for distinguished merit were awarded to Sir Walter Foster, M.D., M.P., and Mr. C. G. Wheelhouse, F.R.C.S., being presented by the President, Dr. Robert Saundby. The Stewart Prize of £50 and certificate were awarded to Dr. German Sims Woodhead, and the Middlemore Prize of £50 and certificate to Dr. Alexander Hill Griffith. The meeting was afterwards adjourned to Montreal, where, on August 31 and the three following days the members of the Association will assemble under the presidency of Professor Roddick, a member of the Dominion Parliament. This is the first meeting of the Association to be held outside the United Kingdom, and the warmest welcome has been offered to the members both by the medical profession in Canada and by the Government of the Dominion and public institutions generally.

The Chemists' Exhibition, to be held next month in Covent Garden Theatre, is attracting much more notice in the lay press on account of the place where the exhibits are to be displayed than it was ever likely to attract on account of its intrinsic merits. In fact, the singularity of the thing seems likely to be its best advertisement on this occasion. The *Court Journal* thinks it improper that such an exhibition should be held in such a place, and says: Of all the unfitting uses to which a great opera house could be put, surely the proposed Chemists' and Druggists' Exhibition at Covent Garden is the most extraordinary. "What would be said if the Grand Opera of Paris were to be devoted to such a purpose, or La Scala of Milan, or, indeed, any opera house of any nation, excepting England and, perhaps, America? The air which has been vibrating nightly with the music of the master composers of the world and the echoes of the finest singers of the age is to be polluted with the fumes of the apothecary's shop. It is but an idea, but certainly no other people than we English people would accept such a violation of the artistic by the prosaic unmoved. And yet, as a community, we may be said to be moved in a way, for many will go to see the exhibition of drugs who would not think of listening to an opera." Yes, and probably many will be induced to go after reading such notices as this, and the promoters' hearts be gladdened by an invasion of that public which already thinks it knows so much about drugs and endeavours to sweat the chemist and druggist accordingly.

At the International Pharmaceutical Congress to be held at Brussels next month, Austria will be represented by Dr. Vogl, the Director of the Pharmacological Institute of the Vienna University; the Swiss Government by M. Sébardt; the Société de Pharmacie of Paris by M. Adrian; the Syndicat de Pharmacie de la Charente by its President, M. Chaux.

REAGENTS, REACTIONS, METHODS AND FORMULÆ, KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 76.)

Joliet's imbedding method. Dissolve gum arabic in water to the consistency of a thick syrup, and add 6 to 10 drops of glycerin to a watchglassful. Immerse the object, and leave to dry for 1 to 4 days, then cut out a block containing it and allow the other side to dry.

Jolles' reaction for acetone. This consists in the precipitation of the acetone with phenylhydrazine.

Jolles' reagent for albumin in the urine. Mix corrosive sublimate, 1·0 Gm.; succinic acid, 2·0 Gm.; sodium chloride, 1·0 Gm.; water, 50·0 Gm. To apply the test pour 4 or 5 C.c. of the filtered urine into each of two test tubes, add 1 C.c. of acetic acid to each, and then shake the mixture up, in one case with 4 C.c. of the reagent, in the other with 4 C.c. of water. By comparison of the two samples, traces of albumin (1 : 120,000) can be identified. Compare Spiegler's reagent.

Jolles' test for biliary colouring matter. The urine to be tested (50 C.c.) is shaken for several minutes in a glass cylinder with a few drops of 10 per cent. hydrochloric acid, 5 C.c. of pure chloroform, and a saturated solution of barium chloride. After standing for 10 minutes, the chloroform and the precipitate are removed to a test tube by means of a pipette, and the chloroform is evaporated off on a water bath. After standing at the room temperature for some time, the watery portion of the residue is decanted from the lumpy precipitate. The latter is distinctly coloured even when only 1 per cent. of gall is present in the urine, whilst upon the addition of 3 drops of concentrated nitric acid, to which $\frac{1}{3}$ of a volume of fuming nitric has been added, the characteristic green and blue rings are formed.

Jolles' test for iodine in urine. The urine is tested with an equal volume of hydrochloric acid, and a few drops of chlorine water are added. In the presence of iodine a brown ring results, which colours starch solution blue.

Jolles' test for mercury in the urine. Warm 100 C.c. of urine with 2 Gm. of granulated gold, with the addition of some stannous chloride. After decanting the liquid, any amalgam that may be formed is washed with water and then introduced into a test tube with a little water and an equal volume of freshly prepared stannous chloride solution. The slightest traces of mercury cause a distinct turbidity. The mercury can be quantitatively determined by heating the dried amalgam. Compare Merget's test.

Jorissen's fusel oil reaction. Upon shaking whisky with ether, evaporating the ethereal layer, and treating the residue with colourless aniline and hydrochloric acid, a beautiful red colour is produced if fusel oil be present. The reaction is not produced by fusel oil contained in the alcohol, but is due to the presence of furfurol, another of the fermentation by-products (Förster). In the presence of considerable quantities of furfurol the liquid may be tested directly by adding a few drops of aniline and hydrochloric acid.

Jorissen's morphine reaction. Morphine is heated on a water bath with a few drops of concentrated sulphuric acid and a crystal of ferrous sulphate, and the resulting liquid poured into a few cubic centimetres of ammonia water. At the zone of contact a red colour develops, and rapidly changes to violet, while the ammonia solution turns blue.

Jorissen's reagent for alkaloids. A solution of 1 Gm. of zinc chloride in 30 Gm. each of hydrochloric acid and water. When evaporated to dryness with this solution, alkaloids give characteristic colour reactions. For particulars see Hager, *Pharm. Praxis*, iii., 1250.

Joseph's injection mass. Dilute filtered white of egg with 1 to 5 per cent. of carmine solution. This mass remains liquid when cold, but coagulates when immersed in dilute nitric, chromic, or osmic acid.

Jungmann's reaction for alkaloids. Upon treating the precipitates obtained with phospho-molybdic acid (compare Sonnenschein's reagent) with ammonia, some are coloured blue or green. (Hager, *Pharm. Praxis*, i., 203.)

Kadyi's imbedding mass. Heat 25 Gm. of sodium stearate soap in shavings with 100 C.c. of 96 per cent. alcohol, in a retort over a water bath. When solution is complete, filter and cautiously add water in small quantities until a drop of the solution,

* After Schneider, Altschul, Lee, Squire, Crookshank, and others.

poured into a watch-glass, no longer solidifies into a white mass. About 5 to 10 Gm. of water will be required for 120 Gm. of soap solution. The finished mass should be almost transparent, with merely the slightest blue opalescence.

Kaiser's Bismarck brown stain. Sections are stained for 48 hours, at a temperature of 60° C., in a saturated solution of Bismarck brown in 60 per cent. alcohol, and washed out in 60 per cent. alcohol containing 2 per cent. of hydrochloric acid or 3 per cent. of acetic acid.

Kaiser's glycerin jelly. Soak 1 part, by weight, of gelatin in 6 parts of water for about 2 hours, then add 7 parts of glycerin, and for every 100 Gm. of the mixture 1 Gm. of strong carbolic acid. Warm for 10 to 15 minutes, stirring until all the flakes produced by the carbolic acid have disappeared, then filter through wet glass wool.

Kaiser's nerve stain. This is a modification of Weigert's process. The material is hardened in Müller's solution for 2 or 3 days, then cut into slices 2 to 4 Mm. thick and treated with the solution for 5 or 6 days more. Subsequently immerse in Marchi's solution for 8 days, then wash, pass through alcohol, and imbed in celloidin. Sections are mordanted for 5 minutes in the following mixture :—Solution of ferric chloride, 1 part ; distilled water, 1 part ; rectified spirit, 3 parts. Next wash in Weigert's hæmatoxylin, and warm in a fresh quantity of the same for a few minutes, wash with water, differentiate in Pal's solution, and neutralise the oxalic acid by washing in water containing a little ammonia.

Kaiser's stain for the spinal cord. Sections are stained for a few hours in a solution of naphthylamine brown, 1 part, in water, 200 parts, and alcohol, 100 parts. Afterwards, wash with alcohol and clear with origanum oil.

Kallins' neurological method. Dissolve hydroquinone, 5 Gm., sodium sulphite, 40 Gm., and potassium carbonate, 75 Gm., in 25 Gm. of distilled water. At the time of using, dilute this solution with one-third to one-half its bulk of absolute alcohol, and immerse sections of silvered material for several minutes until reduction is complete. Then place them in 70 per cent. alcohol for 10 to 15 minutes, and subsequently leave in aqueous solution of sodium hyposulphite (1 : 5) for 24 hours or more. Finally, dehydrate and mount. Carmine may be used as an after-stain.

Karle's reaction. See Wiederholt's reaction.

Kassner's reaction for oxygen peroxide. Upon the addition of potassium ferricyanide and caustic potash solutions, oxygen is evolved.

Kayser's saccharin test. The substance to be tested is shaken with a mixture of ether and petroleum ether, and the residue left upon evaporation of the ethereal layer tested for sweetness.

Keiser's sublimate solution. Mix 10 Gm. of mercuric chloride, 3 Gm. of glacial acetic acid, and 300 Gm. of distilled water.

Keller's test for the principles of digitalis. The substance to be tested is dissolved in 3 or 4 C.c. of glacial acetic acid, a drop of dilute ferric chloride solution added, and the solution poured in a layer upon concentrated sulphuric acid :—Digitonin yields a rose-red zone, which rapidly fades. Digitalin yields a permanent, carmine-red zone. Digitalein yields a red zone, fading somewhat rapidly. Digitoxin yields at first a dirty brownish-green zone, after which the upper portion of the sulphuric acid is coloured brownish-red, above which a bluish-green band is formed.

Kerner's test for the purity of quinine salts. Quinine sulphate is much less soluble in water than are the sulphates of the allied alkaloids. If, therefore, quinine sulphate (or any other quinine salt after the addition of sodium sulphate) be shaken with a definite amount of water, the quantity of ammonia required to produce a permanent precipitate in the filtrate will be a measure of the percentage of allied alkaloids present. Upon digesting 2 Gm. of pure quinine sulphate in 20 C.c. of water at 60° to 65° C. for half an hour, then allowing this mixture to stand for 2 hours at 15° C. with occasional shaking, and subsequently filtering through glass wool, 5 C.c. of the filtrate requires the addition of 4 to 4·3 C.c. of a 10 per cent. solution of ammonia. In the presence of cinchonine, quinidine, and other kindred alkaloids more ammonia will be necessary.

Kerner's test for quinine in urine. This depends upon the fluorescence of quinine solutions. Since the fluorescence is prevented by sodium chloride, a concentrated solution of mercuric nitrate is added to the urine as long as a precipitate is produced. Upon filtration the presence of appreciable quantities of quinine becomes apparent. The use of a fluoroscope is advantageous.

Kieffer's reagent for free mineral acids. A solution of copper sulphate is carefully treated with ammonia water until the resulting precipitate is just redissolved. Solutions of neutral metallic salts which show an acid reaction toward litmus produce a turbidity of this reagent ; if, however, the salts contain free mineral acids, the mixture remains clear.

Kieffer's reaction for morphine. Upon the addition of 5 or 6 drops of ferric chloride solution (1 : 8) and 3 drops of a solution of potassium ferricyanide (1 : 100) a drop of morphine solution will cause a blue coloration or a blue precipitate in consequence of the reduction of the ferricyanide.

Kintschgen-Gintl's reagent. See Millon's reagent.

Kitton's asphalt varnish. Dissolve asphalt in benzol and add a small quantity of gold size.

Kitton's white lead cement. Grind together equal parts of powdered white lead, red lead, and litharge with a little turpentine, and when thoroughly incorporated, mix with gold size. Keep a stock of the materials ready ground, and mix as required for use.

Kjeldahl's method of determining nitrogen. From 0·5 to 2 Gm. of the substance is weighed out and boiled with 20 C.c. of sulphuric acid and 0·7 Gm. of mercuric oxide for 10 minutes, then add 10 Gm. of potassium sulphate, and continue boiling until the colour is reduced to pale straw. Cool, wash into a distilling flask with 200 C.c. of water, and rinse the acid flask out with two more successive lots of water. Add 75 C.c. of 50 per cent. sodium hydrate solution, and 10 C.c. of potassium sulphide solution, distil into 50 C.c. of decinormal sulphuric acid, using cochineal as indicator. When all the ammonia has distilled over, titrate the uncombined acid. Each C.c. of $\frac{N}{10}H_2SO_4$ used = 0·0014 N = 0·0017 NH_3 = 0·00886 albuminoids. In many cases the mercuric oxide is not necessary, and in that case the potassium sulphide is omitted.

Kleb's glycerin gelatin. Wash 10 parts of best French gelatin and allow to stand in distilled water till it swells up ; then pour off excess of water, melt at a gentle heat, and add 10 parts of glycerin and 2 per cent. of carbolic acid.

Kleb's glycerin jelly. Mix a concentrated solution of isinglass with half its volume of glycerin.

Klein's cochineal fluid. See Csokor's alum cochineal.

Klein's fixing mixture. Mix 2 parts of one-sixth per cent. chromic acid solution with 1 part of methylated spirit. Or, mix 1 C.c. of 10 per cent. chromic acid solution with 60 C.c. of water, and add 30 C.c. of 90 per cent. alcohol.

Klein's solution for the mechanical separation of the constituents of a powdered mineral. This is an aqueous solution of cadmium boro-tungstate, sp. gr. 3·3. See Thoulet's solution.

Kleinenberg's colophonium. A solution of ordinary pale resin in rectified oil of turpentine.

Kleinenberg's hæmatoxylin. Great differences exist in the formulæ for this stain. According to Squire, 20 Gm. of crystallised calcium chloride should be dissolved in 10 C.c. of distilled water, and 3 Gm. of alum in 16 C.c. of distilled water, by the aid of heat. Mix the solutions and immediately dilute with 240 C.c. of rectified spirit ; filter after standing an hour and add 2·5 Gm. of hæmatoxylin.

Kleinenberg's picro-sulphuric acid. Mix distilled water, 100 volumes, with sulphuric acid, 2 volumes, and dissolve in the mixture 0·25 per cent. of picric acid. Dilute the finished solution with three times its volume of water. Or, mix 20 C.c. of saturated solution of picric acid, 380 C.c. of distilled water, and 2 C.c. of sulphuric acid.

Klunge's reaction for aloes (Cupraloin reaction). A very dilute solution of aloes is coloured yellow by the addition of copper sulphate. If sodium chloride be added and the mixture gently warmed, a red colour results. Upon adding alcohol in addition to sodium chloride this colour is produced at ordinary temperatures.

Knapp's solution for the determination of glucose. A solution of 10 Gm. of mercuric cyanide and 100 C.c. of soda lye (sp. gr. 1·45) in enough water to make a litre. This solution is reduced upon warming with glucose, metallic mercury separating out. Kreatin and kreatinin act similarly. 40 C.c. of the solution correspond to 0·1 Gm. of glucose.

Knauer's slide-cleaning process. Boil for 20 or 30 minutes in 10 per cent. lysol solution, then rinse with water till clear.

Knop's reagent for the determination of nitrogen in ammonium salts and in amides by means of the azotometer. Sodium hypobromite is used for this purpose. See Hüfner's reagent.

Koch's cholera reaction. The addition of sulphuric acid to cholera cultures on peptone causes a red coloration due to the

action of the sulphuric acid on the two decomposition products of the cholera bacillus, indol and nitrous acid.

Koch's copal method. Stain small pieces of material in bulk and dehydrate with alcohol, then immerse in a thin solution of copal in chloroform. Evaporate with a gentle heat until the solution is so far concentrated as to draw out into threads that are brittle on cooling. Then remove the objects and leave on a tile for a few days to dry. Sections may then be cut by means of a fine saw. If objects are imbedded unstained, remove copal from sections by soaking in chloroform, decalcify if necessary, and then stain.

Koch's method for staining flagella. Immerse cover-glass preparations in a 1 per cent. aqueous solution of hæmotoxylin, then transfer to a 5 per cent. solution of chromic acid or to Müller's fluid; dry and mount in balsam.

Koch's method for tubercle bacilli. Place sections or cover-glass preparations in Koch's methylene blue solution for 20 to 24 hours (or 0·5 to 1 hour if warmed to 40° C.), then treat with aqueous solution of vesuvine for 2 minutes, and wash out excess of colour with distilled water. Cover-glass preparations should then be dried and mounted in balsam, whilst sections require to be dehydrated in absolute alcohol and clearing in cedar oil before mounting in balsam.

Koch's methyl-violet solution for staining bacteria. This is made by adding a few drops of a concentrated solution of methyl-violet in absolute alcohol to 20 C.c. of distilled water, whereby an intensely yellow coloured solution results.

Koch's methylene blue solution. Mix 1 C.c. of saturated alcoholic solution of methylene blue, 0·2 C.c. of 10 per cent. caustic potash solution, and 200 C.c. of distilled water.

Koch's stain for tubercle bacilli. Shake 2 C.c. of aniline with 20 C.c. of water and filter the mixture through a wetted filter. To the clear filtrate add alcoholic fuchsine (or gentian-violet) solution until a film of metallic lustre indicates saturation.

Koch-Erlich method. Place sections or cover-glass preparations for at least 12 hours in gentian-violet or fuchsine aniline water (aniline water, 100 C.c.; concentrated alcoholic solution of gentian-violet, or fuchsine, 11 C.c.; absolute alcohol, 10 C.c.), then immerse in a mixture of pure nitric acid (sp. gr. 1·42), 10 C.c., and distilled water, 30 C.c., for some seconds. Rinse in 60 per cent. alcohol for a few minutes, and then counterstain with vesuvine (vesuvine, 0·5 Gm.; rectified spirit, 20 C.c.; distilled water, 80 C.c.) after gentian-violet or methylene blue (methylene blue, 0·25 Gm.; rectified spirit, 20 C.c.; distilled water, 80 C.c.) after fuchsine. Finally rinse in water, dehydrate, clear, and mount in balsam. According to Squire, who points out that nitric acid is apt to injure delicate sections, Watson Cheyne recommends that sections should be transferred from fuchsine aniline water to distilled water, then rinsed in alcohol and placed in the following contrast stain for 1 or 2 hours:—Saturated alcoholic solution of methylene blue, 20 C.c.; distilled water, 100 C.c.; formic acid, (sp. gr. 1·2), 1 C.c.

Köhler's alkaloid reaction. See Langley's reaction.

Kollmann's fixing solution. This containing 5 per cent. of potassium bichromate, 2 per cent. of chromic acid, and 2 per cent. of concentrated nitric acid.

Kolossow's gold method. Impregnate objects for 2 or 3 hours with a 1 per cent. solution of gold chloride acidulated with 1 per cent. of hydrochloric acid; subsequently reduce for 2 or 3 days, in the dark, in a 0·01 to 0·02 per cent. solution of chromic acid.

Kolossow's osmium stains. (1). A 0·5 per cent. solution of osmium in a 2 or 3 per cent. solution of uranium nitrate or acetate; (2). mix absolute alcohol, 50 C.c.; distilled water, 50 C.c.; concentrated nitric acid, 2 C.c.; and osmium, 1 to 2 Gm. Keep in a cool place. Partly reduced solutions may be regenerated by the addition of a little powdered potash alum.

Kolter's reaction for hypochlorous acid. On shaking the liquid to be tested with metallic mercury, brown oxychloride of mercury is produced in the presence of this acid.

Kopp's test for lead in tinfoil. A drop of sulphuric acid is applied to the foil; if of pure tin, the spot remains white. If lead be present, a black stain is produced.

Kopsch's formaldehyde solution. Mix 4 parts of 3·5 per cent. bichromate solution and 1 part of commercial formaldehyde solution.

Korotneff's narcotisation method. When Siphonophora are extended in water, a watch-glass containing chloroform is floated on the surface, and as soon as the animals are rendered insensible they are killed by means of hot mercuric chloride or chromic acid solution.

Kossinski's double stains. (1) Stain sections for 10 to 20 minutes in saturated aqueous solution of indigo and carmine, wash with water, then with alcohol; next stain with 0·5 per cent. solution of safranine in dilute alcohol, dehydrate and mount. (2) Stain for 3 to 5 minutes in 0·1 per cent. aqueous solution of nigrosin, and proceed as before.

Köttstorfer's number. This indicates the amount of caustic potash, in milligrammes, required to completely saponify one gramme of the fat.

Krämer's test for acetone. See Messinger's test.

Krehbiel's reaction for biliary colouring matter. Treat the urine to be tested with one-fourth its volume of hydrochloric acid and add chlorinated lime solution drop by drop. In the presence of biliary colouring matter a green colour is produced. Bromine water gives the same reaction, called also Trousseau-Dumonpallier's reaction.

Kronecker's artificial serum. Dissolve 6 Gm. of common salt and 0·06 Gm. of caustic soda in 1000 Gm. of distilled water.

Krönig's cement. Gradually add ordinary resin, 7 to 9 parts, to melted beeswax, 2 parts, then filter and cool.

Krüger's glucose reagent. See Böttger's test.

Kühne's aniline oil solutions. Rub up as much methylene blue, methyl green, or safranine as will go upon the point of a knife, with 10 C.c. of aniline, and allow to settle.

Kühne's aniseed oil freezing mass. Soak objects in aniseed oil for 12 to 24 hours, freeze and cut, then remove the oil by means of alcohol.

Kühne's carbolic fuchsine or black brown. Dissolve 1 Gm. of fuchsine or black brown in 10 C.c. of absolute alcohol, and add 100 C.c. of a 5 per cent. aqueous solution of carbolic acid.

Kühne's methyl violet solution. Dissolve 1 Gm. of methyl violet in 90 C.c. of distilled water and 100 C.c. of alcohol.

Kühne's methylene blue method. Transfer sections from alcohol to carbolic methylene blue, and leave for half an hour, then rinse in water, and place in weak acidulated water until they are of a pale blue colour. Next rinse in a mixture of saturated aqueous solution of lithium carbonate, 1 C.c., and water, 30 C.c., and transfer to pure water. Afterwards dip one by one into absolute alcohol in which some methylene blue has been dissolved, then transfer to Kühne's aniline oil solution of methylene blue to dehydrate, rinse in aniline, clear in terebene, then in xylol, and mount in balsam. To show satisfactorily the structure of the tissue, Kühne decolorises sections stained in carbolic methylene blue with a solution of acetine or chlorhydrin blue, 10 Gm., in 100 C.c. of 10 per cent. alcohol. This takes 10 to 60 minutes. They are then passed through alcohol, aniline, terebene, and xylol, after which they are double-stained by treatment for 2 to 10 minutes with Kühne's safranine aniline oil diluted to 4 or 5 times its bulk with aniline. Again pass through terebene and xylol before mounting.

Kühne's method for bacteria. Sections are dehydrated in alcohol, stained for 3 to 5 minutes with Kühne's carbolic fuchsine, rinsed in water, dipped for 1 minute into alcohol, and extracted in Kühne's methyl green aniline oil, then passed through terebene and xylol. Anthrax sections are stained for 5 minutes in carbolic black brown, rinsed in a mixture of aqueous solution of lithium carbonate, 1 C.c., and water, 30 C.c., and then in 90 per cent. alcohol. Afterwards place for 5 minutes in carbolic fuchsine, and decolorise in solution of yellow fluorescine, 1 Gm., in absolute alcohol, 50 C.c. Tubercle sections are treated for 10 minutes with carbolic fuchsine, thoroughly rinsed in water, decolorised in fluorescine alcohol, and then transferred to terebene, xylol, and balsam. Or, before mounting, they may be counter-stained by treatment for 5 or 10 minutes with methyl green aniline oil, diluted with half its bulk of aniline; then pass into terebene for 2 minutes, afterwards into xyol, and mount in balsam.

Kühne's modification of Gram's method. Stain nuclei with carmine, then treat sections for 5 minutes in methyl violet solution, diluted one-sixth with a 1 per cent. aqueous solution of ammonium carbonate, or in a solution of Victoria blue, 0·25 Gm., in rectified spirit, 20 C.c., and distilled water, 80 C.c. Next rinse thoroughly in water and transfer to Gram's solution for 2 to 3 minutes; again rinse in water and extract excess of stain with solution of yellow fluorescine, 1 Gm., in absolute alcohol, 50 C.c. Finally, pass through pure alcohol, aniline, terebene, and xylol, and mount in balsam.

(To be continued.)

THE MEDICAL, SURGICAL, AND HYGIENIC EXHIBITION.

During the present week an exhibition has been held at the Queen's Hall, Langham Place, W., under the auspices of the Medical, Surgical, and Hygienic Exhibitors' Association. Here could be seen on the 120 or 130 stands all the latest styles and improvements in chemical and medicinal preparations and surgical and hygienic apparatus and appliances, mineral waters, cordials, medicated wines, foods of various kinds, and numerous other articles connected either directly or indirectly with the "art of healing."

On entering the building the visitor was confronted in the vestibule by one of the most attractive stands in the exhibition, that of

CAMWAL.

Over the front of the exhibit in large black letters on a white ground stood out the well-known sign: "Chemists' Aërated Mineral Waters Association, Limited," but on passing through the curtained doorway another sign presented itself for view, composed simply of the initial letters of the foregoing, it being intended in future as far as possible to drop the full title and to use "Camwal" only, the meaning of which is now generally understood. The exhibit contained samples of all descriptions of aërated waters manufactured for ordinary use in syphons and bottles; soda, potash, lithia waters, etc., manufactured according to the B.P. for medicinal purposes; also piperazine, lycidine, etc., in syphons, and all descriptions of syrups produced from pure essences of fruits. In addition to these were various novelties connected with the syphon trade, the most noticeable being the large electric syphon lamps, which are of red glass, with "Camwal Table Waters" in large white letters standing out in bold relief, and are intended to serve the double purpose of an advertisement and a guide to the pharmacy where Camwal waters are sold. Another exceedingly pretty and useful novelty is the syphon-cooler and drip-catcher, made of *papier-maché* in the form of a jar, tastefully painted, and constructed so as to allow a syphon to stand within it, when all drips are caught, which, together with a quantity of broken ice, keep the contents of the syphon delightfully cool. There is a contrivance inside the cooler which holds the syphon so that the two can be lifted and moved easily. To the right hand of the exhibit a space was screened off and furnished as a chemists' club, and on the other side a similar space was used as a medical club; thus pharmacists and physicians were enabled to discuss the merits of Camwal products and transact their business privately with the managers.—On leaving the vestibule and entering the hall the visitor came to the stand of

MESSRS. WARRICK BROTHERS,

of 7, Portpool Lane, E.C., whose exhibit consisted of specimens of all desiccated animal substances; nauseous liquids and syrups made up into tabloid form, both hollow and thick; they are noted for their flexibility and the excellence of manufacture, the "Jelloids" and the thyroid gland powder retaining their bright appearance for a long period.—Hearing a sound as of "running water" the visitor passes on to see the productions of

THE BERKEFELD FILTER CO., LIMITED,

and is probably surprised to see one piece of apparatus with taps, indicating that hot or cold water may be obtained as required. This is the "Berkefeld Aseptic Irrigator," an apparatus for supplying sterilised water of regulated temperature for use in surgical operations. Various kinds of "service pressure filters" were also exhibited, with which, by the way, the whole of St. Bartholomew's Hospital is now being fitted. In addition to these were to be seen filters for medical, laboratory, and experimental work, an apparatus for mechanically cleaning filters, and numerous others suitable for different purposes.—From antiseptic filters to disinfecting agents is a natural step, so the next stand visited is that of Messrs. Newton, Chambers and Co., Ltd., of Thorncliffe, whose

PREPARATIONS OF IZAL

are so well known in medical circles. Specimens of most of the forms in which Izal is prepared were on view, the latest product being "Izal Oil," which is a weak 1 per cent. solution, and is considered to be a great improvement on Izal emulsion. The solution being much nicer for use than the emulsion, will probably take its place in medical and surgical cases. Then there were samples of Izal soap, cream, tooth powder, lozenges, embrocation, ointment, etc., the two last mentioned being of great use in the treatment of eczema. It is worthy of note that Izal was the first proprietary article to be supplied under contract to Her Majesty's Government.—A few paces from the Izal exhibit was the stand of

B. KÜHN,

of 36, St. Mary-at-Hill, E.C., on which were seen numerous preparations of chinosol, tannalbin, diuretin, papain, ferropyrin, etc., an exhibit of anti-diphtheritic serum (Rueth-Enoch), showing serum of 200, 600, 1000, and 1500 immunity units; colchi-sal capsules, and the local anæsthetics ethyl chloride and anestile (Dr. Bengué). Various tubes and cylinders of ethyl chloride and anestile, showing the latest improvements in the method of application, were exhibited, an important alteration in the form of the cylinders being that they are now provided with a screw cock, which allows the operator to open and shut off the jet by a single turn of the screw, thus avoiding loss of time and material.—The centre exhibit of

MESSRS. MAW, SON, AND THOMPSON

presented a fascinating appearance, the light being reflected back from a goodly array of brightly polished aseptic instruments of all the latest and most improved patterns, amongst the number being specimens of the "stethonoscope," a new instrument for auscultation, various kinds of forceps, clinical and sick room and ward thermometers, hypodermic syringes of all the newest patterns, catheters, and, in fact, surgical instruments and requisites of all descriptions. At stand No. 5 was exhibited the "Facile Princeps" bedstead, which has lately been designed to facilitate nursing and to give comfort to the patient. There was also a separate stand for all kinds of indiarubber goods used in cases of sickness.

MESSRS. IDRIS AND CO., LIMITED.

This exhibit was brilliantly lighted by electricity which showed off to advantage the numerous specimens of the Company's products, prominence being given to the aërated waters, lime juice, and fruit cordials. Amongst the novelties exhibited, were specimens of chemical and analytical apparatus to illustrate the processes used in ascertaining the strength and purity of the Idris products; samples of tin used in the manufacture of the syphon top, and the method of ascertaining freedom from lead; also tin piping showing marble lining. The method of testing the carbonic acid gas and the spectroscopic examination of aërated waters were also illustrated, and specimens of various strata through which the well passes were shown. Altogether the Idris stands proved a very attractive spot in the exhibition.

W. MARTINDALE'S EXHIBIT.

On passing along the rows of stands the pharmaceutical visitor could not fail to notice, in the centre of stand No. 105, the familiar binding of the eight editions of the 'Extra Pharmacopœia' and several volumes of 'Coca and Cocaine' (Martindale), the sight of which alone indicated whose exhibit this was. Specimens of new medicinal chemicals and pharmaceutical preparations and specialties were here shown in abundance, to enumerate a complete list of which would occupy more space than is at our disposal; it is sufficient, therefore, to say that the exhibit comprised all the new remedies and preparations now used and prescribed by the medical profession, and was at once seen to be an excellent illustration of pharmaceutical art.—On the stand of

MESSRS. STEPHEN SMITH AND CO., LIMITED,

placed in a prominent position, was a splendid engraving of Sir Astley Paston Cooper, Bart., by Samuel Cousins, a lithograph copy of which was presented to every medical gentleman visiting the stall. Surrounding the picture was a tasteful array of ferns and plants of various kinds, amongst which were exhibited specimens of Hall's wine and Liebig's meat and malt wine of the "Keystone" brand.—The next exhibit was that of

MESSRS. COOPER AND CO.,

of 80, Gloucester Road, S.W., which comprised a varied assortment of pharmaceutical preparations, in the form of cachets, globules, pastilles, bougies, pessaries, capsules, numerous kinds of pills, tablets, suppositories, etc., cachet machines, coca wine, and elixir, and samples of their preparation liquor quininæ salicylatis. The specimens of the noted sinapine tissue or mustard leaflets showed

real improvement on the old form, being perforated so that each leaflet may be easily torn off without cutting.—The neat appearance of the

BOVRIL, LIMITED,

exhibit attracted many, the "Bovril Castle Urn" being freely patronised. In addition to specimens of the well-known Bovril preparations, the bone marrow preparations of the Liquor Carnis Company, which is now incorporated in the firm, were prominently exhibited, amongst which were samples of virol and marrol, virol-sans-sucre, liquor carnis, malto-carnis, meat-juice, and cocoa, etc.

THE MEDICO-HYGIENIC INVENTIONS COMPANY, LIMITED,

exhibited numerous specimens of "Autosprays" charged with solutions of a variety of remedies for immediate application in the form of a fine spray; also "Lance Perfumes," a very seasonable novelty, being autosprays with perfume. The "Trillat System of Aërial Disinfection" for disinfecting rooms and houses after infectious diseases by means of "Formochlorol" was fully illustrated by a piece of apparatus—the "Formogenic Autoclave"—which is intended for the volatilisation of formic aldehyde under a pressure of three or four atmospheres.—Three stands contained the exhibits of

MESSRS. PARKE, DAVIS AND CO.,

the principal one being devoted to their numerous medical specialties and requisites, also specimens of the new starch digestant, "Taka-Diastase," hypodermic tablets, serums, medicinal clixirs, syrups, etc. The other stands were devoted to the various food products and jellies prepared chiefly from beef meal and beef meal with chocolate; and also to fluid extracts and tinctures, animal preparations, etc.—Two ladies neatly attired in nursing costume were in attendance at the exhibit of

THE VIMBOS CO., LIMITED,

ready to supply visitors in need of refreshment with a free cup of "Vimbos" from a brightly polished urn, also to explain the virtues of "Invalid Vimbos," "Vimbos Lozenges," etc., which were exhibited on the stand.—In close proximity to "Vimbos" was the stand occupied with the productions of

THE LIEBIG'S EXTRACT OF MEAT CO., LIMITED,

whose preparations are so well known as to need no mention here. Several novelties in the way of advertising cards were shown, the most noticeable being a very pretty menu card on which the Czarina of Russia and a view of the Kremlin is depicted. Several other attractive cards were also to be seen.

MESSRS. INGRAM AND ROYLE, LIMITED,

had a good display of the natural mineral waters and salts for which they are the British agents. Samples of the Vichy waters "Celestins," "Grande Grille," and "Hôpital" being shown, and also of the Vichy salts and pastilles. The "Hunyadi Janos" natural aperient water had a prominent place assigned to it in the exhibit, as had also the natural Carlsbad salts, which are now prepared from the mineral water in the form of powder ("Pulverförmig") which contains all the constituents of the Sprudel Springs.

THE FORMALIN HYGIENIC COMPANY, LIMITED,

represented by Messrs. A. M. Zimmermann, of St. Mary-at-Hill, E.C., who also had a very attractive exhibition of Schering's preparations, showed several specialties, the one which received, perhaps, the largest share of attention being the "Alformant," a small lamp used for the gasification of dry formalin for air sterilisation and disinfection.

MESSRS. J. F. MACFARLAN AND COMPANY,

of Edinburgh and London, exhibited their Listerian surgical dressings; catgut ligatures, and silk sutures, the ligatures are put up in the form of balls containing twelve feet of catgut preserved in alcohol contained in a glass tube, three of which are placed in a very handy pocket case. Anæsthetic preparations were represented, together with sulphur cones for disinfecting purposes. The Holyrood table water also had a place on the stand, as had "Forret's Milk Steriliser," the invention of a Scottish pharmacist (*vide P. J.*, April 3, p. 293).—The stand of

MESSRS. H. T. KIRBY AND CO., LIMITED,

of 14, Newman Street, Oxford Street, W., had perhaps the prettiest sign in the whole exhibition, the name of the firm being most ingeniously portrayed by means of an assortment of red, golden, white, and pink-coloured glycecols. Attention being thus drawn to the exhibit, the other preparations shown were seen to consist of pills of various kinds and sizes, one specialty being the smallest pill manufactured anywhere, at present a proprietary article, pill masses, compressed tablets, medicated glycerin lozenges or glycecols, elixirs, concentrated mixtures, antiseptic toilet preparations, etc., also samples of beef oatmeal, prepared by a patent process by which fresh meat is preserved in an uncooked condition combined with Scotch oatmeal.

PARLIAMENTARY NOTES AND NEWS.

THE MERCHANDISE MARKS ACT has been officially declared to be a blessing. A select committee has said so, and it is foolish to question the findings of select committees. In effect, the Merchandise Marks Committee reports that the Act has, on the whole, been beneficial to British commerce, and has been largely instrumental in stopping fraudulent practices, more especially in reference to the imitation of proprietary trade marks. The report goes on to condemn the system of foreign bounties and subsidies, and recommends that every effort should be made to get foreign governments to legislate on the lines of the 1887 Act—admirable, but rather a tall order. It is also suggested that the substitution of the words "made abroad" for "made in Germany," and so forth, would more effectively protect British manufacturers and consumers from fraud.

A MINORITY REPORT is the natural corollary to a committee's report, and Sir C. Cayzer (Barrow), C. H. Wilson (W. Hull), and J. Samuel (Stockton) combine to vigorously curse the Merchandise Marks Act, 1887, which, according to them, has ruined our transit trade, disclosed our trade secrets, and gratuitously advertised the wares of the unspeakable foreigner. The minority then proceed to abuse the majority—all in a perfectly natural way. Practically they say that the majority are very decent fellows, but really they know nothing of trade, and cannot be expected to appreciate the views of persons who do—to wit, the minority. This is all very interesting, but the net result is that we remain in *statu quo ante*.

CALCIUM CARBIDE may now be stocked in small quantities, *i.e.*, not exceeding 5 pounds, without a licence, provided the storage is effected in separate, substantial, hermetically sealed metallic vessels of a capacity not exceeding one pound each. This concession is due to urgent representations made to the Home Secretary, and it is gratifying to find that he has been advised to modify the rather exaggerated position created by the Order of February 26, by which the keeping of small quantities of the carbide was placed under the operation of the Petroleum Acts.

THE LONDON UNIVERSITY COMMISSION BILL is an example of what can be done in the way of rapid legislation in the House of Lords. The Bill made its first appearance on July 20 in charge of his Grace the Lord President of the Council, was considered a second time two days later, and passed its third reading on Tuesday 27. Its progress in the Commons must be equally rapid if it is to pass this session, for Mr. Balfour has declared his intention of "breaking up" on August 7.

HAIR WASH was the subject of inquiry on Monday last by Mr. Isaacson (Stepney), who wished to know whether the sale of dangerously inflammable preparations for the hair could not be stopped. The Home Secretary, whilst declining to express an opinion as to the nature of the preparation which led to the recent fatal accident, added that if it consisted principally of petroleum spirit, it would come under the provisions of the Petroleum Acts, and its sale would consequently be subject to the grant of a licence under the Acts. Sir M. W. Ridley very significantly rounded his reply off by asserting that the present condition of the law with regard to petroleum is very unsatisfactory. That has been pretty evident for years, but Parliament has manfully grappled with the evil by appointing Select Committees, which each year examine crowds of witnesses, from professors of chemistry to vendors of domestic lamp oils, and annually report that their labours are "to be continued"!

LETTERS TO THE EDITOR.

The Flowers of July.

Sir,—Your contributor on this subject will, I hope, forgive my reminding him that several interesting plants are conspicuous by their absence from his list. The air has been heavy with the scent of lime blossoms, elder, and roses of various kinds, even the old dog rose. Marshmallow, stramonium, caraway, garlic, liquorice, the three mints, rue, caraway, and others. It is hard to think what our harmless, useful old friend *Leontodon taraxacum* has done that he should be excluded from the fasciculus, or what claim *Eschscholtzia californica* has to be considered a native of Great Britain. The mischievous *Æthusa cynapium* is prominently in evidence, as is also the beautiful little oxalis. The return of the flowers is one of the greatest solaces to old age. Trusting that the weakness may be indulged in this instance,

Kew, July 21, 1897. R. Goodwin Mumbray.

*** It has been the object in the 'Floral Calendar' to give as nearly as possible the date at which the flowers are generally to be found in blossom in the south of England. In different years they are late or early, according to the coldness, or dryness, or warmth and moisture prevalent at their flowering season. In selecting as far as possible those of especial interest botanically or medicinally, it is quite possible that one here and there may be overlooked, and correspondents who will point out such omissions will confer a favour on the compiler of the list. Of the plants mentioned by our correspondent, *Tilia* was overlooked; elder and the three official roses are mentioned in the June list, p. 534; caraway both in May, p. 418, and June, p. 534; both caraway and *Oxalis acetosella* are long over, and *Leontodon taraxacum* (*T. officinale*) was described in April, p. 336. Marshmallow, stramonium, liquorice, the three mints, and *Æthusa cynapium* properly come into the August list, as outside of London, even south of it, they are only just showing flower-buds. The inclusion of *Eschscholtzia* under the heading of wild plants was so evidently an oversight, and the intention of the paragraph was so obviously to point out plants of botanical interest to the student, that our correspondent, who has himself overlooked the mention of so many plants in the previous numbers of the Journal, might well have forgiven it in this case.—[Ed., *P. J.*]

The Proposed New Bye-Laws.

Sir,—May I, through the medium of the Journal, call the attention of members of the Western Chemists' Association to the importance of their presence at the special meeting to be held on August 4, at 17, Bloomsbury Square, for the confirmation of the proposed new Bye-Laws? These Bye-Laws as now printed, with the increase of Minor fee deferred until 1900, are as many members wished they should be when we discussed them at our meeting in the early part of this year.

Harlesden, N.W., July 24, 1897. J. W. Taplin.

Liquor Ferri Dialysatus.

Sir,—The British Pharmacopœia, in the preparation of liquor ferri dialysatus, gives directions for the acid liquid to be transferred to a dialyser, without specifying in any way what kind of dialyser is to be used. The apparatus in general use consists of a sieve frame, over which a piece of vegetable parchment is stretched. This is defective in several ways, besides being slow, and I should like to draw the attention of your readers to a method which I have been using with considerable success. Instead of the vegetable membrane, unglazed earthenware is used as the diaphram, the acid solution being placed in a vessel of this material, and immersed in a jar of distilled water. The porous cell of a Daniell's battery, or the common or garden flower-pot, the aperture of which has been closed, answers admirably. The fact of diffusion taking place through the sides as well as the bottom of the cell will show that this method is a considerable improvement on that in general use.

London, July 27, 1897. F. W. Daniels.

What Ought to Be.

Sir,—Chemists throughout the country will hear with unfeigned pleasure the news that a new Pharmacy Bill is to be submitted to the Legislature. Certainly it is not before it is wanted. The present condition of pharmacy demands that something be done, and done quickly, not only in the interest of the profession, but of that of the public also. I have no wish to force my private views on the Council, but with your permission I will submit to their notice a rough outline of what, at any rate, meets with the approval of a large section of the profession.

(1) The Pharmaceutical Society to be known as the Royal College of Chemists.

(2) A new system of apprenticeship. Our present system is nothing short of a disgrace. The new regulations with regard to the Preliminary examination will undoubtedly do something to improve matters, but not much. Under existing conditions errand boys who have never received any instruction in pharmacy, and never dispensed a bottle of medicine in a pharmacy, obtain the necessary declaration, and after repeated failures pass the Minor. It is quite conceivable that there are some who have never seen the inside of either a pharmacy or a surgery, but who, having obtained a knowledge of chemistry, etc., obtain the declaration from some unscrupulous person and enter for the examination, after practising pharmacy for a few months in a "cramming" school. These are the men who, not having the necessary capital to start in practice for themselves, go to the stores and ruin the private pharmacist. As for the man who passes his three years with a surgeon we all know his condition. He obtains no knowledge of true pharmacy, but having gained a smattering of therapeutics, etc., becomes in time the prescribing chemist. Let not the surgeons cry out against us! They have themselves to thank for the existence of "counter prescribing." I know one surgeon of large practice who has for many years sent his "dispensing clerks" out visiting in busy times, and has even despatched them to set the broken limbs of club patients. This gentleman has, I believe, turned more than one working lad into a full-fledged chemist by these means. A proper system of apprenticeship ought to be instituted without delay upon some such lines as obtains with the Incorporated Law Society. Proper registration forms should be issued by the College, and a fee of, say, £10 paid (in the case of the Law Society it is, I believe, £50). The three years' apprenticeship to be undergone after the signing of the articles. Registration forms to be supplied only to members of the College.

(3) An examination in school subjects to be passed before registration.

(4) In order to protect the apprentice and to insure his receiving proper instruction a Preliminary examination to be passed not less than three years after registration. Such an examination to consist of elementary pharmacy, chemistry, and botany. The registration fee to cover the cost of this examination. This Preliminary examination to qualify for entrance to a recognised school of pharmacy for a two years' course.

(5) At the end of the first school year an examination similar to the present Minor to be passed, which would confer the title of "druggist" and qualify the successful candidates to sell poisons under the supervision of a fully qualified pharmacist. This examination to entitle a man to be an associate of the College. Fee £5 5*s*.

(6) At the end of the second year the final examination to be passed. This examination to be similar to our present Major, with such necessary additions as bacteriology, etc. The passing of this examination to confer the title of pharmacist and qualify for membership of the College. Fee £5 5*s*.

(7) In addition to these examinations an optional examination similar to that for F.I.C. might be instituted with advantage. This would require another year in the school, and would qualify a man to enter manufacturing houses or to seek public scientific appointments. This examination to confer on successful candidates the title chemist, and qualify for fellowship of the College. A fellowship to be merely a honour and not to confer upon the recipient any privileges other than those held by a member. The addition of such an examination as this to the curriculum would immensely improve the status not only of the pharmacist, but also of the College. In order to ensure that small country places might not be without a druggist, the College might have the power of granting permission to druggists to open shops in such places. Of course, I do not pretend that such a scheme is perfect. It is merely an outline of what the profession requires. It might not be possible, for instance, to obtain immediately a compulsory two years' course, however necessary such a course may be both from the point of view of the profession and of the public, although I think the possibility of dividing it into two parts would speak in its favour. In order to obtain a compulsory school course it might even be expedient, if necessary, to sacrifice a year of the apprenticeship. The present condition of pharmacy in this country makes it imperative that something should be done, and in my humble opinion the registration of apprenticeships and the increased stringency of the qualifying examination, at the same time dividing it into two or three parts, take precedence of all others. I most respectfully urge the Council to insist upon a more thorough training and examination in pharmacy. It is a well-known fact that the majority

of men who pass the Minor have by no means a thorough knowledge of practical pharmacy. I myself passed the Minor after an experience with which I should have been worthless in a first-class dispensing practice. Our most important subject ought undoubtedly to occupy a full day's examination. The passing of such an Act as the above would, I believe, do much to smooth matters between the two great branches of the medical profession, the prescribers and the dispensers, and would meet with the approval of medical associations, a fact which would greatly increase its chances of success. If only chemists in every parliamentary division will select deputations to wait upon their members and press their views with persistency upon every possible occasion, there is no reason why a new era should not soon dawn for British pharmacy.

July 21, 1897. FYTON (103/18).

W. GRIFFITHS, CIRENCESTER.—We cannot regard the matter to which your letter refers as being "controversial," inasmuch as it has been settled by the Society so far as its power extends. The comments to which you object represent the present situation as well as the past, and most probably the future, without raising any question as to the motives or "honesty of conviction" of those who differ from the Council, and, we may add, from the Society which it represents.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

BOTANICAL.—*Matricaria parthenium.* [*Reply to* S. H.—103/15.]

LONDON PURPLE.—This consists of residues rich in arsenic from the aniline dye factories. It is used as an agricultural insecticide. [*Reply to* COUNTRYMAN.—103/21.]

DOSE OF EXT. FILICIS LIQ.—The dose you mention is not an uncommon one, and much larger doses have been given on occasion. The preparation is very variable in strength (see p. 85), [*Reply to* P. G. W. J.—103/41.]

BOTANICAL.—Your determination of the genus (not "genera," as a plant cannot belong to more than one such group) is not quite correct. The plant is a white variety of *Stachys betonica.* [*Reply to* BETONICA.—103/23.]

BOOK ON THE TAPEWORM.—'Tapeworms and Threadworms: Their Sources, Nature, and Treatment,' by the late T. Spencer Cobbold, will probably suit your requirements. It is published by Longmans. [*Reply to* K. H.—103/10.]

SALE OF LUMP ARSENIC.—There does not appear to be any way in which you can retail this in small quantities, as not less than ten pounds of arsenic may be sold without admixture with soot or indigo. The herb you mention was not enclosed in your letter. [*Reply to* H. P.—103/43.]

LAWN SAND.—The sample of lawn sand which you send consists of 65 per cent. of crude sulphate of ammonium, including a good deal of iron and organic impurity, and 35 per cent. of fine sand. It is interesting to learn that such a mixture kills daisies and plantains, but does not permanently kill the grass of lawns. [*Reply to* ASSOCIATE.—103/24.]

IRISH SLATE.—This is an argillaceous slate containing a good deal of iron and a little sulphur. It was formerly used as a remedy for internal and external bruises, probably because the powder stains the skin with a bluish stain like a bruise. It is still used by the ignorant in some parts of the United Kingdom. It is probably quite inert. Powdered rottenstone has been sold under this name. *Reply to* COUNTRYMAN.—103/21.]

SPIRITUOUS HAIR WASH.—We do not profess to know the composition of any proprietary articles. The following is an excellent preparation which will probably suit your purpose:—Castor oil, 1½ fl. oz.; eau de Cologne, 2 fl. ozs.; glycerin, 2 fl. ozs.; tincture of cantharides, ½ fl. oz.; solution of ammonia, 1½ fl. oz.; rectified spirit to make 1 pint. [*Reply to* CRINALE.—103/19.]

SKIN IRRITATION CAUSED BY PRIMULA OBCONICA.—We are not aware that it has been satisfactorily determined what causes the irritation you allude to, but it is generally attributed to the hairs; although one of our contributors states (see "Month," *P.J.*, 1889 [3], xx., 65) "that these are not adapted for producing irritation, since they are somewhat obtusely pointed, but they appear to secrete a yellowish viscid substance, which is found coating their apices." A chemical examination of the leaves might settle the question. See if an extract of the dried leaves in strong alcohol has any rubefacient action. [*Reply to* E. W. T.—103/17.]

VIOLET TOOTH POWDER.—Your ionone does not seem to be very strong; from the odour of the sample you send, we should not have thought that there was as much as ten minims in it. We tried the recipe some time back, and in our hands it gave a much more marked violet odour than your sample has. You had better increase the amount of ionone you use up to one drachm, and add five minims of neroli oil as well. If you wish the powder to be sweet add a few grains of soluble saccharin, or if you prefer it, a couple of ounces of powdered sugar in place of two ounces of precipitated chalk. The violet colour you may obtain either with *pure* methyl violet, or by the use of liquor violæ conc. The colour should be rubbed down with the chalk. [*Reply to* H. B. S.—103/27.]

NAME OF SALT.—You say you wanted "confirmatory evidence," as you had "evidence" from a friend in business who "maintained it was superoxalate of potassium." Unfortunately we could not supply "confirmatory evidence," as the salt proved to be potassium chlorate, and now you think it was "a piece of supererogation" to suggest that you ought to have been able to ascertain that for yourself. If this means that you knew it was a "chlorate," why ask for confirmatory evidence that it was a "superoxalate"; if it means that you are fully aware of the fact that you ought to have been able to satisfy yourself it was a "chlorate," why place yourself in a position to be told what you knew, instead of studying the reactions of the acids, and then applying the knowledge so gained? [*Reply to* S. H.—103/291.]

INFORMATION WANTED.

ANTIBILIOUS POWDER.—Can any Scottish reader give a formula for "antibilious powder," which is said to be prepared like tea and sold in Glasgow at eightpence per ounce? (100/27.)

OBITUARY.

TOCHER.—On July 14, Minnie Snedden, beloved wife of Robert Tocher, Pharmaceutical Chemist, Maybole. Aged 20.

COSSENS.—On July 16, William Cossens, Chemist and Druggist, late of Monmouth. Aged 63.

HUNT.—On July 16, Thomas Hunt, Chemist and Druggist, Grantham. Aged 79.

WOODCOCK.—On July 20, Joseph Woodcock, Chemist and Druggist, Liverpool. Aged 70. Mr. Woodcock had been closely associated with the parochial government of the city, having served the ratepayers on the Select Vestry for about twenty years, during which time he filled the responsible positions of chairman of the relief quorum, chairman of the workhouse committee, and chairman of the finance committee. He was also for some time an overseer of the parish of Liverpool, and for four years was churchwarden of the pro-cathedral. For several years he was a Conservative representative for St. Anne's Ward on the City Council, and for a lengthy period occupied the position of chairman of the Conservative Association of St. Anne's Ward.

WILLIAMS.—On July 22, Richard Eustace Williams, Chemist and Druggist, Cardiff. Aged 49.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Bloxham, Brucc, Bryant, Butterworth, Carter-Bell, Clowes, Curtis, Daniels, Dewar, Forster, Gane, Griffiths, Haigh, Hayward, Hehner, Hogg, Ince, Jackson, Japp, Jesper, Kermath, Luff, McAdam, Mumbray, Naylor, Nightingale, Picken, Pitcher, Ramsay, Ridley, Russell, Saul, Senier, Sharman, Shenstone, Shields, Smith, Stephenson, Stevenson, Symes, Thresh, Tyrer, Umney, Vibert, Wild, Wilkinson, Wynne.

PARAFORMIC ALDEHYDE AS AN ANTISEPTIC.

BY DR. B. H. PAUL AND A. J. COWNLEY.

The solution of formic aldehyde supplied under the name of formalin, and containing about 40 per cent. of the aldehyde, appears to be the most concentrated form in which a solution can be kept without undergoing conversion into the solid polymeric condition.

The question whether the solid polymer might not be applicable in its stead is of some interest. This substance is described as being volatilisable about 100° C., and readily convertible into formic aldehyde when heated to that temperature with water. A commercial sample of it was found to have a melting-point of from 162° to 163° C., and some experiments made to ascertain whether it could be employed for extemporising a solution of formic aldehyde suitable for antiscptic purposes gave results which were favourable.

According to the view that an aqueous solution of formic aldehyde contains that substance in the state of a hydrate the change would be as follows—

$$C_3H_6O_3 + xOH_2 = 3CH_2O + xOH_2.$$

For comparative experiments paraformaldehyde was boiled with water in the proportion of 4:10 in a flask connected to an inverted condenser until a complete solution of the solid was effected. In another experiment the same operation was carried out in a sealed tube at the temperature of boiling water. The conversion of the insoluble modification into the soluble form was in both cases effected in about two hours, the alteration being more rapid in the open flask than when the operation was effected in the sealed tube. In both cases almost clear solutions were obtained with a mere trace of acidity. In order to ascertain the relation of the result obtained with the material operated on it was necessary to devise some means of approximately determining the amount of formaldehyde produced. Several methods have been suggested for the determination of formaldehyde, but most of them on examination have not proved satisfactory for our purpose. Finally we relied on determining the amount of the compound produced when ammonic hydrate is added either to formaldehyde or to paraformaldehyde thus—

$$(1)\quad 6CH_2O + 4NH_3 = (CH_2)_6N_4 + 6H_2O.$$
$$(2)\quad 2(CH_2)_3O_3 + 4NH_3 = (CH_2)_6N_4 + 6H_2O.$$

In each case theory requires that 140 parts of hexamethylene tetramine should be produced from 180 parts of either formaldehyde or paraformaldehyde, or 77·8 parts from 100 parts.

Paraformaldehyde is readily soluble in ammonic hydrate, and the ammonium compound, on being evaporated at a low temperature until viscid, can be readily dried under the desiccator until a constant weight. Formaldehyde, again, can be treated with ammonic hydrate, and the solution treated in the same way, the desiccator-dried residue in both cases being regarded for our purpose as hexamethylene tetramine. At the temperature of boiling water the desiccator dried hexamcthylene tetramine shows a gradually increasing loss of weight with a slight darkening, thus pointing to some alteration.

The original "paraformaldehyde" when converted into its ammonium compound and the amount of formaldehyde calculated therefrom gave the following result :—

Gramme.		Ammonium compound. Gramme.		
0·313	gave	·208	=	66·4 per cent.

$$66{\cdot}4 \times \binom{180}{140} = 1{\cdot}286 = 85{\cdot}4 \text{ per cent. formic aldehyde.}$$

Four grammes of the original material were boiled in about 10 C.c. water in a flask with a reflux condenser until solution was effected and made up to 11·25 C.c.

Ammonium compound.
Gramme.

1 C.c. gave ·230 × 1·286 × 100 = 29·57 per cent. solution of formaldehyde.

$$\text{Theory requires } \frac{4 \times 85{\cdot}4}{11{\cdot}25} \times 100$$

30·3 per cent. solution of formaldehyde.

Four grammes of the original solid heated at temperature of boiling water in about 10 C.c. of water in a sealed tube and made up to 11·5 C.c.

Ammonium compound.
Gramme.

1 C.c. gave ·222 × 1·286 × 100 = 28·54 per cent. of formic aldehyde.

$$\text{Theory requires } \frac{4 \times 85{\cdot}4}{11{\cdot}5} \times 100 = 29{\cdot}7 \text{ per cent.}$$

The paraformaldehyde dried under desiccator gave 76·77 per cent., showing evidence of some loss of material, which is fixed by ammonic hydrate. This loss in weight being dependent on the time of exposure and temperature. In air at the ordinary temperature paraformaldehyde is fairly volatile, about 50 per cent. volatilising in twenty-four hours.

The solutions of formaldehyde so produced by the action of water are by treatment with strong sulphuric acid again polymerised, the insoluble paraformaldehyde gradually being formed and separating out.

These results show that it is possible readily to convert the insoluble paraformaldehyde into its soluble modification, formaldehyde. It would thus seem that it would be more advantageous to produce paraformaldehyde than formaldehyde for commercial use, as it is more readily manipulated and as we have shown is easily rendered soluble to a suitable degree of strength for antiseptic purposes when required. Indeed, where an antiseptic powdcr is required there is no reason why paraformaldehyde itself should not be of great service.

The formation of paraformaldehyde from formic aldehyde naturally depends on the purity of the material operated on, as well as on the method of procedure. On exposure to air of an aqueous solution of formic aldehyde until it dries up, there appears to be formed not the true para compound but a mixture partaking to some extent of the characters of the substance $(CH_2O)_2$, described by Tollens and Mayer as being formed when formic aldehyde is evaporated over sulphuric acid. This substance we found melted at about 131° C., and was more solublc in water than paraformaldehyde. The polymer produced by adding sulphuric acid to formic aldehyde had a much higher melting point, namely, 170° C. The variation of the melting point from 152° to 172° C. ascribed to paraformaldehyde is no doubt due to an admixture of these two bodies.

SIR HANS SLOANE, BART., M.D.*

The publication of the "Voyage" enhanced, especially on the Continent, Sloane's considerable reputation, and procured him a still higher distinction than any conferred on him, in course of time, by the Academies of Berlin and St. Pctersburg, among others, each of which elected him a member. In 1708, the same honour was paid him by the most illustrious body of thc kind in Europe, the French Academy of Sciences itself. What added to thc greatness of this high distinction was, that it was bestowed on him at a time when England and Francc were at war, so that Sloane had to ask

* Continued from page 66.

Queen Anne's permission, readily granted, before he could accept it. The same Sovereign recognised his merits directly and conspicuously by appointing Sloane her Physician Extraordinary in 1712. Two years afterwards he was summoned to attend her during her last and fatal illness, when of course we are told that he "blooded her." In the same year which saw him made Physician Extraordinary to Queen Anne, Sloane began his long and intimate connection with Chelsea, when he purchased the Lordship of the Manor from the Cheynes, who gave their name to Cheyne Walk, and to Cheyne Row, where Thomas Carlyle was so long domiciled. In the second of our chapters on the "Botanic Gardens of the World" has been chronicled Sloane's generous surrender to the Apothecaries' Company of the lease of their "physick garden, and their recognition of his liberality by the erection of a statue of the donor there."

Honours were showered on Sloane with the accession of the House of Hanover. George I. made him Physician to the Army, Physician-in-Chief to himself, and, greatest distinction of all, created him a baronet, being the first professor of the medical art on whom that distinction had been ever conferred. One episode in connection with the Hanoverian Royal Family is interesting, though it has been slurred over by his biographers. It was told by Sloane himself in a paper which was not printed until it appeared in the 'Philosophical Transactions,' some years after his death, and may be regarded as an autobiographical fragment. It relates to incidents which happened probably during the early years of George I.'s reign. The then Princess of Wales, afterwards Queen Caroline and Consort of George II., was in great distress of mind. Her eldest daughter, the Princess Anne, afterwards Princess of Orange, was dangerously ill with small-pox. Her mother was alarmed for her sisters, and consulted Sloane, who tells the story of what happened. Caroline asked him whether it would not be desirable to try inoculation on the princesses who until then had escaped infection. Inoculation, as is well known, was introduced into England by Lady Mary Wortley Montagu, who had become familiar with its usefulness when she was with her husband in Turkey, where he was Ambassador to the Porte. But it had made small way in this country when the Princess Caroline consulted Sloane respecting it. The Faculty generally were against it as a dangerous innovation, ecclesiastics banned it as interfering with the course of Providence, and the public not unnaturally distrusted it as producing the very disease of which it was supposed to avert the dangerous consequences. Sloane on this occasion showed the caution of his father's countrymen, a quality which indeed seems to have characterised his medical practice always. In conformity with the natural bent of his mind, and with the precepts and example of his old friend and patron, Sydenham, he preferred observation to theory, and the beneficial effects of inoculation he appears to have known only by hearsay. Accordingly, he encouraged Caroline to have the experiment tried *in corpore vili*. So "six convicted criminals"—how strangely the story reads now!—presumably with a promise of pardon, were inoculated. With five of the inoculated the experiment was successful, but the operator seems to have bungled with the sixth, who belonged to the softer sex. "She," Sloane writes, "had the matter of the small-pox put up her nose, which produced no distemper, but occasioned great inconvenience to the poor woman." The scruples of the Faculty were not, however, satisfied. They maintained that the symptoms produced by the inoculation were simply those of chicken-pox, which did not prevent a subsequent attack of small-pox. Upon this, Sloane and one of George I.'s physicians subscribed to bribe a prisoner in Newgate to allow himself to be inoculated and then proceed to Hertford, where an epidemic of small-pox was raging. He did what he was bribed to do, and though he slept in the same bed with a small-pox patient, escaped infection. But all these were adults, how about children? The experiment was next tried on six charity children, and with triumphant success. Caroline, now quite reassured, asked Sloane whether he would not advise inoculation to be tried on the youthful princesses. "I would not," he replied, "persuade or advise the making trials upon patients of such importance to the public" as princesses. He was then asked whether he would dissuade a trial, and on his answering "No," Caroline resolved on the experiment. The King, her father-in-law, approved, and an interview with His Majesty dispelled any lingering dubitations of the cautious Sloane. All went well with the inoculated princesses, and we may be sure that in their case the operator was extremely careful, and that not one of the royal children had "the matter of the small-pox put up her nose"!

Apropos of inoculation, which, though long since superseded in the case of small-pox, has in certain other cases of disease attained unexpected importance in recent times, it may be worth while to refer to what seems a rather interesting matter, which, though only indirectly connected with Sloane, may be new to our readers as certainly until lately it was new to ourselves. Lady Mary Wortley Montagu was the first to introduce inoculation for small-pox into England, but she was not the first to make it known, if only to a small circle here. Her earliest mention of it is in a letter written home from Adrianople in April, 1717, before she had her son inoculated. Now in the 'Philosophical Transactions' for the first quarter of 1714, some three years anterior to the date of Lady Mary Wortley Montagu's letter from Adrianople, there appeared a full description of the practice of inoculation in Turkey, entitled "An Account of the Procuring the Small-pox by Incision, or Inoculation, as it has for some time been practised at Constantinople," being an extract from a letter from E. Timonius, Oxon and Patav. M.D., S.R.S. And it was "communicated to the Royal Society by John Woodward, F.R.S., Prof. Med. Gress.," no other a person than the very Woodward who was Sloane's assailant, and whose communication, now seen to be important, appears to have received not the least attention from the medical, the scientific, or any other world, though it did appear in the organ of the Royal Society itself.

In 1718 Sloane acquired by purchase (for £4000 it is said) the extensive but chaotic botanical collections of Petiver, the apothecary of the Charterhouse, of whom as a collector and as connected officially with the "Physic Garden" at Chelsea, there was a notice in our second article on the "Botanic Gardens of the World," already referred to. In the following year Sloane received the highest distinction which his professional brethren could bestow on him; he was elected President of the Royal College of Physicians, whose local habitation was then in Warwick Lane, Newgate Street. He filled the office for fourteen years, and might, if he had chosen, have filled it much longer. He behaved with his usual liberality to the College. He presented it with the "magnificent gates" which fronted its entrance in Warwick Lane. Its finances being in a somewhat low condition when he became its President, he not only gave its funds a donation of £100, but cleared off its debt by lending the necessary sum, for which he charged only a very moderate rate of interest. The next incident in his biography worth recording was the publication in 1725 of the second and concluding volume of his great work on Jamaica. As an apology for the long interval which had elapsed since the appearance of the first volume in 1707, he pleaded the pressure of his medical duties, which he considered more important than any other. He himself expressed the opinion that the second volume was more valuable scientifically than the first, inasmuch as its illustrations and descriptive letterpress were mainly zoological.

Meanwhile by purchases, by personal effort, and through numerous presents from friends and admirers, he was always adding to his museum. It is a signal indication of his zeal as a collector that he sent a draughtsman to Bartholomew Fair itself to draw and colour anything curious exhibited there, rare living animals, human beings of abnormal formation, and so forth. From all parts of Great Britain and its colonies and foreign possessions, as from Continental savants and collectors, there poured in on him gratuitous gifts and offers of objects that were not gratuitous. One of his countrymen—to quote out of many only two instances of different kinds—who had been afflicted with the stone, left the following direction in his will for the treatment of his corpse. After saying that he had been so far kept alive by "the continued taking of Castile soap," he proceeded thus:—"I desire my body to be opened and examined by eminent surgeons that mankind may be informed of its effect. And if a stone should be found in my bladder (which I imagine there will), I desire it may be preserved among Sir Hans Sloane's collection." Another wrote to Sir Hans, offering him for a consideration "a pin which has been many hundred years in our family, and was, I am told, the pin of the first Saxon King of the West Angles." Among the oddest and not the least unrepresentative of the innumerable articles, valuable and valueless, in Sloane's vast and multifarious collection, was "a gentleman's breeches singed by lightning"! It may be easily fancied that the literary jesters of the day found matter for their pens in some of the contents of Sloane's "omnium gatherum" Museum. The most noticeable of such *jeux d'esprit* is a rhymed "Epistolary Letter to H[ans] S[loan]e," which seems to have had a considerable sale. The letter-writer's life is supposed to have been saved by the

medical skill of Sir Hans, who asks him in return to send any rarities which he may have lighted on in the course of his travels. Among the items, Sir Hans is told,

> Which Carrier Dick shall bring you down
> Next time his waggon comes to town,

are the following :—

> I've got three drops of that same shower
> Which Jove in Danae's lap did pour,
> From Carthage brought the sword I'll send
> Which brought Queen Dido to her end,
> The stone whereby Goliath died,
> Which cures the headache well-applied,
> The snake-skin which you may believe,
> The Devil cast who tempted Eve,
> A fig-leaf apron, 'tis the same,
> Which Adam wore to hide his shame,
> But now wants darning ; I've beside
> The blow by which poor Abel died,
> A whetstone, wore exceeding small,
> Time used to whet his scythe withal, etc.

Harmless satire, published in 1727, the year of all years in which Sir Hans could best afford to smile at ridicule. For it was in 1727 that Sloane received the highest distinction ever conferred on him, one higher than the Presidency of the College of Physicians, higher far than the Baronetcy, namely, election to the Presidency of the Royal Society. Sir Hans must have been all the prouder of the honour, because that vacancy in the chair of the Royal Society which he was selected to fill had been caused by the death of the illustrious Newton, who had made him a vice-president, and in whose absence he had often presided at the meetings of the Society. Neither before nor since, we believe, has any man, however distinguished, enjoyed the twofold honour of being at one and the same time President of the Royal Society and of the Royal College of Physicians. It is just worth noting that in this same year Voltaire, then an exile in England, published as a sort of supplement to his 'Henriade,' his essay on the civil wars of France. He sent a presentation copy, with his autograph on the fly-leaf, "to Dr. Hans Sloane, from his most humble servant, voltaire." The Presidency of the Royal Society Sloane retained for about the same number of years as that of the College of Physicians, and its members, as in the earlier case, accepted his resignation with great reluctance. Among the measures which, as President, he proposed to the Council of the Royal Society, were two, one of which was dictated by a spirit of liberality, the other by a sense of justice. He urged that foreign members should be asked to contribute to the funds of a body which had invited them to join it, and as there was a large arrear of home subscriptions due, he recommended that the defaulting members should be sued in the Law Courts. Last, not least, it was Sloane who persuaded Sir Godfrey Copley to place a sum at the disposal of the Royal Society for the Copley medal, to receive which is still considered a high scientific distinction.

As Lord of the Manor of Chelsea, and long before he retired to live in it, Sloane steadily promoted its interests and the welfare of its inhabitants. Besides what he had done for the Botanic Garden of the Apothecaries' Company, he presented Chelsea with a cemetery and with the site for a workhouse. That suburb, now populous and built over, was, when Sloane became its Lord of the Manor, a mere village, with here and there a few mansions tenanted by "persons of quality." Its present area was largely covered by farms, and from a want of roads access from it to London was difficult. What is now the King's Road was originally a private road used by George I. when he went to and came from Kew or Richmond. An attempt was made by the King's surveyors to close the road against the inhabitants of Chelsea. Sloane was foremost in the local movement which succeeded in restoring its use to the public. One episode in Sloane's connection with Chelsea is a little mysterious. In 1738 he bought, for £2000, Beaufort House, once the residence of Sir Thomas More, and latterly of the Dukes of Beaufort. But in two years after the purchase Sloane had it pulled down—no reason is given why, perhaps it was thoroughly dilapidated—and its brick and wood work were sold and carted away. One exception he made to the general devastation which befel the historic mansion. The gateway, which was the handiwork of Inigo Jones, was given by Sloane to the Earl of Burlington (on the site of his town house Burlington House now stands), who had it carefully removed to Chiswick, where doubtless it is still to be seen. Lord Burlington was a friend of Pope, who inscribed to him the fourth epistle of his 'Moral Essays,' hence the lines written by the poet on the removal of the gate to Chiswick :—

> *Passenger :* O Gate, how cam'st thou here ?
>
> *Loquitur Gate :* I was brought from Chelsea last year,
> Battered with wind and weather.
> Inigo Jones put me together ;
> Sir Hans Sloane let me alone ;
> Burlington brought me hither.

This is not the only mention of Sloane in Pope's verse. In the epistle to Lord Burlington, just referred to, and when describing the lavish expenditure of the Prodigal on things which he is not qualified to enjoy, Pope introduced among his purchases—

> Rare monkish manuscripts for Hearne alone,
> And books for Mead and butterflies for Sloane.

"Butterflies" is slightly depreciatory, but it appears that in the first edition, "rarities"—a much better word—stood in the place of "butterflies," and in a prose note, added afterwards, on the lines, Pope referred to Sloane, as well as to Mead, in very appreciative language. They were, he said, "two eminent physicians, the one (Mead) had an excellent library ; the other (Sloane) the finest collection in Europe of natural curiosities : both men of great learning and humanity." Further, in Pope's 'Imitation of the Fourth Satire of Dr. Donne' are the lines—

> A verier monster that on Afric's shore
> The sun e'er got, or slimy Nilus bore ;
> Or Sloane's or Woodward's wondrous shelves contain ;
> Nay, all that lying travellers can feign.

Here, curiously enough, Sloane is conjoined in the same line with his old enemy and persecutor Woodward, for he too had "wondrous shelves" which were full of fossils and specimens of geological and mineralogical formations. Of subsequent personal amenities interchanged by Pope and Sloane something will be said hereafter.

Sloane's fame brought him into connection either personal or epistolary with all manner of men, from princes and nobles downwards, who took an interest, scientific or unscientific, in the products of nature. The letters, which he received from them during his long life, fill thirty-four volumes of the Sloane MSS. in the British Museum, and almost incredible as it may seem, were the handiwork of no fewer than some two thousand correspondents. They included of course crotchet-mongers and bores, among the former such as the Abbé de Saint Pierre, who wished for Sloane's co-operation with him in his vast and varied schemes of social amelioration, which ranged from the abolition of war to the improvement of road-making. Even on theological questions he was consulted.

(*To be continued.*)

THE PHARMACIST AS A PHOTOGRAPHIC DEALER.

As stated in a previous paper on this subject (see last vol., p. 458), the average amateur is always glad to buy ready-made solutions put up in convenient form, and a great deal depends upon the way in which they are put up. The class of amateur who is willing to buy a "pig in a poke" or a solution of unknown composition is rapidly decreasing, and it is as well to bear this in mind, particularly in the case of developers and toning-baths.

Developers.

Pyrogallol, more familiarly called pyro, is still the main developing agent, and it is now more generally used with soda than with any other alkali. Some few years ago potash was used, and prior to that ammonia. The normal developer—that is to say, one which may be taken as the mean of all the pyro-developers recommended by the plate-makers—is

Pyro	3 grs.
Potassium bromide	0·3 gr.
Sodium Carbonate	24 grs.
Water	to 1 oz.

But whilst a developer may be made up on these lines, it will be found more practicable to make the developer up in the form of a 10 per cent. solution. Pyro is readily oxidised, and therefore it is necessary to combine it with some preservative, such as sodium sulphite or potassium metabisulphite ; of the two the latter is to be preferred, and the quantity should never exceed half that of the pyro, because when equal quantities are used the solution in time gets so acid that it requires far more alkali to produce the same effect, but there seems to be some special action on the pyro,

which destroys to some extent its developing power. The following, therefore, may be taken as a suitable solution and label :—

Pyrogallol	1 oz. (avoir.).
Potassium Metabisulphite	½ oz.
Distilled Water ....to make 9 ozs.	1 fluid drachm.

Label : "Ten per cent. Solution of Pyro."

Every ten minims correspond to 1 grain of dry pyro. Thirty minims will be sufficient to form with the alkali 1 oz. of a normal developer for all plates. For over-exposure this quantity may be increased to 80 minims and for under-exposure to 10 minims per ounce.

To make this solution dissolve the metabisulphite in 6 ozs. of water and if necessary filter it, and then open a fresh bottle of pyro and pour on the solution, and make the total bulk up to 73 drachms, and immediately bottle. When the pyro has been dissolved, the solution must not be filtered, or it will become slightly discoloured. To make a 10 per cent. solution of sodium carbonate is hardly advisable, as it will take up such a large bulk ; so it will be preferable to make it four times that strength, and it will then be as follows :—

Potassium Bromide	25 grs.
Sodium Bicarbonate	4 ozs.
Distilled Water.... to	73 drachms.

Label : "Solution of Sodium Carbonate with Bromide."

Every drachm of this solution contains 24 grs. of soda and one-third of a grain of potassium bromide, and is the normal quantity for 1 oz. of developer for all plates. In cases of over-exposure reduce to one-half or less ; in under-exposure increase to 1½ drachm. If potash is to be the alkali, then the sodium carbonate in the above formula must be replaced by 1344 grs. of potassium carbonate.

Hydroquinone was a very favourite developer, but has lately been ousted by the newer developers, and a normal developer is—

Hydroquinone	3 grs.
Potassium Bromide	5 gr.
Water	1 oz.

Unfortunately it is not possible to make an aqueous 10 per cent. solution of hydroquinone, but there will be no difficulty if alcohol be used, as in the following formula :—

Hydroquinone	1 oz.
Sulphurous Acid	4 ozs.
Absolute Alcohol ....to	9 ozs., 1 drachm.

Label : "Ten Per Cent. Solution of Hydroquinone," the rest being a copy of the label for the pyro developer.

With hydroquinone it is usual to use a caustic alkali, such as potassium or sodium hydrate, and 4 grains of either should be used to the ounce, so that the alkaline solution for use with this will be—

Potassium Hydrate	292 grs.
Potassium Bromide	36 grs.
Sodium Sulphite	2 ozs.
Distilled Water .... to	9 ozs., 1 drachm.

The reason why sulphite is used with the alkali is to prevent the discoloration of the developer in the dish.

Label : "Alkaline Solution for Hydroquinone."

One drachm should be mixed with 30 minims of 10 per cent. solution of hydroquinone and diluted with sufficient water to make 1 oz.

Hydroquinone is a great favourite for one-solution developers, which are applicable to all classes of work, but is, in my opinion, far surpassed by glycine, to which I shall refer presently. As a one-solution developer we may take the following :—

Potassium Metabisulphite	1 oz.
Potassium Ferrocyanide	1 oz.
Hydroquinone	270 grs.

Dissolve in—

Distilled Water	5 ozs.

and add—

Potassium Hydrate	400 grs.

dissolved in—

Distilled Water	2 ozs.

and make the total bulk measure 10 fluid ozs.

Label : "For Negative Work."

For under-exposure mix 1 oz. with 3 ozs. of water ; for correct exposure use 6 ozs. of water and add 6 grs. of potassium bromide ; for over-exposure add 8 ozs. of water and 16 grs. of bromide. For bromide paper and lantern slides use the same as for over-exposure.

Metol by itself is not so satisfactory for negative work, but in conjunction with pyro it gives an excellent developer, particularly for snapshot work, and the following will be found very satisfactory :—

Metol	180 grs.
Pyrogallol	220 grs.
Potassium Metabisulphite	1 oz.
Potassium Bromide	80 grs.
Distilled Water to	10 ozs.

Dissolve the metol in 5 oz. of water, add the metabisulphite, shake till dissolved, then add the pyro and bromide and make the total bulk measure 10 ozs.

Label : "Pyro and Metol Developer."

For use dilute 2 drachms with 6 drachms of water and mix with 48 grs. of carbonate of soda dissolved in 1 oz. of water.

If preferred the soda solution may be sent out, and in this case that suggested for pyro should be used and the bromide omitted from the pyro and metol.

Glycine is a developer very much neglected which well deserves attention, as it never stains, gives beautifully clean negatives and keeps well, and is applicable to bromide paper, and lantern slides as well. It may be sent out either in the form of a one or two solution developer ; for the former the following may be used :—

Sodium Sulphite	720 grs.
Potassium Carbonate	1080 grs.
Potassium Bromide	60 grs.
Glycine	½ oz.
Distilled Water ....to	10 ozs.

Dissolve in the above order.

Label : "One-Solution Developer."

For negative work dilute 2 drachms of the above with 6 drachms of water ; for bromide paper and slides use 9 drachms of water.

For a two-solution developer the following can be used :—

A.	Glycine	300 grs.
	Sodium Sulphite	2½ ozs.
	Distilled Water ....to make	10 ozs.
B.	Potassium Carbonate	1 oz.
	Potassium Bromide	20 grs.
	Distilled Water....to make	4 ozs.

For use mix 3 drachms of "A" and "B" and dilute with 8 drachms of water, for bromide paper and lantern slides use 12 drachms of water.

Intensifiers.

As regards intensifiers, there are two which are special favourites, the first being known as Monckhoven's potassio cyanide intensifier, which is made as follows :—

A.	Mercuric Chloride	100 grs.
	Ammonium Chloride	100 grs.
	Distilled Water .... to	10 ozs.
B.	Silver Nitrate	100 grs.
	Distilled Water .... to	10 ozs.
	Potassium Cyanide	*q.s.*

The first solution requires but little comment, but to make the second dissolve the silver in half the water and the cyanide in 2 ozs. of water, and add the latter to the silver gradually in small quantities, shaking after each addition till the silver cyanide first thrown down is nearly all dissolved, but not quite. There should always be some left, and therefore the solution must not be filtered. The total bulk of the solution should be made up to 10 ozs.

Label : "Mercury Intensifier—Poison."

When the negative has been thoroughly freed from hypo, immerse in "A" solution till it appears quite white on the back ; then wash thoroughly and immerse in "B" till it appears black when examined from the glass side.

Another favourite, which is in the form of a single solution, is

Uranium Nitrate	100 grs.
Potassium Ferridcyanide	100 grs.
Glacial Acetic Acid	½ oz.
Distilled Water .... to	10 ozs.

The only point about making this is to well wash the ferridcyanide from any adherent powder before mixing with the uranium.

Label : "One-Solution Intensifier."

The negative must be thoroughly freed from hypo and then immersed in the solution, and then rinsed and dried. Note.—This intensifier acts very energetically, and therefore care should be taken not to carry the process too far. Negatives

intensified in this may be reduced by immersion in a 5 per cent. solution of ammonia.

Another intensifier which has been lately put on the market under a high-sounding title is the bromide of copper suggested many years ago :—

A. Sulphate of Copper		249 grs.
Distilled Water,	to	5 ozs.
B. Potassium Bromide		236 grs.
Distilled Water,	to	5 ozs.

Mix and, if necessary, filter.

Label : "Bromide of Copper Intensifier."

The negative must be free from hypo and then immersed, in daylight, in the solution, and after well washing should be redeveloped with any developer, such as metol or hydroquinone, but not with pyro and ammonia. If very great intensification is required, rinse the negative only and flow over with a 10 per cent. solution of silver nitrate and thoroughly wash.

The best reducer is that known as Belitzski's, as follows :—

Potassium Ferric Oxalate	200 grs.
Sodium Sulphite	200 grs.
Distilled Water	5 ozs.

Dissolve the iron salt, add the sulphite, and shake till dissolved. The solution will be blood red. To this add

Oxalic Acid (crystal)	75 grs.

Shake well till the solution turns bright green ; then pour off from any undissolved acid and add

Sodium Hyposulphite	2½ ozs.

and sufficient distilled water to make the total bulk measure 10 fluid ounces.

Label : "One-Solution Reducer."

The negatives may be just rinsed when they are taken from the fixing bath, and then immersed in the solution till nearly reduced enough, then well washed. A slight reduction continues during washing. This reducer may be used over and over again, till it works too slow or is quite yellow. It must be kept in the dark. Negatives which have been dried should be soaked in water till thoroughly moist before being reduced.

Both the reducer and intensifiers given above may be applied to bromide papers and lantern slides, but the uranium intensifier gives a rich, warm, brown image.

A New Reducer.

M. Mathet suggests the following as a reducer, and states that it is a great improvement on Howard Farmer's ferridcyanide reducer, as it does not attack the half tones so much as the latter, and is applicable to every silver process. It consists of two solutions.

1.—Eau Celeste.

Distilled Water	625 parts.
Sulphate of Copper	1 part.
Liq. Ammonia	quant. suff.

sufficient ammonia should be added to redissolve the precipitate first formed.

2.—Hyposulphite.

Water	100 parts.
Hypo	1 part

For negatives mix immediately before use—

Eau Céleste, No. 1	1 part.
No. 2 Solution	1 part.
Water	6 parts.

For albuminised or gelatino-chloride paper—

No. 1 Solution	10 parts.
No. 2 Solution	1 part.
Water	190 parts.

For bromide paper—

No. 1 Solution	20 parts.
No. 2 Solution	2 parts.
Water	180 parts.

Preparation of Mercury Pyoktanate and Its Gauze.—Pyoktanate of mercury has been used with success as a general bactericide, either in a half or one per cent. solution, or for dressing as a gauze. The compound is prepared by precipitating a solution of mercuric chloride in ammonium chloride by means of a strong solution of pyoktanin. The precipitate which results contains 55 per cent. of mercury. The gauze is prepared by first saturating 100 parts of undressed gauze in a solution of sublimate, 1 part, and ammonium hydrochloride, 5 parts, in water, 60 parts. After drying it is moistened with a half per cent. solution of pyoktanin and again dried.

A PROPOSED FOOD AND DRUGS ACT.

The following is the text of the Bill introduced into Parliament by Mr. Chaplin on Monday, excluding Sections 4, 5, 6, and 7, which possess no special interest to our readers :—

A Bill to Amend the Acts relating to the Sale of Food and Drugs.

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual, and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :—

1. It shall be the duty of every local authority entrusted with the execution of the laws relating to the sale of food and drugs to put in force from time to time, as occasion may arise, the powers with which they are invested, so as to provide proper securities for the sale of food and drugs in a pure and genuine condition, and in particular to direct their officers to take samples for analysis.

2. The minimum fine for a second or subsequent offence under the Sale of Food and Drugs Acts shall be *five pounds*, and in the case of a third or subsequent offence the court may in its discretion impose imprisonment without the option of a fine.

3. Where a person convicted of an offence under the Sale of Food and Drugs Acts has been within *twelve months* previously convicted of another offence under those Acts, the court may, if it thinks fit and finds that he knowingly and wilfully committed both those offences, order that a notice of the facts be affixed in such form and manner, and for such period not exceeding *twenty-one* days, as the court may order to any premises occupied by that person, and that he do pay the cost of such affixing, and if any person obstructs the affixing of any such notice, or removes, defaces, or conceals the notice while affixed during that period, he shall for each offence be liable on summary conviction to a fine not exceeding *five pounds*.

4, 5, 6, and 7, deal with the sale of margarine and milk exclusively.

8. The label referred to in section eight of the Sale of Food and Drugs Act, 1875, shall not be deemed to be distinctly and legibly written or printed within the meaning of that section unless it is so written or printed as not to be obscured by the other printed matter on the label : Provided that nothing in this enactment shall affect any registered trade mark, but the Comptroller-General of Patents, Designs, and Trade Marks shall not register any trade mark purporting to describe a mixture unless it complies with the requirements of this enactment.

9.—(1) The limit of *twenty-eight days* fixed by section ten of the Sale of Food and Drugs Act Amendment Act, 1879, for the service of a summons under the Sale of Food and Drugs Acts shall extend to non-perishable articles, and the words "and in the case of a perishable article" in that section shall be repealed. (2) Any such summons must be served not less than *fourteen days* before the day on which it is returnable. (3) There must be served with any such summons a copy of any analyst's certificate obtained on behalf of the prosecutor.

10. A warranty shall not be available as a defence to any proceeding under the Sale of Food and Drugs Acts unless the defendant has, within *seven days* after receipt from the purchaser of notice of his intention to take proceedings, sent to the purchaser a written notice stating that he intends to rely on the warranty, and specifying the name and address of the person from whom he received it.

11. The justices or court of appeal shall, on the request of either party under section twenty-two of the Sale of Food and Drugs Act, 1875, cause an article of food or drug to be sent to the Commissioners of Inland Revenue fer analysis.

12.—(1) The certificate of analysis required by the Sale of Food and Drugs Act, 1875, shall be in a form prescribed by the Commissioners of Inland Revenue, and section eighteen of that Act, and the schedule to the Act are hereby repealed. (2) At the hearing of the information in any proceeding under the Sale of Food and Drugs Acts, the production by the defendant of a certificate by a public analyst shall be sufficient evidence of the facts therein stated, unless the prosecutor requires that the analyst be called as a witness. (3) The certificate of analysis given under section twenty-two of the Sale of Food and Drugs Acts, 1875, by any chemical officer at Somerset House shall be sufficient evidence of the facts therein stated, unless either party requires that the analyst be called as a witness.

13.—(1) This Act may be citcd as the Sale of Food and Drugs Act, 1897, and shall, except as specially provided by this Act, be construed as part of the Sale of Food and Drugs Act, 1875. (2) The Sale of Food and Drugs Act, 1875, the Sale of Food and Drugs Act Amendment Act, 1879, the Margarine Act, 1887, and this Act, may be cited collectively as the Sale of Food and Drugs Acts, 1875 to 1897, and are in this Act referred to as the Sale of Food and Drugs Acts. (3) This Act shall come into operation on the *first day of January, one thousand eight hundred and ninety-eight.*

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, AUGUST 4, 1897.

Present :

Mr. Walter Hills, President.

Mr. G. T. W. Newsholme, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Cross, Grose, Hampson, Harrison, Johnston, Savory, Symes, and Warren.

The minutes of the last monthly meeting, and also of the special meetings on July 14 and 21, having been read and confirmed,

The President said he had received a letter from Mr. George Rimmington conveying to the Council the sincere thanks of his family for the letter of sympathy which had been sent to them, and for the touching allusions made at the last Council Meeting to his late father. A letter had also been received from Dr. de Vrij, in which he expressed his appreciation of the honour that had been conferred upon him. He (the President) was sorry to say that owing to the infirmities of advancing age, Dr. de Vrij could hold out very little hope of being present at the presentation in October. Thc President also called attention to the legislation which had been passed in favour of the adoption of thc metric system. He had drafted and forwarded to the House of Commons a petition in favour of the Weights and Measures (Metric System) Bill, which was presented by the Right Hon. Mr. Ritchic, President of the Board of Trade. The Bill had now passed the third reading, and was awaiting the Royal assent.

Calcium Carbide.

Dr. Symes asked if any communication had been received from the Government, relative to the exemption of retailers keeping and selling small quantities of calcium carbide, from the provisions of the Petroleum Act, under which it had been placed. When the official notice of the fact was sent to the Council a short time ago, he suggested that some effort might be made to get such an exemption for chemists, and he should like to know if the Society was entitled to any credit in the matter, and whether any official intimation had been received with regard to it?

The President said he did not remember that any definite suggestion was made as to taking any action, and, as a matter of fact, he had not done anything, nor had any official intimation on the subject been received.

Dr. Symes said the exemption which applied to keeping quantities not exceeding 5 lbs. and to the sale of the article in 1-lb. tins would no doubt be of great advantage to chemists, because the storing of articles which came under the Petroleum Act affected the question of fire insurance. Although the trade in the article was but a small matter at present, it would no doubt grow, and chemists would find there was a demand for the carbide.

The Sale of Food and Drugs Act.

Mr. Bottle asked if any communication had been received on the subject of the Bill for amending the Sale of Food and Drugs Act. It was a matter they were all interested in, and he thought the Society ought to have had some information from the Government as to the direction in which it was intended to move.

The President said he had only just received a copy of the Bill, and had had no previous information with regard to it. From the hasty glance he had been able to give it, he thought it was a Bill to which they might take some exception, as there was no mention of any Board of Reference, such as had been suggested in other quarters, which should include someonc who would represent the interests of chemists and druggists. He hoped to be able to examine the Bill more carefully before the next meeting of the General Purposes Committee.

Mr. Harrison said there was no possibility of the Bill becoming an Act this year. He had no doubt the matter would be considered by the Law and Parliamentary Committee.

Diplomas.

The undermentioned, being duly registered as pharmaceutical chemists, were respectively granted a diploma stamped with the seal of the Society :—

Blyton, John Henry.
Fothergill, James.
Hamerton, James.
Hankinson, Herbert Stanley.
Hankinson, William.
Jones, Edward Rees.
Metcalfe, Wm. Edward.
Roberts. Haworth.
Smith, Thomas Wm.
Wallis, Jas. Samuel.
Widgery, Ernest.

Election of Members.

Pharmaceutical Chemists.

The following, having passed the Major examination and tendered their subscriptions for the current year, were elected "Members" of the Society :—

Blyton, John Henry ; Manchester.
Fothergill, James ; Newbiggin.
Jones, Edward Rees ; Bangor.
Wallis, James Samuel ; Crouch End.

Chemist and Druggist.

Herbert Amoore, of Bournemouth, who was in business before August 1, 1868, having tendered his subscription for the current year, was elected a "Member" of the Society.

Election of an Associate in Business.

Alfred Morgan Jones, of Penrhiwceiber, having passed the Minor examination, being in business on his own account, and having tendered his subscription for the current year, was elected an "Associate in Business" of the Society.

Election of Associates.

The following, having passed the Minor examination and tendered, or paid as Students, their subscriptions for the current year, were elected "Associates" of the Society :—

Ascroft, Benjamin ; Ince.
Ashcroft, Alfred William ; W. Leigh.
Barker, John Brydon ; W. Hartlepool.
Bartlet, Alexander ; Turriff.
Bentley, Thomas ; Normacot.
Billings, Sydncy James ; Cheltenham.
Brown, Thomas Frederick ; Gravesend.
Brown, William Charles ; Birmingham.
Bull, William Robert Watcham ; Bath.
Bustard, Francis Edwin ; Poole.
Church, Charles Edward ; Andover.
Clark, Alexander Robertson ; Brighton.
Clark, Henry Burton ; Gloucester.
Coe, Arthur Edward ; King's Lynn.
Coley, James William Ernest ; Stroud.
Cook, Thomas ; Lincoln.
Davis, John Butler ; London.
Dennis, William ; Jarrow.
Epps, James Washington ; Tulse Hill.
Epton, James ; Spalding.
Falck, Charles ; Huddersfield.
Farrow, Tom ; Stokesley.
Garsed, William ; Elland.
Guard, Harry Ernest ; Kennington.
Hackett, John ; Shepherd's Bush.
Happold, Carl ; Barrow-in-Furness.
Hill, Philip Robert ; Weymouth.
Holt, Henry ; Manchester.
Jenkins, Evan Jones ; London.
Jenkins, Herbert ; Crieklewood.
Jones, John Lloyd ; Chester.
Jones, Thomas H. O. ; Upper Bangor.
Jordan, Ernest Samuel ; Exeter.
Lambert-Shea, William A. ; Brighton.
McGlinchy, John Owen ; Reading.
McIntosh, Alexander ; Edinburgh.
Matthews, Harold Evan ; Cirencester.
Merrikin, Sydney Herbert ; Louth.
Miller, Harold ; Grantham.
Molson, Algernon Heanley ; Sleaford.
Morgan, Harold Marston ; Ullesthorpe.
Nelson, William Brown ; Harrogate.
Norman, Charles Henry ; London.
Orrell, William Herbert ; Bolton.
Pattinson, Thomas ; Guisbrough.
Perrédès, Pierre Elie Felix ; Jersey.
Pinchbeck, Gerald ; Middlesborough.
Riddell, James Hamilton ; Glasgow.
Sinclair, James ; Aberdeen.
Smith, Frederick A. U. ; Birmingham.
Smith. George William ; Oakham.
Smith, Harold James ; Grimsby.
Stephenson, James ; Newark.
Street, Spencer ; Littleport.
Teale, John Oliver ; Rhyl.
Thompson, Laurence Noel ; Edinburgh.
Tinsley, Samuel Hilton ; Widnes.
Tulloch, James John B. ; Aberdeen.
Walker, Vernon ; Sheffield.
Ward, Ernest Baker ; Leicester.
Ward, William Henry C. ; London.
Watson, Herbert Shepley ; Towcester.
Watts, William ; Dumfries.
Wendon, William ; Totnes.
Wild, Sydncy ; New Mills.

Election of Students.

The following, having passed the First examination and tendered their subscriptions for the current year, were elected "Students" of the Society :—

Checketts, Mary ; Leamington.
Edwards, John ; Nottingham.
Fawcett, Frank Dalby ; Bebington.
Fawcett, Harry Rowland ; Retford.
Fenton, Samuel Gray ; London.
Holden, William Clifford ; Folkestone.
Jones, Arthur Henry ; Cardiff.
Larder, Frederick ; Louth.
Marshall, John William ; Leicester.
Nunday, William Lockwood ; London.
Roberts, Annie E. ; Rhayader.
Swinnerton, George ; Hanley.
Taylor, Walter Percy ; Shrewsbury.
Williamson, Edward ; Guisbrough.

Several persons were restored to their former status in the Society upon payment of the current year's subscription and a nominal restoration fee of one shilling.

Reports of Finance Committee.

The report contained the usual recommendations for the payment of sundry accounts, and referred to the fact that the Treasurer had been authorised to purchase £4000 of 2¾ per Cent. Consols on the Benevolent Fund account.

The President, in moving the adoption of the report, said there was nothing special to call attention to on the General Fund, but he should like to refer to the fact that a legacy of £2000 had been received from the executors of the late Mr. George Nind, for which they were very grateful. The sum of £2084, the donations arising from the Festival Dinner, had also been received. That, together with a sum from ground rents and other small sums, amounted to £4415, and it was suggested that £4000 of 2¾ per Cent. Consols should be purchased. There was already stock to the credit of the Benevolent Fund account of some £2050, and that, together with the stock now purchased, would form a sum with which they could easily deal when a better investment commended itself to the judgment of the Council.

Benevolent Fund.

The report of this Committee included a recommendation of grants to the amount of £32 in the following cases :—

A registered chemist and druggist (76) who was in business down to 1893 ; he is in very weak health, and entirely without means. (Gravesend.)

The widow (47) of a registered chemist and druggist and subscriber for one year to the Fund. She has four children, two dependent upon her. (Cleator Moor.)

The widow (50) of a registered chemist and druggist, who died in April last, leaving nothing. (Merton.)

A registered chemist and druggist (65) who had a grant last year. Is now out of employment and can do but little. (Willesden Green.)

The Secretary reported the death, on July 12, of William S. Baker, of Clacton-on-Sea, aged 84. He was elected an annuitant in 1893.

The Vice-President moved the adoption of the report and recommendations which was at once agreed to.

Library, Museum, School, and House Committee.

The report of this Committee stated that the report of the Librarian had been received, including the following particulars :

		Attendance.	Total.	Highest.	Lowest.	Average.
June	Day		365	24	0	15
	Evening		69	7	0	4

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
June	171	84	87	19s. 7½d.

Several donations had been received (*Ph. J.*, July 17, p. 45), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended the purchase of the undermentioned works for the Library in London :—

Bloxam, Laboratory Teaching, 6th ed.
Hartwich, Die neuen Arzneidrogen aus dem Pflanzenreiche, 1897.

The Curator's report had also been received, and included the following particulars :—

		Attendance.	Total.	Highest.	Lowest.	Average.
June	Day		482	32	9	21
	Evening		83	8	1	3

Several donations had been received, and the Committee had directed that the usual letter of thanks be sent to the respective donors.

On the recommendation of Professor Collic, the Committee had appointed Messrs. Frye and Dewhirst as demonstrators in the Chemical Laboratory, and Mr. Lee as lecturer's assistant. The Curator had presented a report of his visit to the Oxford meeting of the Museums Association.

The President, in moving the adoption of the report and recommendation, said it covered a good deal of ground, and showed that a considerable amount of work had been done, but there was nothing needing special comment. He was very pleased to mention, however, that an old friend, Mr. Copney, a former prizeman of the School of Pharmacy, and now an annuitant on the Benevolent Fund, had presented to the Society through the Council a picture of Faraday lecturing at the Royal Institution, which was now hung in the Library.

Mr. Carteighe said the picture was very interesting, and included the portraits of several men of science of that day, including Mr. Morson.

The report was agreed to unanimously.

Research Committee.

The report of this Committee referred to the fact that no applications had been received either for the Redwood or the Burroughs Scholarship, and the Committee recommended that the time for receiving applications be extended this year to September 30.

The President, in moving the adoption of the report, said it was a matter for regret that no applications had been received either for the Redwood Scholarship or the Burroughs Scholarship, but he thought that might be explained by the fact that matters were in rather a transitory state this year. Although the Council was delighted to receive applications for these scholarships from students at any school, they did expect to get more frequent applications from scholars attending their own School of Pharmacy. Owing to the transitional state in which they were during the present session, they had necessarily only a very few advanced students, therefore it was suggested by the Committee that the time during which applications for the scholarships should be made might be extended to September 30. They would all agree that they would like to see the scholarships filled during the next twelve months.

Mr. Carteighe seconded the proposition, and said he was not at all surprised that with regard to the scholarships, the Pereira Medal, and the Council Prizes examinations, there had been a falling off in the number of candidates. Whatever might be said about the School of Pharmacy of that Society, it was right that he should say that for many years the chief honours in open competitions had been obtained by scholars from the Society's School, but the fact was they had grown no Major students this year, and no doubt they were all to come next year. If it should turn out that there were no applications for the scholarships this year, he would venture to prophesy that if the Council chose to double the amount or to give two scholarships next year, there would be plenty of applications.

The motion was then agreed to.

General Purposes Committee.

The report of this Committee included the following reports on the Prize and Scholarship Examinations :—

Jacob Bell Memorial Scholarships.

The Examiners appointed to conduct the examination for the Jacob Bell Scholarships had reported that 31 candidates had competed for the Scholarships at the following centres :—

Birmingham, 3 ; Bristol, 2 ; Canterbury, 3 ; Carlisle, 1 ; Cheltenham, 1 ; Dundee, 1 ; Edinburgh, 1 ; Lincoln, 1 ; Liverpool, 2 ; Manchester, 1 ; Newcastle, 1 ; Northampton, 1 ; Nottingham, 1 ; Oxford, 2 ; Southampton, 2 ; London, 8.

The envelopes bearing the mottoes of the successful candidates having been opened by the Committee appointed to make the award had been found to contain the following names :—

Herbert Payne.
John Evans.

The Committee had awarded the scholarships to these two gentlemen subject to the approval of the Council.

The competitors who wrote under the following mottoes obtained upwards of two-thirds of the maximum number of marks (which is the minimum for the award of a Bell Scholarship). The arrangement is in order of merit :—

3. Concordia parvæ res cresunt.
4. Eureka.
5. Sapientia Industriam Coronat
6. Beate mundo corde.
7. Aequabiliter et Diligenter.
8. Agamemnon.
9. Veni, vidi / Neophyte } æq.
10. Laborando.
11. Ora et labora.
12. Perseverantia / Excelsior } æq.
13. Per Ardua.

The remaining competitors did not reach the standard of efficiency referred to.

Manchester Pharmaceutical Association Scholarship.

The Committee reported that three candidates had sat, and that one had reached the standard of marks entitling him to the award of the Scholarship.

The envelope bearing the motto of the successful candidate was opened by the Committee appointed to make the award, and had been found to contain the name of

Robert Hilliard Dawson,

to whom the Scholarship had been awarded subject to the approval of the Council.

Herbarium Competition.

Professor Green had reported on the Herbarium Competition, and on his recommendation the following award was made:—

Certificate of Honour..... George Todd.

Council Prizes Examination.

Professors Balfour and Gibson and Mr. Maben, who had been appointed to conduct this examination, had reported that 11 competitors entered for the prizes, but that only one had attained the requisite standard of efficiency for the award of a medal. The envelope bearing the motto of the successful competitor having been opened was found to contain the name of W. A. Knight.

The following award was therefore made:—

Pereira Medal (Silver); and Books value £5, presented by the late Thomas Hyde Hills.

William Arthur Knight.

The President in moving the adoption of this portion of the report, remarked on the satisfactory character of the examination for the Jacob Bell Scholarships, there having been thirty-one competitors, of whom fifteen obtained a sufficient number of marks to qualify them for the scholarship. With regard to the Council Prizes Examination it was perhaps unsatisfactory that neither the silver nor bronze medal had been awarded on this occasion, but the remarks he had previously made, supplemented by those of Mr. Carteighe, would go far to explain the special conditions of the present year. The Pereira Medal had almost without exception been taken by a student of the School of Pharmacy, though the competition was open to all. Practically, as Mr. Carteighe had said, they had grown no Major students this session. There was every reason, however, to hope and believe that next year not only the Pereira Medal, but also the silver and bronze medals, would be awarded.

The report was agreed to unanimously, and votes of thanks were passed to the professors and gentlemen who had conducted the respective examinations.

The Council then went into Committee to receive the legal portion of the report of the General Purposes Committee. It included the usual letter from the solicitors, and recommended proceedings in certain cases. On resuming, the report and recommendations were received and adopted, and special resolutions were passed, authorising the Registrar to take proceedings against the persons named.

On the conclusion of the business the President announced that it was not intended to form a quorum for a meeting of the Council in September.

Report of Examinations.

July, 1897.

	Candidates.		
	Examined.	Passed.	Failed.
England and Wales:—			
Major	17	11	6
Minor	256	86	170
Scotland:—			
Major	4	0	4
Minor	141	55	86
First Examination	371	176	195

Twenty-five certificates by approved examining bodies were received in lieu of the Society's examination.

SPECIAL GENERAL MEETING.

The Proposed New Bye-Laws.

A special general meeting of the Pharmaceutical Society was held, pursuant to notice, on Wednesday, August 4, at Bloomsbury Square, for the purpose of confirming the new Bye-laws, as approved by the Council on July 7, 14, and 21 (see *ante*, pp. 28-29). The chair was taken at three o'clock by Mr. Walter Hills, President, and the Secretary read the notice convening the meeting.

Mr. Carteighe then moved that the proposed Bye-laws before the meeting be taken as read.

Mr. Atkins seconded the motion, which was carried unanimously.

The President next moved that the fourteen Bye-laws of the Society, Nos. 11 to 24 of Section 10, be abrogated, and that the new Bye-laws No. 11 to 23 of the same Section, now submitted to the meeting, be confirmed. He said it was unnecessary to make any lengthy remarks, and he should probably best consult the interests of the meeting by merely introducing the subject with a very few words. It would be remembered that, at a special general meeting of the Society held on May 19, the amended Bye-laws then submitted were confirmed almost with unanimity after considerable discussion. It appeared at that meeting, as well as at many others held in various parts of the country, that there was a general consensus of opinion in favour of widening the scope of the Preliminary examination and of the devolution of that examination entirely to specially-appointed examining bodies. The discussion was restricted almost entirely to the important question of the increase of the fee for the qualifying examination, on which a great deal was said, and even those who were opposed to it would agree that they had a fair hearing, and were completely beaten. The members then came to the conclusion almost unanimously that the amended Bye-laws then submitted were reasonable and proper. The next point was to send on those amended Bye-laws to the Privy Council for approval, and a suggestion was then made by that department which did not affect the principle involved, but simply had reference to a matter of detail. It was noticed, even by some who were in general accord with the views of the Council, that there might possibly be some little hardship involved in the case of those who had already entered the business, in having to pay ten guineas for the qualifying examination instead of five, and the suggestion made by the Privy Council was that this increase in the fee should not come into operation until three years after the approval of the Bye-laws. On that suggestion being submitted to the Council it was unanimously agreed to, and the result was that the matter had to be considered *de novo*. The new Bye-laws now before the meeting were adopted with perfect unanimity, and had been confirmed in accordance with the Charter at two subsequent meetings of the Council, and it only remained to confirm them by a general meeting of the members specially convened for the purpose. He had no reason to believe that there would be any serious opposition, and he would merely say, as he did on the former occasion, that it was out of the question to propose any amendment. It was open to any member to discuss any matters touched upon in the Bye-laws and to vote against the resolution he had proposed, and if the resolution were not carried the matter would be remitted to the Council for reconsideration. He trusted, however, that the resolution would be adopted with practical unanimity.

The Vice-President seconded the resolution. It was not necessary for him to say anything at that moment in its support.

Mr. Wootton said he understood the President to rule that no amendment could be moved which would have the effect of ruling out one of the Bye-laws.

The President said that was so.

Mr. Wootton said, in that case, he would take no part in the discussion. He would content himself with saying formally that he wished to move an amendment.

The President said he could not admit an amendment, but was quite willing to hear Mr. Wootton on any point that was touched on by the Bye-laws, and, of course, if he wished, he could vote against them.

Mr. Wootton said he did not wish to vote against them.

Mr. Lescher wished to say, on behalf of many friends of his who were not then present, that they were completely in favour of the proposed Bye-laws for many reasons.

The resolution was then put and carried *nem. con.*

Mr. Carteighe next proposed a vote of thanks to the President for presiding.

Mr. Bottle seconded the resolution which, on being put to the meeting by the Vice-President, was carried by acclamation.

The President said he was very much obliged to the meeting for the vote. He could assure them that it was a very happy thing for him to think that the Bye-laws were passed as far as they were concerned, and there was every reason to believe that they would come into operation. That was sufficient reward to him for the labour he had undertaken, because he could conceive of nothing that would tend more to raise their calling than the alterations which had been sanctioned that day. It was one of the greatest changes that had been made for many years. They would not reap the advantages at once, but in a few years they would see the great benefit that would accrue to the whole calling.

"FIRST" EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held on Wednesday, August 4.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination :—

Iliffe, Oliver G. ; Nuneaton.
oore, Benjamin ; Riehmond.
Nieholson, Malcolm ; Glasgow.
Williams, Gwilym Ivor ; Ross.
Worfolk, Harriet Ellen ; Ilkley.

The report of the College of Preceptors on the examination held on July 13 was received. **371** candidates had presented themselves for examination, of whom **195** had failed.

The following **176** passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students :—

Akhurst, Arthur Alfred John ; Brixton.
Allan, Edward Cross ; Aberdeen.
Aneliffe, Albert John ; Guernsey.
Anderson, David W. ; S Queensferry.
Anderson, John ; Dundee.
Anderson, John ; Kilmalcolm.
Anderson, Roderick Douglas ; Dundee.
Armstrong, John H ; Wigton.
Austen, Edgar Parsons ; Southampton
Badcoek, John Mark ; Barnard Castle.
Badenoeh, George H. ; Castle Douglas.
Baker, Walter Henry ; Bristol.
Bamforth, Cyril Brierley ; Huddersfield.
Barnett, Alfred ; Aberdeen.
Bates, Henry James ; New Benwell.
Baxter, Alexander Cooper ; Edinburgh.
Beeeroft, Frederiek T. ; Searborough.
Beeham, Reginald Sanders ; Oundle.
Benson, Joseph Henry ; Whitehaven.
Blyth, Alec ; Colehester.
Board, William Robert ; Jersey.
Boyd, John ; Comrie.
Boyle, Joseph ; Glasgow.
Braid, John Borlase ; Truro.
Brierley, Joseph H. ; Burton-on-Trent.
Buehanan, William James ; Crieff.
Burry, David Edmund Henry ; Pieton.
Burton, John Robert ; Wakefield.
Cartwright, Alfred Harry ; Silverdale.
Cattell, Aliee Mary Drueilla ; Elmdon.
Cawthorn, Lionel ; Doneaster.
Clark, Walter Sidney ; Luton.
Collenette, William de Franee ; Guernsey.
Combe, Robert Grierson ; Aberdeen.
Corkill, William Sidney ; Ramsey, I.M.
Cuthbert, Harry Holmes ; Northampton.
Dall, John ; Edinburgh.
Davidson, Alexander Hugh ; Stranraer.
Dorman, Hugh ; Stranraer.
Doueh, Walter ; Southborough.
Drewett, Perey Conyers ; Whitby.
Duekworth, Arthur ; Heaton Moor.
Dutton, Charles Ceeil ; St. Helen's.
Eaton, Edgar Smith ; Swinton.
Edwards, Evan Ellis ; Carmarthen.
Elliot, Thomas ; Edinburgh.
Fairelough, Wilfrid ; Sunderland.
Ferguson, Allan Hitchen ; Preston.
Flemons, Joseph Charles ; Aylesbury.
Forster, Edward Maver ; Alnwiek.
Franeis, Aaron ; Llanidloes.
Fraser : David Wilson ; Ayr.
Fraser, Hugh W. M. ; South Shields.
Gardner, John Wilson ; Coatdyke.
Garner, David Lionel ; Bridport.
Gibson, George Edward ; Lincoln.
Gibson, George Willis ; Douglas, I. M.
Gibson, John ; Dumbarton.
Gilehrist, John ; Hamilton.
Gooeh, William Rastrick ; Dedham.
Griffiths, James Alfred ; Ludlow.
Hague, Harry ; Bury.
Hagyard, Robert John ; Scarborough.
Hall, Edgar ; Burnley.
Hamlin, Hourston ; Dartford.
Hampshire, Arthur ; Ossett.
Hannay, Thomas ; London.
Harrison, Arthur ; Horneastle.
Hattersley, Hugh ; Bradford.
Henderson, John Reed ; Inverness.
Hodges, Charles E. ; Wotton-u.-Edge.
Holden, James Lancelot ; Laneaster.
Hugall, John Robert ; Sunderlaud.
Hunter, Charles ; Glasgow.
Hussey, Herbert Riehard ; Weymouth.
Ingham, Edgar Foster ; Sunderland.
Ingham, John Bertram ; Huddersfield.
Inglis, Alexander ; Edinburgh.
Jackson, Marion ; Gainsborough.
Jensen, Harold Rupert ; New Brighton.
John, John Jenkin ; Llanpumpsaint.
Johnson, Alfred ; Barnsley.
Johnson, Alee. Samuel ; Stourbridge.
Johnson, John Albert ; Lincoln.
Jones, Gwilym ; Crieeieth.
Jones, Robert ; Carnarvon.
Juleff, John, Jun. ; Clapham.
Keen, Florenee Edith ; Cheltenham.
Kenworthy, George ; Barnsley.
Kermode, William Quane ; Peel, I. M..
Kerse, John Tulip ; Neweastle-on-Tyne
Kinnis, Wm. D. ; Newcastle-on-Tyne.
Kynaston, George Henry ; Exeter.
Laddiman, Ernest John ; Norwieh.
Leith, Alfred Benjamin ; Breehin.
Lester, Aubrey Vietor ; Dover.
Liddell, Harry Bowman ; York.
Loekhart, Jeanie Lawson ; Irvine.
Lowe, Wilfrid ; Whaley Bridge.
Lowes, Herbert ; Ferryhill.
Lyall, David Watson ; Montrose.
MeDiarmid, George ; Edinburgh.
MeDonald ; Charles S. S. ; Earlston.
MeGregor, Gillies ; Aberdeen.
MacIver, Jeanie C. ; Dingwall.
Maekenzie, Angus ; Edinburgh.
Mackinnon, Thomas ; Govan.
Male, Frank Linton ; Cambridge.
Matthews, James Gilbert ; Birmiugham.
Mellors, George ; Retford.
Milestone, Robert ; Leeds.
Miller, John ; Blantyre.
Moffat, George Alexander ; Belton.
Mole, Ernest Mitehley ; Leatherhead.
Muckersie, Benjamin S. ; Kirkealdy.
Mundy, Arthur Terry ; Ivy Bridge.
Myers, John ; Dalton-in-Furness.
Neill, William Maleolm ; Dalkeith.
Nieholson, Edwin ; Barrow Hill.
Nish, George ; Perth.
Oddy, Herbert ; Keighley.
Opie, Arthur Thomas ; Redruth.
Oram, Herbert Maddison ; Leieester.
Osborne, Henry ; Portsoy.
Ostle, Thomas W. ; Workington.
Overton, Llewellyn ; Edinburgh.
Patterson, Joseph Motteram ; Newtown.
Pethiek, Henry Thomas ; Bodmin.
Pickering, John James ; Langwathby.
Priee, Albert Hudson ; Glasgow.
Purvis, James Morrison T. ; Kensington.
Pyatt, George Henry ; Nottingham.
Ramsay, William Alexander ; Loehee.
Ransford, Arthur T. ; Folkestone.
Reid, George David ; Kirkwall.
Reynolds, William ; Bolton.
Roberts, John W. ; Wolverhampton.
Robertson, James Sim ; Monymusk.
Ross, William ; Greenoek.
Russell, Thomas ; Glasgow.
Sales, Thomas Alfred ; Goole.
Salter, Leonard Eli ; Trowbridge.
Saunderson George Fox ; Retford.
Shaekleton, Joseph Herbert ; Bradford.
Shepherd, Fred Walter ; Nottingham.
Stainsby, Frederiek ; Darlington.
Straton, George W. ; Lasswade.
Tabberner, Thomas K. ; Birmingham.
Tawell, Thomas E. ; Wakes Colne.
Thomas, Heber ; Moilgrove.
Thompson, Henry Marshall ; Hull.
Thomson, Agnes Murray M. ; Ayr.
Topper, Percy ; Middlesbrough.
Tillott, John Booty ; London.
Toft, William Vitruvius ; Patrieroft.
Turnbull, A. ; Neweastle-on-Tyne.
Turner, Dennis William ; Holsworthy.
Ullathorne, William Harris ; Bradford.
Venters, John Warrender ; Kirkcaldy.
Viret, Francis Mervyn ; London.
Wallace, Robert ; Castle Douglas.
Walmsley, Joseph William ; Preston.
Watson, Edward ; Sunderland.
Westlake, Ethel Maude ; Windsor.
Weston, Charles Egbert ; Chester.
White, James Frederick ; Leeds.
Whyte, Edward ; Forfar.
Wigglesworth, James William ; Bolton.
Williams, Arthur Walter ; Taunton.
Williams, Perey Woodburn ; Rhyl.
Wilson, Riehard ; Edinburgh.
Wilson, William ; Ossett.
Witehell, Robert Williams ; Blaenavon.
Wood, John G. ; Berwiek-on-Tweed.
Woodward, Charles E. A. ; Halifax.
Youngman, W. ; Walsham-le-Willows.

The questions set at this examination were published in the *Pharmaceutical Journal* for July 17, p. 45.

The following is a list of the eentres at which the examination was held, showing the number of eandidates at each eentre, and the result :—

	Candidates.				Candidates.		
	Examined.	Failed.	Passed.		Examined.	Passed.	Failed.
Aberdeen	13	6	7	Jersey	1	1	0
Birmingham	17	6	11	Kirkwall	1	1	0
Brighton	1	1	0	Lancaster	7	4	3
Bristol	10	4	6	Leeds	28	13	15
Cambridge	4	1	3	Lineoln	8	6	2
Canterbury	4	2	2	Liverpool	15	3	12
Cardiff	5	1	4	London	27	13	14
Carlisle	15	4	11	Manchester	29	9	20
Carmarthen	10	4	6	Newcastle-on-Tyne	13	10	3
Carnarvon	5	3	2	Northampton	3	1	2
Cheltenham	6	1	5	Norwich	4	3	1
Darlington	7	4	3	Nottingham	11	3	8
Douglas	6	3	3	Oxford	1	0	1
Dundee	13	8	5	Penzanee	3	2	1
Edinburgh	30	17	13	Peterborough	3	1	2
Exeter	4	2	2	Plymouth	3	3	0
Glasgow	27	17	10	Sheffield	8	4	4
Guernsey	2	2	0	Shrewsbury	4	3	1
Hull	8	3	5	Southampton	9	2	7
Inverness	2	2	0	York	4	3	1

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Liquor Magnesii Carbonatis.—This solution contains really bi-carbonate of magnesium. The carbonate is insoluble in water, but in presence of excess of carbonic acid forms the very unstable bicarbonate. You are directed to freshly prepare the carbonate because the dried carbonate does not so readily dissolve in carbonic acid water. This is a phenomenon very generally met with in chemical operations, *i.e.*, substances precipitated from solutions undergo some kind of aggregation when dried, and become less readily soluble in substances capable of dissolving them easily in the moist, freshly precipitated condition. Besides this *physical* alteration, *chemical* change occurs with some precipitates on drying, *e.g.*, many metallic hydrates lose water and become converted to oxide or an oxyhydrate (compare ferric hydrate). Calcium carbonate, like magnesium carbonate, is insoluble in water, and also dissolves in water containing carbonic acid. This explains why spring water contains calcium carbonate, which is deposited on boiling (temporary hardness), owing to the decomposition of the bicarbonate by heat and the expulsion of the carbonic acid. The Pharmacopœia states that the solution should contain nearly ten grains of the official carbonate per fluid ounce. The verification of this requirement is made in the test described—evaporating a fluid ounce to dryness, calcining and weighing the residual magnesia. The formula for the official carbonate shows that 160 parts of oxide should be obtained by heating 382 parts of carbonate,

$$\underset{382}{3(MgCO_3),\ Mg(OH)_2,\ 4H_2O} = \underset{4\times40}{4MgO} + \underset{3\times44}{3CO_2} + \underset{5\times18}{5H_2O}$$

The calcined residue of oxide weighing about four grains corresponds, therefore, to 9·5 grains official carbonate,

$$160 : 382 :: 4 : 9{\cdot}5.$$

Liquor Potassæ.—The lime is washed to remove easily soluble chlorides, traces of these being usually found in slaked lime derived from chalk or limestone.

$$\underset{138}{K_2CO_3} + \underset{74}{Ca2HO} = 2KHO \times CaCO_3$$

74 parts of calcium hydrate react with 138 of *pure* potassium carbonate. The official potassii carbonas contains, however, 16 per cent. of water, so that to obtain 138 parts of pure K_2CO_3 we must take $\frac{138\times100}{84} = 164{\cdot}3$ parts of the official carbonate. The one pound of carbonate of potassium in the official formula requires theoretically less than half its weight of pure calcium hydrate for conversion into hydrate. An excess of slaked lime is, however, employed to facilitate the completion of the reaction and secure the conversion of the whole of the carbonate into potassium hydrate Only a minute trace of this excess of calcium hydrate dissolves, since it is still less soluble in caustic potash solution than in water. In the tests, acidulation with nitric acid and evaporation to dryness should yield a residue of KNO_3 entirely soluble in water. Anything insoluble would indicate silica, which is dissolved by caustic potash with facility from earthenware vessels, forming potassium silicate. This is decomposed by addition of nitric or other acid; but nitric acid is used in this case in preference to sulphuric or hydrochloric, so that a solution of the same residue may be tested for chlorides and sulphates by means of $AgNO_3$ and $BaCl_2$—

$$K_2SiO_3 + 2HNO_3 = 2KNO_3 = 2H_2SiO_3.$$

This silicic acid is a colloid substance and is not precipitated unless a considerable quantity be present, particularly in presence of excess of acid. When the solution is evaporated to dryness and heated (to above 130° C.), the silicic acid loses water and leaves the silicic anhydride (silica) in the form of a white insoluble powder.

$$H_2SiO_3 = H_2O + SiO_2.$$

If silica be found it should be filtered off, and the filtrate from it should not give a precipitate with ammonia; this indicates absence of alumina. This impurity, if present, exists in liquor potassæ as potassium aluminate ($K_2O{\cdot}Al_2O_3$), which is decomposed by nitric acid, forming nitrates of the two metals—

$$KAlO_2 + 4HNO_3 = KNO_3 + Al3(NO_3) + 2H_2O.$$

Ammonia added to solutions of aluminum salts produce a gelatinous precipitate of aluminum hydrate—

$$2Al3(NO_3) + 6NH_4HO = Al_26(HO) + 6NH_4NO_3.$$

Liquor Sodæ.—The remarks made under liquor potassæ apply equally to this liquor. Note that equal weight of the two liquors have approximately the same neutralising power because the percentage of hydrate in the two liquors is in the same ratio as their molecular weights—

$$\underset{56}{KHO} : \underset{40}{NaHO} :: 5{\cdot}84 : 4{\cdot}17$$

Liquor Sodæ Chlorinatæ.—This can be made by passing chlorine into solution of sodium hydrate, but is more conveniently prepared from the calcium compound by double decomposition with sodium carbonate—

$$CaOCl_2 + Na_2CO_3 = CaCO_3 + 2Na_2OCl_2.$$

THE FLOWERS OF AUGUST.

A large number of the flowers of July will also be in blossom during this month, especially in the midland and northern counties. To them the following may be added of wild plants worth examination:—*Achillea millefolium** and *A. ptarmica*, *Anagallis arvensis*,* *Anthemis nobilis*,* *Artemisia absinthium** and *A. vulgaris*,* *Arctium lappa*,* *Œthusa cynapium*, *Butomus umbellatus*, *Calamintha officinalis*, *Chlora perfoliata*, *Cichorium intybus*,* *Cicuta virosa*, *Circœa lutetiana*, *Colchicum autumnale*,* *Crithmum maritimum*, *Dipsacus sylvestris*, *Echium vulgare*, *Epilobium hirsutum*, *Erigeron canadense*,* *Eupatorium cannabinum*,* *Euphrasia officinalis*,* *Fœniculum capillaceum*,* *Frankenia lævis*, *Gentiana campestris*, *Geranium robertianum*, *Glaucium luteum*, *Glaux maritima*, *Herniaria glabra*, *Hippuris vulgaris*, *Hypericum perforatum** and *H. androsæmum*, *Inula conyza*, *Isöetes lacustris*, *Limnanthemum nymphæoides*, *Melissa officinalis*,* *Monotropa hypopitys*, *Ononis campestris*, *Origanum vulgare*, *Orobanche minor*, *Parnassia palustris*, *Pilularia globulifera*, *Polygala vulgaris*, *Potentilla anserina*,* *Pyrola rotundifolia*, *Ranunculus repens* and *R. flammula*, *Reseda lutea*, *Rumex crispus*,* *Saponaria officinalis*,* *Solidago virgaurea*,* *Tamarix anglica*, *Tanacetum vulgare*,* *Thesium humifusum*, *Verbascum thapsus*,* *Verbena officinalis*,* *Xanthium strumarium*. The plants whose names are marked with an asterisk are used as herbs or medicinal plants.

Some of the plants are remarkable for abnormal structure, *e.g.*, *Butomus umbellatus*, for the seeds being attached all over the interior of the ovary; *Chlora perfoliata*, for its connate leaves; *Circœa lutetiana*, for all the parts of the flower being in twos instead of fours; *Dipsacus sylvestris*, for its connate leaves and the irregular opening of its florets; *Echium vulgare*, for its irregular corolla; *Glaucium luteum*, for having only two carpels, forming a ceratium; *Glaux* and *Hippuris*, for the absence of petals; *Limnanthemum nymphæoides*, for its alternate leaves like those of a small water-lily; *Monotropa* for being a saprophyte without leaves, and differing from *Pyrola* in the anthers opening transversely, and in having basal nectaries; *Orobanche minor*, for the absence of leaves, and for being a root parasite; *Parnassia palustris*, for having in the flower five scales bearing glandular bristles; *Polygala vulgaris*, for the irregular calyx with two of the sepals larger, and petaloid, united petals subdiadelphous stamens, and porous anthers; *Pyrola rotundifolia*, for its inferior ovary, petals scarcely cohering, anthers opening by a basal pore, and margins of the valves of the fruit connected by a web, and for the seeds having a loose testa; *Reseda lutea*, for the irregular, hypogynous disc, ovary open at the apex, and fimbriate petals. *Frankenia*, *Tamarix*, *Thesium*, and *Verbena*, are worth examination as being the only British representatives of the natural orders, Frankeniaceæ, Tamaricaceæ, Santalaceæ, and Verbenaceæ.

In botanical gardens the following may be looked for in blossom:—*Asclepias incarnata*, *A. syriaca*, *A. vincetoxicum*, *Cannabis sativa*, *Convolvulus scammonia*, *Datura stramonium*, *D. tatula*, *Ecballium elaterium*, *Eupatorium purpureum*, *Glycyrrhiza glabra*, *Guizotia oleifera*, *Liatris spicata*, *Monarda didyma*, and *M. punctata*, *Nardostachys jatamansi*, *Veronica virginica*, *Xanthium strumarium*, and *X. spinosum*. The last two species are remarkable for their monoicous flowers and for the achenes being enclosed in an indurated involucre, thus differing entirely in appearance from all British Compositæ.

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THE COUNCIL MEETING.

The special interest of the August meeting of Council is analogous to that of the schoolboys' breaking-up day, inasmuch as it is the precursor of a period of relaxation which comes agreeably to all concerned.

The gathering of members of Council was numerous, and after the minutes of the previous meeting had been read and confirmed, the President mentioned that he had received from Mr. George Rimmington a letter thanking the Council for the sympathy expressed in reference to the death of his father. Another letter had been received by Dr. de Vrij, stating his appreciation of the honour conferred upon him by the award of the Hanbury Medal. The passing of the Metric System Bill, in support of which a petition was presented by the Pharmaceutical Society (see *ante*, p 106), was also mentioned.

Dr. Symes asked whether any communication had been addressed to the Government department relative to calcium carbide, in accordance with his suggestion that some exemption should be secured for chemists keeping small quantities of that article, and the President said that had not been done. It is, however, satisfactory that the interests of chemists have been considered.

In regard to the Food and Drugs Bill, introduced by the Government tentatively as it would appear, Mr. Bottle asked whether any communication had been received on this matter in which chemists are interested. The President replied that from a hasty glance at the Bill, which had only just been received, he thought some exception might be taken to its provisions, as there was no mention of a Board of Reference such as had been suggested to safeguard the interests of persons affected by the proposed legislation. Mr. Harrison pointed out that the Bill could not possibly pass this session, and that its introduction was intended to facilitate consideration of the subject in all its bearings.

The additions to the Society comprised five members, sixty-five associates, and fourteen students.

The reports of the Finance and Benevolent Fund Committees were of the usual character, and called for no special mention beyond the record of the fact that the purchase of four thousand pounds of Consols was suggested as desirable until a better investment could be found. Four grants, amounting in all to thirty-two pounds, were ordered to be paid, and the death of W. S. Baker, an annuitant elected in 1893, was reported.

The report of the Library, etc., Committee dealt with a variety of subjects, representing a considerable amount of work. On the recommendation of Professor Collie, Messrs. Frye and Dewhirst were appointed demonstrators, and Mr. Lee lecturer's assistant. The Curator reported on his visit to the Oxford meeting of the Museums Association. Mention was made by the President of a picture which had been presented to the Society by Mr. Copney, a former prizeman in the School of Pharmacy, and it now hung in the Library. The special interest attaching to it is the fact that it contains portraits of several scientific men of the time, some of them connected with the Pharmaceutical Society.

The report of the Research Committee stated that no applications have yet been made for the Redwood or Burroughs Scholarships, and it recommended that the time for receiving applications should be extended for this year to September 30.

Mr. Carteighe explained that the absence of applications was not surprising in view of the changes which have been made in connection with the School, and he expressed the opinion that next year there would be even more than the usual number of applicants for these Scholarships.

The report of the General Purposes Committee gave the results of the examinations for the Jacob Bell Scholarships which have been held at various centres (see p. 107). The number of candidates has been normal, and a large proportion of them have obtained the minimum number of marks. The successful candidates are John Evans, of Aberayron, and Herbert Payne, of Maidstone.

Three candidates competed for the Manchester Pharmaceutical Association Scholarship, and Robert Hilliard Dawson was the one sucessful. The Herbarium prize has been awarded to George Todd, and the Pereira Medal to William Arthur Knight.

Votes of thanks were passed to the several examiners conducting the examinations for these scholarships and prizes.

After the legal portion of the report had been considered in Committee the recommendations contained in it were adopted, and authority given for proceedings to be taken by the Registrar in the cases reported to the Council.

PHARMACEUTICAL SCHOLARSHIPS AND PRIZES.

It is greatly to be regretted that no applications should have been received for the research scholarships tenable in the Pharmaceutical Society's laboratory, and even more unsatisfactory that it should have been found impossible to award the Society's silver and bronze medals this ear. The reason suggested by the President and Mr. Carteighe (p. 107) probably accounts for the lack of competitors in both directions, for it has long been recognised that the winners of medals and advanced scholarships come almost invariably from the ranks of those who have been trained in the Society's School of Pharmacy. A necessary corollary of the extension of the course of training in the School is that no "Square" students became qualified at the last examinations to compete for the medals and scholarships; consequently, the course has been practically clear for outside students, since men who have passed the Major examination some time previously are usually found to be disinclined to return to take part in competitions. The time for making application in respect of the Redwood and Burroughs scholarships has been extended on this occasion to September 30, and if, as seems not improbable, this concession should fail to meet the desired end, it may be that some more radical alteration in the arrangements may be called for.

ANNOTATIONS.

The Proposed New Bye-Laws of the Pharmaceutical Society were agreed to without a single dissentient vote at the special general meeting on Wednesday afternoon, and now nothing remains to be done but to secure for them the approval of the Privy Council. That done, the new Bye-laws will have statutory force, and a considerable advance will have been made in the direction of securing for pharmacy in Great Britain adequate recognition as a profession. Though the Bye-laws will not come into force for three years from now, the fact that they will then do so ought to act as a deterrent to unsuitable individuals proposing to enter pharmacy, and in that way indirect benefit to the craft and the public will result, whilst direct benefit will follow.

The 'Pharmaceutical Journal' will next week be sent to every chemist and druggist in business throughout Great Britain and an unusual opportunity will thus be afforded for addressing the whole of those engaged in the profession of pharmacy in England, Wales, and Scotland. A full account of the proceedings of the British Pharmaceutical Conference at Glasgow will be presented to readers in this special issue, and those who are unable to attend the annual pharmaceutical business-picnic will thus, by Friday next, be almost as fully conversant with what has taken place at Glasgow as those on the spot. The total circulation of the Journal on this occasion will be over eleven thousand copies.

The School of Pharmacy opens for the fifty-sixth session on Monday, October 4, and the new prospectus is now ready and may be obtained on application to the Secretary of the Pharmaceutical Society, 17, Bloomsbury Square, W.C. As the benches in the chemical and pharmaceutical laboratories will be allotted in the order in which they are applied for, preference being given to students who enter for a full course, early application should be made by intending students. The School prospectus includes full details of the courses in botany, chemistry, materia medica, and pharmacy, together with particulars of the scholarships and prizes offered for competition, a list of suitable text-books, and other information of interest to pharmaceutical students.

Pharmaceutical Education and the admission of women to the practice of pharmacy are among the subjects for the discussion of which notices of motion have been given in connection with the general meeting of the German Apotheker Verein, to be held at Strasburg at the end of this month. Lectures will be delivered by Dr. Schaer on the relations of pharmacy to various branches of natural science, and by Herr van Ledden Hulsebosch on the microscopic examination of excreta.

The Anomalous Position of Carbolic Acid, which is now regarded as a poison in Ireland, but not in Great Britain, has been noted by Mr. Ernest Hart, Chairman of the Parliamentary Bills Committee of the British Medical Association, who has addressed the Lord President of the Privy Council on the subject. He directed attention to the fact that the compound has recently been scheduled as a poison in accordance with the Sale of Poisons Act (Ireland), and stated that his Committee would be glad to learn whether a similar provision would shortly be made in respect to England and Scotland. In reply, he has been informed that a Bill dealing with the subject is at present under the consideration of the Goverment, and that pending the introduction into Parliament of that measure, it is not proposed to include carbolic acid in the Schedule to the Pharmacy Act, 1868. As the Parliamentary Session closes in a few days, this is equivalent to shelving the matter for a further indefinite period, during which carbolic acid may be purchased anywhere by anyone, without any restriction on its sale.

Meanwhile, Carbolic Acid has been taken in mistake for whiskey by a labourer, residing at Chester, whose wife had bought some of the spirit to relieve him during an attack of asthma. The bottle containing it was placed on a table, alongside a similar bottle containing the poison, and the patient helped himself to the contents of the wrong bottle, with a fatal result. The carbolic acid had been purchased of a chemist, and the bottle was labelled "Poison," but unfortunately it was a bottle that had originally been used for spirits, and in that respect great carelessness was displayed. The local coroner, in addressing the jury, betrayed his ignorance of the Pharmacy Act, for he assumed that carbolic acid is included in part two of the Schedule. Instead, therefore, of pointing out that the chemist had done much more than the law required of him—in labelling the bottle with the name of the article, the word "Poison," and the name of the seller—the coroner influenced the jury by his remarks, to such an extent, that they attributed the whole blame of using an unsuitable bottle for the poison to the chemist. This is distinctly unfair, but at the same time it serves to emphasise the fact that chemists will safeguard their interests best by invariably refusing to supply poisons, scheduled or unscheduled, in bottles that have served other purposes.

Other Fatal Poisoning Cases, due to accident, have not been so numerous of late. In one instance a soothing syrup—prepared from poppies and containing in addition, sugar, ammonia, and spirit of nitrous ether—contributed in some degree to the death of an infant at Deptford, aged ten weeks. The name under which the seller is referred to does not appear in the Register of Chemists and Druggists, and both coroner and jury appear to have been greatly dissatisfied with his conduct in not labelling the preparation properly. An overdose of laudanum caused the death of a man at Little Ilford; hair oil given in mistake for soothing syrup has killed a four months old child; and paraffin oil drunk by a child under two years old produced the same result. Whilst referring to paraffin it may be observed that much confusion between burning petroleum and petroleum spirit is apparent in the daily press, in the matter of the petroleum hair-wash that recently exploded, causing the death of a lady. What was actually found in the hairwash by Mr. W. J. Dibdin, chemist to the London County Council, was petroleum spirit, having its flashing point at the ordinary temperature. The extreme volatility and inflammability of the spirit were such that its vapour might easily have been ignited by a match struck in a room some distance away from the hairdressing room.

The Firing of the Hair-wash is attributed by Lord Kelvin, however, to an electric spark produced by friction of the hair saturated with petroleum spirit, the volatility of which would readily lead to the formation of an explosive mixture capable of being ignited by the faintest electric spark. As an illustration of this, the case of "Volta's Cannon" is referred to, and the occurrence of accidents under similar conditions in the cleansing of fabrics with benzene shows that the use of these extremely volatile combustible liquids is always attended with danger. This suggested explanation of the occurrence will perhaps not be appreciated by many, and the desire which has been expressed for some experiments to be made for the enlightenment of the jury serves to show how slender is the capacity of most people either to understand how such accidents occur or to

recognise the danger incurred by the improper use of such articles as petroleum spirit.

The Sale of Food and Drugs Bill introduced by Mr. Chaplin (see page 105) is a very different production from the amateurish attempts at legislation in this direction that have been somewhat prominently before us for the past two or three years. Of course, it may bear a totally different aspect when, if ever, it becomes law. As it stands, however, it is remarkable for ignoring the claims of public analysts and for omitting all mention of the proposed board of reference. The capability and impartiality of the chemical officers at Somerset House evidently commend themselves to Messrs. Chaplin and Russell, the sponsors of the Bill, for it is proposed that articles of food or drugs shall be sent to the Commissioners of Inland Revenue for analysis, in case of dispute, practically as at present. Moreover, the certificate of analysis is to be in a form prescribed by those Commissioners, the effect of this clause being, it may be anticipated, to prevent the insertion of irrelevant matter in certificates by public analysts. The Bill will not be proceeded with this Session, but is published in order that opinions may be expressed with regard to it, and as chemists and druggists are deeply interested in the matter it is commended to their careful consideration.

The Theft of Inoculated Rabbits in Paris, which was briefly referred to last week (p. 100*b*), has caused the police of that city some trouble in tracing the missing rodents. After energetic search, it is reported, the police have succeeded in finding several persons to whom some of the cholera-inoculated rabbits stolen from the Aubervilliers hospital sheds had been sold by the thieves, but so far as can at present be assertained, only one family had made a meal off the stolen material, and in that case neither cholera, typhus, authrax, nor any other terrible malady has been contracted. The stolen animals had been carted about the suburbs of Clichy and Saint-Ouen, and offered at low prices, and the police officials have been fortunate in arresting the robbers, who have made a full confession of their guilt. One of them stole the animals single-handed, and his companion helped him to take them around Saint-Ouen and Clichy on a barrow, in order to get rid of them as speedily as possible.

The X-Rayed Hen is the latest practical application of scientific principles, according to the *Pharmaceutical Era*, which quotes from a contemporary a story of a Californian who had a poultry farm with ten thousand hens. The number of eggs laid was short of what the proprietor thought the hens ought to produce, and the Californian, after an elaborate compilation of statistics, arrived at the conclusion that one-fifth of the birds were not doing their duty. Accordingly the use of the Röntgen rays was resorted to, and a preliminary examination of twelve hens showed that eight were egg producers and four were non-producers "An X-ray plant was then permanently established, and the ten thousand hens were put through a searching X-ray examination at the rate of thirty per hour." After this, it is not strange to find that the result was "a temporary season of over-production in the dressed poultry market, and a corresponding depression in corn meal circles."

A National Physical Laboratory may be established in due course, for the Treasury authorities have appointed a Committee to consider and report upon the desirability of establishing such a laboratory. The idea is that a special place should be provided for testing and verifying instruments for physical investigation, and for the construction and preservation of standards of measurement. The laboratory would also be employed for the systematic determination of physical constants and numerical data useful for scientific and industrial purposes. The Committee is instructed to report whether the work of such an institution, if established, could be associated with any testing or standardising work already performed, wholly or partly, at the public cost. The following are the members of the Committee :—Lord Rayleigh (Chairman), Sir Courtenay Boyle, Sir Andrew Noble, Sir John Wolfe Barry, Mr. W. C. Roberts-Austen, Mr. Robert Chalmers (of the Treasury), Mr. A. W. Rücker, Mr. Alexander Siemens, and Mr. T. E. Thorpe.

Business and Patriotism are not always synonymous, and inability to resist the temptation to display an advertisement in a unique position has brought trouble upon an enterprising pill-maker and his agent. Nelson's old battleship "Foudroyant," which had recently been done up with a view to exhibiting it as a sort of Nelson Museum, was wrecked during a storm at Blackpool a few weeks ago and cast upon the shore. The opportunity thus presenting itself, the man was soon forthcoming, and he chose his own time—the early morning—to paint on the hull of the doomed ship the following pithy but scarcely accurate observation :—"England expects every man to do his duty and to take ———'s pills." The appearance of the huge letters naturally irritated the owner of the vessel, and he sued the pill-maker and his agent for trespass, securing heavy damages in the result. Commenting on the matter, the *Daily Chronicle* observes that it supposes there are people whose sense of taste is not outraged by the chronic defacement of our beaches and fields and buildings; but of this it is sure—that many more people are disgusted than attracted by such displays, and it is this which brings the consolation of believing that those who advertise so as to offend public taste will find their policy does not pay in the long run.

The Dangers of Tinned Food, as the *Lancet* points out, are not of necessity due to the presence of metal. In fact, the metals usually present are practically innocuous. Tin is a comparatively harmless metal, while the iron which it covers is quite free from risk. The lead in the solder employed may possibly give rise to poisoning, but so well is the sealing process done that cases of this kind are very rare. The dangers of tinned food generally arise from an inherent change in the food itself, and though such change does not readily take place in well-packed goods, there is little doubt that the longer the food is preserved the greater is the chance of its being unwholesome, while, as is well known, as soon as the food thus preserved is exposed to the air certain changes rapidly set in, and for this reason the *Lancet* is quite right in insisting that the food should be partaken of as soon as possible after the tin is opened.

The Lord Mayoralty of Manchester is to be offered to a pharmacist, a unanimous vote having been given at an informal meeting of the Manchester City Council last week to a motion to invite Alderman Robt. Gibson to accept the mayoralty for 1897-8, and a requisition being in course of preparation for presentation to that gentleman. Mr. Gibson, who has been a member of the Pharmaceutical Society since 1853, is head of the well-known firm of R. Gibson and Sons, lozenge manufacturers, Manchester, and has been a member of the Manchester City Council for fifteen years. He is a Justice of the Peace for the City and Chairman of the Corporation Gas Committee.

SOCIETY OF ARTS.

The Production of Colour by Photographic Methods.*

BY SIR HENRY TRUEMAN WOOD,
Secretary of the Society.

Although the main object which I have set myself in the preparation of this paper is the introduction to the Society of what I believe is the most promising process for the photographic reproduction of colour, I have thought that it would be more consonant with the Society's traditions and more agreeable to those members who are present this evening, if instead of dealing merely with a single method and one at present, whatever its merits, as yet incomplete and almost untried, I endeavoured to submit to the Society a brief *résumé* of the whole question of colour-photography, to show the point which it has now reached, and to describe—or at least to summarise—the various methods for producing photographic pictures in colour which have achieved at all events some measure of success.

In attempting such a task I must apologise for the entirely inadequate treatment which must be given to inventions of exceeding merit and great ingenuity. Let me make this apology once for all, and let me excuse myself on the ground that I am about to try to compress into a single hour's discussion, a subject which would afford ample material for a course of Cantor lectures.

The "direct and permanent reproduction of the camera picture in its natural colours" has been described by an accomplished writer on the subject† as the greatest of all photographic problems. It has exercised the minds of photographers since the first discovery of the art. It was anticipated as a probable outcome of their researches by its earliest votaries, and though the advance of knowledge has only seemed to render its solution less and less likely, the hope of resolving it has never, I think, been quite abandoned, at all events by some enthusiastic spirits.

The tyro in photography can see no reason why if the camera picture can be reproduced in monochrome, it cannot also be reproduced in all its varied colours. An elementary knowledge of science supplies the reason. Photographic pictures are produced (experts will forgive my dealing for a few minutes with first principles) by the change effected by light falling on certain parts of a sensitive surface. The surface may be of various materials, and the change may be of various characters, but in every case such a change is produced that the altered parts of the surface will resist the action of some solvent which removes the unaltered portions. The action is too familiar to require specific illustration. I only desire to remind you that practical photography is merely a method of registering, by the greater or less density of the deposit produced, the greater or less intensity of the light incident on a given surface.

What justification, therefore, have we for supposing that any improvement, any modification of such a process can produce a picture in colours? Consider the action which goes on when a negative is produced on an ordinary gelatin plate. An image—say of a landscape—is projected upon it by a lens. The light falling on the silver bromide produces some sort of change in it. What that change is, chemical or physical, we need not stay to inquire; authorities, as a matter of fact, are not agreed upon its nature, but that does not affect our argument. Suffice it to say that the altered bromide is more easily reduced by suitable chemical reagents than the unaltered. We pour on the plate such a reagent, the "developer," and the altered bromide is reduced (wholly or partly) to metallic silver. We then subject the plate to treatment by a solvent of silver bromide, the "fixing solution." The bromide is dissolved away and we have left an image in metallic silver following the lights and shades of the original, dense where the brightest light fell, clear where there was no action of light, with intermediate gradations in the intermediate shades.

The "negative" thus formed we place over a sheet of sensitised paper. The light passing through the clear portions blackens the silver salt on the paper, for here the change is a visible one, while under the shaded parts of the negative no change takes place. Finally, the unaltered silver salts are dissolved away, and our picture is "fixed."

I have dwelt on these familiar details merely to impress on you the utter unsuitability of our present processes for producing pictures in colour, or anything beyond pictures in light and shade. So far as we know, all we have done is to throw down a more or less thick deposit of silver, which blocks out the light more or less effectively. It is difficult to regard this as even a first stage to the discovery of a process for reproducing the colours of Nature. For consider the conditions of the problem if it is to be worked out as a development of our present system. We should require, for the direct production of colour by light, not merely a substance sensitive to light, so that it can be brought by it into a soluble or insoluble condition (for that is what it amounts to), but a substance capable of having its structure so modified by light of different colours as to show permanently light of the same colour that caused the change. Further, when the desired change has been effected, the susceptibility to further change must be removed, or the picture would obviously be destroyed by the continued impact of light.

No such substance is known, nor is there any reason to believe that such a substance exists. Perhaps till it is discovered we may adjourn the consideration of such details as the manner of its treatment, or the light in which it is to be manipulated—just as the old alchemists adjourned the consideration of the material of which the vessel was to be constructed which might contain without dissolution the universal solvent, when it was discovered.

Such are the conditions of the problem, and it is not to be wondered at if those who were most competent to solve it have for long regarded it as insoluble.

The hope, however, of producing colour photographically was not abandoned till after a long series of researches had been made. Soon after the discovery by Scheele that chloride of silver was darkened by light, which was the foundation of all future photographic work, it was found by several experimenters that the different parts of the spectrum affected the chloride differently, and that the colours produced, to some extent, approximated to the colour of the part of the spectrum employed. This remark seems to have been first made by Senebier in 1782, and the observation was reported by Seebeck in 1810. This, as you know, was before the discovery of any practical photographic process. Thirty years later Sir John Herschel and Robert Hunt were working at the subject, and the former expressed the opinion in a communication to the British Association in 1841, that the experiments with which he was occupied might lead to the future production of naturally coloured photographs. Both Herschel and Hunt succeeded in producing on paper prepared with silver chloride and exposed first to diffused light, and then under coloured glasses, deposits of different colours reproducing more or less accurately the original colours of the glass.

A little later, in 1848, Edmund Becquerel took up this line of research, and succeeded in producing fairly vivid copies of the spectrum. He tried various methods; I believe the most successful results were produced on Daguerreo-type plates, on which a film of silver chloride had been deposited by the use of a battery. The plate was dried, heated, and exposed either to an image of the spectrum, or in the camera, and by these means actual reproductions of coloured objects were obtained. No method, however, was discovered of fixing these pictures, and they could only be viewed in a very subdued light, because the impact of light upon them of course continued the action and destroyed the picture.

Other experimenters, amongst them the late Mr. Warren de la Rue, have since continued this line of research, and pictures, similar I believe, to those of Becquerel, were shown in a darkened chamber by Niepce de St. Victor in the Paris Exhibition of 1867. Still I do not think that any great advance has been made. It is not difficult to get either on silver chloride paper, or on a silver plate coated, by immersion in a solution of metallic chloride, with a film of silver chloride, variously coloured deposits of the chloride. A preliminary exposure to diffused light seems to be necessary. But how far these are accurate representations of the natural colours can be judged from the fact that the opinion has been expressed by a competent authority that the coincidence of colour is accidental.

I think it must be admitted that the process which, at all events theoretically, most nearly realises the idea of producing colours by the direct action of light is that of Professor G. Lippmann. M. Lippmann, I believe, first exhibited photographs by his process in 1891. In 1894 they were shown in London by Mr. E. J. Wall at a lecture before the Affiliation of Photographic Societies, and they were again exhibited by M. Lippmann himself in 1896 before the Royal Society and the Royal Institution.

M. Lippmann's process depends on the phenomenon known as "in-

* Read at a meeting of the Society.

† Professor Meldola 'The Chemistry of Photography,' p. 321, edit. 1889

terference." All of you know the colours which are shown by the film of a soap bubble. Most of you know the manner in which these are produced. Without going at length into a subject, a full explanation of which would easily take up the full time allotted for this paper, I may remind you that if white light falls on the surface of a film some of it will be reflected from the front surface, while some will pass into the film and be reflected from the back surface, the remainder passing through entirely. The waves reflected from the back surface will combine with those reflected from the front, and if the thickness of the film is such as to cause the rays of any particular wave length reflected from the back to be just half a wave length (or any multiple of half-wave lengths) behind those reflected from the front surface, the crest of one series will coincide with the depressions of the other series, they will interfere with and cancel one another.

If you are using mono-chromatic light—light of a single colour—the result will of course be the extinction of the light. If you are using white light—that containing all the colours of the spectrum—the result will be that certain of the waves are quenched, and your reflected light will be white light minus those rays, that is to say, light showing colour.

This shows us that merely physical conditions may produce colour. It is simply a question of the thinness of the film, it does not matter of what the film is composed. It may be oil floating on water, or a stratum of air enclosed between two glass plates, or a film of soapy water, it does not matter so long as it is of the right thinness.

Now, if you can imagine a series of films superposed one upon another, or a layer of material composed of a laminated structure of this sort, it is not difficult to see that it should be, when illuminated by white light, capable of reflecting light of any colour, according to the size of the films.

Pray remember that I am not trying to explain the phenomenon completely. I am only trying to help you to realise the bare fact that colour effects can be produced by a purely mechanical device like that hinted at.

In treating of light-waves, their exceeding minuteness is such that the unpractised imagination finds it difficult to picture to itself the actions that go on. The difficulty is lessened if we educate our imagination with experiments on a larger scale. Let us consider a rough illustration of wave movement on a scale we can easily appreciate, an illustration M. Lippmann himself has used in explaining his invention. If you take a long cord, fix one end and jerk the other so as to send an impulse or wave along the cord, the wave will run to the fixed end and then be reflected back to your hand. If you keep sending a series of waves along the cord they will meet the series of reflected waves and the result will be that the cord will vibrate up and down in fixed lengths. "Standing waves" will be formed, with points, where the cord is stationary. Similar "standing waves" are produced in water when waves strike a vertical wall and are reflected from it. If such standing waves could be produced in light they would mean intervals of light and darkness, or in a sensitive medium, intervals of chemical action and no action, the result of which would be a laminated or striated structure, which might be expected to reflect back light of the colour which created it.

I do not know whether Professor Lippmann was the first to think out such a scheme. I believe he was anticipated by our distinguished countryman, Lord Rayleigh, but he was the first to realise the idea in practice, and this is how he did it:—He placed a transparent sensitive film in immediate contact with a mirror, the mirror being composed of mercury. He found that light of any colour falling on the film, passing through it and reflected back along the same line by the mercury mirror, produced in the film a series of strata, because there were points in the path of each ray of light where the waves cancelled and re-inforced each other. Where they cancelled one another there was no chemical action; where they re-inforced one another the chemical action was increased. Thus he obtained, by the action of light, the structure we have seen would be theoretically capable of showing, when illuminated by white light, light of the same colour as had produced it. That the theory should hold good for the infinitely complicated structure which must ensue when light of various colours is thus caused to act on the film, is hardly credible. But experiments proved the truth of his theories, and after some time M. Lippmann was able to produce not only an image of the solar spectrum, but also actual camera pictures from coloured objects, which, when illuminated by white light, gave back the colours of Nature.

(*To be continued.*)

REAGENTS, REACTIONS, METHODS AND FORMULÆ, KNOWN BY THE NAMES OF THEIR AUTHORS.*

(*Continued from page 96.*)

Kühne's carbolic methylene blue. Rub up 1·5 Gm. of methylene blue with 10 C.c. of absolute alcohol, and add 100 C.c. of a 5 per cent. aqueous solution of carbolic acid.

Kühne's macerating mixture. Mix potassium chlorate with four times the quantity of nitric acid.

Kultschitzky's double imbedding method. After the collodion bath, soak objects in origanum oil, then pass into a mixture of origanum oil and paraffin, heated to not more than 40° C., and finally soak in pure paraffin.

Kultschitzky's fixing solution. A saturated solution of potassium bichromate and copper sulphate in 50 per cent. alcohol, to each 100 C.c. of which 5 or 6 drops of acetic acid are added at the moment of using. Fix objects for 12 to 24 hours in the dark, then treat with strong alcohol for 12 to 24 hours, and afterwards cut sections.

Kultschitzky's stain for nervous centres. Harden for 1 or 2 months in Erlicki's solution, imbed in celloidin and cut. Stain sections for 1 to 24 hours in a stain made by dissolving 1 Gm. of hæmatoxylin in a little alcohol and adding to 100 C.c. of 2 per cent. acetic acid. Wash out in saturated solution of lithium or sodium carbonate containing 10 per cent. of a 1 per cent. solution of potassium ferricyanide, well wash in water, and mount in balsam.

Kuskow's digestion fluid. Dissolve 1 part of pepsin in 200 parts of 3 per cent. solution of oxalic acid. This should be freshly prepared.

Labarraque, Eau de. Sodium hypochlorite solution, prepared in a similar manner to eau de Javelle (which see), using caustic soda instead of caustic potash.

Labiche's reaction for cottonseed oil. Mix 25 C.c. of the melted suspected fat with 25 C.c. of a solution of 500 Gm. of lead acetate in 1 litre of water, previously warmed to 35° C., and 5 C.c. of ammonia water (22° Baumé). Stir this mixture for several minutes until a homogeneous emulsion results. In the presence of cottonseed oil, the emulsion is coloured orange-red. Deiss modified this test to prove the presence of cottonseed oil in olive oil by dissolving 10 C.c. of the oil in 100 C.c. of ether, shaking the solution with 5 C.c. of a concentrated lead acetate solution and again shaking after the addition of 5 C.c. of ammonia water.

Ladendorf's reaction for blood. Treat the solution to be tested with tincture of guaiacum wood and then with oil of eucalpytus. In the presence of blood the lower layer is coloured blue, and the upper, oily layer violet.

Lafon's reaction for digitalin. This substance yields a bluish-green coloration with a solution of 1 Gm. of sodium selenate in 20 Gm. of concentrated sulphuric acid (Lafon's reagent). In place of sodium selenate, the corresponding tellurate may be employed.

Lamal's morphine reaction. Evaporate 2 to 10 drops of morphine solution on a water bath with a like quantity of uranium acetate solution (0·015 Gm. of uranium acetate and 0·01 Gm. of sodium acetate in 5 C.c. of water). Permanent light red or hyacinth-red rings remain behind. Oxymorphine gives the same reaction, but toxine and most alkaloids do not.

Landois's macerating mixture. Mix 5 parts each of saturated solutions of neutral ammonium chromate, potassium phosphate, and sodium sulphate, then add 100 parts of distilled water. This mixture is used for macerations in the same way as chromic acid solution.

Landolt's phenol reaction. Upon adding supersaturated bromine water to a solution of phenol, a white, crystalline precipitate of tribromphenol is formed. Similar precipitates result with cresol, oxybenzoic acids, indol, indican, cyanides and other compounds, a fact that must be borne in mind in the examination of urine for phenol.

Langerhan's gum and glycerin medium. In this modification of Farrant's formula, gum arabic is dissolved in an equal weight of water, and to each 10 Gm. are added 5 Gm. of glycerin and 10 Gm. of 5 per cent. aqueous solution of carbolic acid.

Langley's reaction for alkaloids. Upon treating with mixed nitric and sulphuric acids and subsequently supersaturating with soda lye, various alkaloidal salts show characteristic colorations. For details see Dragendorff, 'Ermittelung von Giften,' S. 283.

* After Schneider, Altschul, Lec, Squire, Crookshank, and others.

Langley-Köhler's alkaloid reaction. This is a modification of the preceding, in which the alkaloids are mixed with 3 to 5 times their weight of potassium nitrate, then 1 or 2 drops of sulphuric acid are added, and followed at once by an excess of concentrated soda solution.

Lang's fixing liquids. (1) Mix 6 to 10 parts of sodium chloride, 6 to 8 parts of acetic acid, 3 to 12 parts of mercuric chloride, 0·5 part of alum, and 100 parts of distilled water. The alum is sometimes omitted from this solution, which is used for *Planaria*. (2) Add 5 per cent. of acetic acid to a concentrated solution of mercuric chloride in picro-sulphuric acid. See Kleinenberg.

Lassaigne's hydrocyanic acid reaction. Upon adding to a solution containing hydrocyanic acid a few drops of caustic potash solution, followed at once by a few drops of copper sulphate solution, and slightly acidulating with hydrochloric acid, a white precipitate of cuprous cyanide is formed. A solution of copper sulphate in sulphurous acid can also be employed to produce the same precipitate in solutions containing hydrocyanic acid.

Lassaigne's test for organic nitrogenous compounds. Heat about 0·01 Gm. of the substance to be tested with a small piece of sodium in a test tube, add 2 or 3 C.c. of water, then a solution of mixed ferric and ferrous salts, and acidulate with hydrochloric acid. If any nitrogenous body be present, a precipitate of Prussian blue is formed.

Laubenheimer's reaction for thiotolene. This substance yields a bluish-green colour with a solution of anthraquinone in glacial acetic acid. The colouring matter is precipitated by water, but is redissolved by ether to form a violet solution.

Lavdowsky's bilberry juice stain. Well wash the fresh berries of *Vaccinium myrtillus*, then express the juice and mix with twice its bulk of distilled water, mixed with a little 90 per cent. alcohol. Heat for a short time and filter whilst warm. Dilute the stain with 2 or 3 volumes of distilled water before use.

Lavdowsky's chloral hydrate macerating medium. A 5 per cent. aqueous solution of chloral hydrate.

Lavdowsky's formaldehyde solutions. (1) Distilled water, 20 parts; alcohol (95 per cent.), 10 parts; formaldehyde (40 per cent.), 3 parts; glacial acetic acid, 0·5 part. (2) Distilled water, 30 parts; alcohol (95 per cent.), 15 parts; formaldehyde (40 per cent.), 5 parts; glacial acetic acid, 1 part.

Lavdowsky's sandarac medium. Dissolve 30 Gm. of sandarac in 50 C.c. of absolute alcohol. If diluted with an equal volume of absolute alcohol this may be used for clearing sections.

Lawrence's glycerin jelly. Soak Nelson's gelatin in cold water for 2 or 3 hours, then pour off the superfluous water. Next melt the gelatin, and, after cooling somewhat, to each fluid ounce add a fluid drachm of egg albumin. Boil until the albumin coagulates, then filter through fine flannel, and to each fluid ounce of the clarified solution add a mixture of 0·25 fl. oz. of glycerin and 0·5 fl. oz. of camphor water.

Leber's Prussian blue impregnation method. Treat the tissue for a few minutes with 0·5 per cent. solution of ferrous sulphate, then with 1 per cent. solution of potassium ferricyanide, and wash with water.

Lechini's test for the presence of blood in urine. Treat 10 C.c. of urine with a drop of glacial acetic acid and shake with 3 C.c. of chloroform. In the presence of colouring matter from the blood, the chloroform will form a red layer at the bottom.

Lee's celloidin imbedding method. Objects are penetrated first with a 4 to 6 per cent. solution of celloidin in a mixture of equal parts of ether and absolute alcohol, and subsequently with a 10 to 12 per cent. solution (see Elsching's solution). They are then arranged in position in small paper receptacles, which are filled with the thick solution and placed in a dessicator, on the bottom of which a little chloroform must be poured. When the celloidin masses are hardened sufficiently on the surface, remove them from the paper cases and turn them over from time to time, in order that they may be equally exposed on all sides to the action of the chloroform vapour. As soon as the masses are fairly hard, immerse them in Gilson's hardening mixture (chloroform, 1 part; cedar oil, 1 or 2 parts) and replace the chloroform as it evaporates with more cedar oil. When the objects are cleared throughout, expose the masses to the air so that the last traces of chloroform may evaporate, and they will then be ready for mounting on the holder of the microtome by means of a drop of thick celloidin solution.

Lee's formaldehyde solutions. (1) Mix 1 part of 40 per cent. formaldehyde solution with 2 parts of 1 per cent. chromic acid solution, and add 4 per cent. of acetic acid. (2) Mix 1 part of 40 per cent. formaldehyde solution with 4 parts of 1 per cent. platinic chloride solution, and add 2 per cent. of acetic acid.

Lee's glycerin mixture. Mix 1 part of glycerin, 1 part of alcohol, and 2 parts of water.

Lee's "Kernschwarz" stain. The material, if fresh, is stained in "Kernschwarz" diluted with 10 volumes of water for a few minutes; otherwise, it is left in the undiluted liquid for 24 hours. Rinse in water, and then stain for 24 hours or more with safranine, gentian violet, Victoria blue, or a hæmatein stain. Safranine is preferred, and should afterwards be extracted with alcohol (acidulated, if necessary), followed by clove oil. "Kernschwarz" is said to be a good stain for preparations that are to be photographed.

Lee's method of mounting celloidin sections. Mount the sections on Mayer's albumin, care being taken to press them down very thoroughly, and remove the celloidin if desired by immersion in ether-alcohol.

Lee's osmic acid and pyrogallol stain. Fix the tissues in Hermann's mixture or Flemming's mixture for half an hour, then place in a weak solution of pyrogallol, which may be prepared with alcohol in some cases. Safranine may be used as a second stain.

Lee's sublimate solution. See Frenzel's sublimate solution.

Lee's turpentine colophonium mounting medium. This is highly recommended for general work, and is prepared by adding small pieces of colophonium to rectified oil of turpentine, heating in a stove, and when the solution is sufficiently thick filtering twice in the stove. See Kleinenberg's colophonium.

Leffmann-Beam method of determining fat in milk analysis. This consists in the decomposition of the milk with sulphuric acid in a graduated tube, and separating the fat by means of a centrifugal machine, a small amount of fusel oil being added to aid the aggregation of the oil globules.

Légal's alum-carmine and picric acid stain. Mix 10 volumes of Grenacher's or other alum-carmine with one of saturated picric acid solution.

Légal's test for acetone in urine. Treat several cubic centimetres of the distillate from urine with a few drops of a freshly prepared solution of sodium nitro-prussiate and a few drops of soda or potash lye. A red colour is produced, and after this has faded, an excess of acetic acid is added. In the presence of acetone, a purple colour is produced. Creatinine also shows a fading of the first-formed red colour, but upon the addition of acetic acid, first a green and then a blue colour is produced. Compare Le Noble's reaction.

Léger's reagent for bismuth. A solution of cinchonine nitrate with potassium iodide, in which solutions of bismuth salts produce a dark-red precipitate.

Lehmann's test for glucose. Dissolve the substance in alcohol, add alcoholic potash solution, then copper sulphate solution, and warm. In the presence of glucose, separation of red cuprous oxide results.

Leismer's test for sugar in urine. Heat to boiling 5 C.c. of a 0·1 per cent. solution of safranine, 1 C.c. of urine, and 2 C.c. of soda lye. In the presence of grape sugar, the solution is decolorised.

Le Noble's reaction for acetone in urine. Upon adding sodium nitroprussiate and ammonia to urine containing acetone, a violet colour gradually forms. Compare Légal's test.

Lenz's reaction for pilocarpine. Upon rubbing up the alkaloid or its chloride with 100 parts of calomel, a grey to black colour is produced, owing to the reduction of the calomel. According to Nagelvoort, in the case of pilocarpine nitrate the free base must first be separated with ammonia and extracted with chloroform, after which the residue left upon evaporation of the chloroform is treated as above.

Lepage's reagent for alkaloids. See Marmé's reagent.

Letheby's aniline reaction. Aniline yields a blue colour upon heating to 50° C. with manganese dioxide and dilute sulphuric acid.

Lewin's test for biliary colouring matter. The urates separating out upon cooling urine to a low temperature are filtered out, washed, dissolved in hot water, and the solution tested for biliary colouring matter. See Gmelin's reaction.

Lewin's modification of Baudouin's test. See Baudouin's test.

Lewis's (Bevan) blue-black stain for nerve centres. Sections are stained for 1 hour in 0·25 per cent. aqueous solution of aniline blue-black, and in the case of the cortex of the cerebellum, washed out for 20 to 30 minutes in a 2 per cent. chloral solution, prior to clearing and mounting.

Lewis's (Bevan) hardening process for brain. Keep in methylated spirit for 24 hours in a cool place, then transfer to

Müller's solution for 3 days, after which change the liquid and at the end of another 3 days substitute a 2 per cent. solution of potassium bichromate. At the end of 2 weeks use a 4 per cent. solution of bichromate, and if the material is unfit for section cutting in another week, treat with chromic acid solution.

Lex's phenol reaction. Upon adding a solution of a hypochlorite (chlorinated lime solution, 1 : 20) or of bromine water (Cotton's modification) to an ammoniacal phenol solution a green colour is produced, which changes to blue on warming.

Lieben's acetone test. Add to the solution to be tested (*e.g.*, to the distillate from urine) a solution of iodine in potassium iodide and a few drops of caustic potash solution. In the presence of acetone, iodoform is formed. Alcohol gives the same reaction. See Gunning's test.

Liebermann's phenol reaction. Upon warming phenol with sulphuric acid in which 5 per cent. of sodium nitrate has been dissolved, a blue colour is produced. The addition of water causes a brown precipitate.

Liebermann's reaction for cholesterin. According to Burchard, a solution of cholesterin compounds in acetic anhydride, to which chloroform has been added, is coloured rose-red by concentrated sulphuric acid. The colour rapidly changes to blue and green.

Liebermann's reaction for diazo and nitroso compounds. These compounds become intensely coloured upon the addition of a mixture of phenol and sulphuric acid.

Liebig's hydrocyanic acid test. Upon evaporating hydrocyanic acid with ammonium sulphide, after the addition of a few drops of caustic potash solution, and dissolving the residue in water, the solution obtained becomes blood-red when treated with a little ferric chloride solution, after acidulating slightly with hydrocyanic acid.

Liebig's quinine test. Upon shaking 0·5 Gm. of quinine sulphate in a stoppered test tube with 5 C.c. of ether (sp. gr. 0·728) and 1 C.c. of ammonia, two clear layers should form after standing. Turbidity indicates the presence of cinchonine or allied alkaloids. Compare the more delicate tests of Kerner, Schäfer and De Vrij.

Liebig's test for cystine. The cystine obtained from the sediment of urine yields a black precipitate of lead sulphide upon boiling with a solution of lead oxide in soda lye.

Lifschütz's mixture for dissolving cellulose. This consists of sulphuric and nitric acids.

Linde's tests for glycerin separated from fluid extracts. (1) The solution is rendered slightly alkaline with a dilute solution of sodium carbonate, and then mixed with powdered borax upon a watch-glass. If glycerin be present, a small quantity of the mixture introduced into an alcohol or gas flame upon a platinum wire will colour the flame green. (2) Red litmus paper is saturated with a concentrated borax solution so that it turns blue. Upon moistening this paper with the glycerin solution, previously rendered slightly alkaline, the red colour reappears more or less rapidly, depending upon the concentration of the glycerin solution. Compare Hager's glycerin reaction.

Lindo's reaction for alkaloids. The alkaloid is dissolved in dilute sulphuric acid, after which some ferric chloride is added. Concerning the resulting colour reactions, see Hager, 'Pharm. Praxis,' iii., 64.

Lindo's reaction for nitrates and nitrites. Upon the addition of 1 drop of hydrochloric acid (15 per cent.), 1 drop of resorcin solution (10 per cent.), and 2 C.c. of pure cooncentrated sulphuric acid, 0·5 C.c. of a solution of a nitrate or nitrite gives a purple colour.

Lindo's reaction for saccharin. Upon evaporating saccharin to dryness with concentrated nitric acid, treating the residue with a few drops of a solution of potassium hydroxide in 50 per cent. alcohol, and warming, blue, violet, purple, and red colours appear in succession.

Lipp's reaction for dextrin. A cold saturated solution of lead acetate is heated to 60° C. and enough lead oxide added to solidify the mass. After some time the mass is extracted with water and the solution filtered. This solution causes the formation of a white precipitate when boiled with a solution of dextrin.

List's hæmatoxylin and eosine stain. Sections are stained for 24 hours in a solution of 3 or 4 drops of Renaut's hæmatoxylic glycerin in 250 C.c. of water, and then for a few minutes in a mixture of 1 part of 0·5 per cent. aqueous solution of eosine with 3 parts of absolute alcohol.

List's methyl green and eosine stain. Sections are stained for a few minutes in a mixture of 3 parts of absolute alcohol with 1 part of 0·5 aqueous solution of eosine, then washed and stained for 5 minutes in a 0·5 per cent. aqueous solution of methyl green. Wash, dehydrate, clear, and mount in balsam.

Livache's test for fatty oils. The increase in weight of oils is observed, when they are mixed with finely divided lead.

Lochini's reagent for alkaloids. A solution of potassium bichromate in hot concentrated sulphuric acid. Veratrine gives a yellow coloration with this reagent.

Löffler's solution. Concentrated alcoholic solution of methylene blue, 30 C.c. ; solution of potassium hydrate (1 : 10,000), 100 C.c. Mix and filter shortly before use. Sections are stained for a few minutes (tubercle sections for some hours), and excess of stain removed by immersion for a few seconds in 0·5 per cent. acetic acid. Dehydrate in absolute alcohol, clear in cedar oil, and mount in balsam.

Löffler's stain for flagella. Prepare the mordant by adding 5 C.c. of cold saturated solution of ferrous sulphate and 1 C.c. of aqueous or alcoholic solution of fuchsine, methyl violet or "Wollschwarz," to 10 C.c. of a 20 per cent. aqueous solution of tannin. Typhoid bacilli require the addition of 1 C.c. of a 1 per cent. solution of sodium hydrate ; *Bacillus subtilis* requires 28 to 30 drops, and the bacilli of malignant œdema require 36 to 37 drops. In the case of cholera bacteria add 0·5 to 1 drop of sulphuric acid to the soda solution, and for *Spirillum rubrum* add 9 drops. Cover-glass preparations are made and fixed in the flame, then treated with the above mordant and heated for half a minute, after which they are washed in distilled water and then in alcohol. Stain by treating in a similar manner with a saturated solution of fuchsine in aniline water, the solution being preferably neutralised to the point of precipitation by cautiously adding 0·1 per cent. sodium hydrate solution. For further details see the *Journal of the Royal Microscopical Society*, 1890, p. 678.

Looff's reagent for morphine. This is Fröhde's reagent in various degrees of concentration, whereby various changes of colour are produced.

Lovett's cement. Grind very fine and mix dry 2 parts of white lead, 2 parts of red lead, and 3 parts of litharge. Keep the mixed powder in a bottle, and when required for use mix a little with japanner's gold size to the consistency of paint.

Löwe's reagent for glucose. Mix a solution of 16 Gm. of copper sulphate in 64 Gm. of water with 80 C.c. of soda lye (sp. gr. 1·34) and 6 or 8 Gm. of glycerin. With solutions of glucose or with diabetic urine this reagent causes a red precipitate upon warming. For quantitative determination the reagent is prepared as follows :—Warm 15·621 Gm. of cupric hydroxide (prepared from 40 Gm. of crystallised copper sulphate) while still moist, with 30 Gm. of glycerin, 80 C.c. of soda lye (sp. gr. 1·34), and 160 C.c. of water, until solution results, after which add enough water to make the whole measure 1155 C.c. 10 C.c. of this solution correspond to 0·05 Gm. of glucose. Compare Fehling's solution.

Löwenthal's reagent for glucose. A solution of 60 Gm. of tartaric acid, 240 Gm. of sodium carbonate and 5 Gm. of crystallised ferric chloride in 500 C.c. of hot water. Glucose solutions or diabetic urine cause a brown precipitate when boiled with this solution.

Lowe's test for crystallisable phenols in "carbolic" disinfectants. Distil 100 C.c. in two fractions, the first containing all the water and 10 per cent. of the oils, the second 62·5 per cent. This fraction is cooled, a crystal of phenol added, and the rise in temperature on crystallisation taken with a delicate thermometer. From this the amount of phenol present is deduced.

Lowit's gold method. Place small pieces of fresh skin in formic acid (sp. gr. 1·12) diluted with an equal bulk of water, and when the epidermis peels off transfer to 1·5 or 1 per cent. gold chloride solution for 15 minutes ; next treat, in the dark, with dilute formic acid (1 part with 1 to 3 of water) for 24 hours, and subscquently for a similar length of time with undiluted formic acid. Thin sections are then cut and mounted in dammar or glycerin.

Lücke's test for hippuric acid. Upon heating the residue obtained by boiling to dryness a mixture of hippuric and concentrated nitric acids, a strong odour of nitrobenzene is developed.

Lugol's solution for identifying albumin in the urine. A solution of iodine in potassium iodide, acidulated with glacial acetic acid.

(To be continued.)

NEW REMEDIES.

Benzoiodihydrin.—Chenal recommends this body as a substitute for potassium iodide. It is said not to cause iodism, and small doses of it are reported to have the same therapeutic effect as larger quantities of potassium iodide. It is a crystalline body, soluble in ether, alcohol, and chloroform, and is best dispensed as sugar granules. The dose is 2 grains, which is equivalent in effect to 15 grains of potassium iodide.—*Pharm. Zeit.*, xlii., 448.

Bromalbumin.—This body, which is now in use as "bromosin," was first brought out in 1885. According to the author bromalbumin contains 13·1 per cent. of definitely combined bromine, and no sulphur is separated on boiling it with alkali, in which respect it differs from ordinary albumin; decomposed with mineral acids no tyrosine is formed, and Millon's reagent does not produce any red coloration on boiling, but the biuret reaction is obtained. Ordinary albumin subjected to partial oxidation with potassium permanganate behaves in a similar manner.—*Pharm. Centralh.*, xxxviii., 357.

Airol Paste as an Antiseptic Dressing.—Bruns applies this paste as a dressing for surgical wounds. It is composed of airol, mucilage of acacia, and glycerin, of each 10 parts, white bole 20. The paste is spread on in a thick layer over the wound and surrounding parts, and rubbed over lightly with the finger. It is a non-irritant, dries quickly, possesses high antiseptic properties, and is specially recommended as being permeable to the serous secretions of the wound.—*Pharm. Centralh.*, xxxviii., 423.

Injections of Glycerophoshates for Sciatica.—Robin finds that excellent results are obtained by the deep injection of a solution of glycerophosphates into the painful part. The most useful solution is that of sodium glycerophosphate, consisting of 1 part of the salt in 4 parts of water. A second solution is sometimes employed containing, in each cubic centimetre, glycerophosphate of lime 4, of magnesia 4, of potassium 4, and of sodium 13 centigrammes. A third solution containing the addition of 5 centigrammes of iron instead of 5 of sodium glycerophosphate is also used. The dose of each of these is 1 C.c. or more, up to 4 C.c., but as a rule, 2 C.c. will be found to be sufficient. The first solution is generally to be preferred, since it does not give rise to pain. Success is not always obtained with the first or even the second injection; a series is sometimes necessary to effect a cure. Chronic cases which are not absolutely cured are greatly relieved by the treatment.—*Bull. Gén. de Thérapeut.*, cxxxii., 433.

Crystalline Digitoxin in Affections of the Vascular System.—Crystalline digitoxin has been employed by Starck in fourteen cases of heart disease in the form of pastilles, each containing a quarter of a milligramme of the active ingredient. In one case of fatty heart it completely failed; in a case of myocarditis its therapeutic effect was not lasting, while in another case, its success was very marked, even after the ordinary galenical preparations of foxglove leaves had failed. In valvular lesions it acted as well as the powdered leaves, and in arterial sclerosis its effect was more pronounced than that of the crude drug. In one case, by the administration of too large doses symptoms of intoxication were observed, but these were amenable to treatment, after which the good effects of the drug were apparent for three months. It is given in the above-mentioned dose twice daily; the full therapeutic effect is produced in ten such doses. The symptoms of toxic action observed in the one case alluded to was produced by eight doses, which shows that the administration of digitoxin requires to be watched very carefully and the alkaloid prescribed with much circumspection. The author concludes that, in most cases, it may replace the crude drug, but insists on the importance of very careful preparation of the pastilles to ensure that the active principle is accurately distributed in each dose.—*Bull. Gén. de Thérap., sec. Pharm.*, ii., 198, after *Therapeut. Woch.*

Strontium Salicylate in Gout and Rheumatism.—Strontium salicylate is recommended as being more effective in gouty and chronic rheumatic affections than the ordinary combinations of the acid with the alkalies, and at the same time it does not disturb the stomach. It is given in doses of from 60 centigrammes to 1 gramme.—*Bull. Gén. de Thérap., sec. Pharm.*, ii., 275.

Anti-galactogogue Action of Camphor.—Herrgott gives 20 centigrammes of camphor in a cachet three times daily, and finds it very effectual in suppressing the lacteal secretion; good results were obtained in thirty cases.—*Rev. de Thérap. Med. Chirurg.*, lxiv., 280.

Oxysepsine in Tuberculosis.—Hirschfelder gives this name to a substance similar to the oxytuberculin, and states that, in advanced cases of tuberculosis, an infectious mixture of various cocci and bacilli, which produces the destruction of the tissues and hectic fever, is found. In such cases he has used, besides oxytuberculin, an oxytoxin, which had been prepared in similar manner by cultivating a sputum of a high fever case, and this was called oxysepsin. The sputa of various consumptive cases were tested until one was found which gave the best results. The culture liquid was sterilised with a solution of peroxide of hydrogen analogous to the method for oxytuberculin, and the resulting oxysepsin was used hypodermically. The equivalent of 2·5 Gm. of tuberculin was frequently injected without producing any ill-effects whatever. Up to 60 C.c. of oxysepsin were repeatedly injected hypodermically and borne well.—*Pharm. Zeitg.*, xlii., 326.

Cordol or Tribromosalol as a Sedative.—Under this name tribromosalol is recommended as a sedative, anti-rheumatic and anti-neuralgic by Gehe and Co. in their report. It is a crystalline powder which is insoluble in water, difficult to dissolve in alcohol and ether, melting at about 195°. It is taken in single doses of 0·5 to 2 Gm., or 0·5 to 1·5 Gm. per diem.—*Pharm. Zeit.*, xlii., 325.

Tetrallylammoniumalum: A New Uric Acid Solvent.—This preparation is introduced as a solvent for uric acid. It crystallises in the octahedra similar to alum; the crystals dried at 100° give off water very slowly, and their weight remains constant only after being heated for several hours.—*Pharm. Zeit.*, xlii., 326.

Ichthyol in Small-pox.—Cassenko uses the following ointment for local application in cases of small-pox:—Ichthyol, 10; fat, 60; lanolin, 20; the latter may be replaced by chloroform, olive oil, or glycerin, according to the special requirements of the case. The ointment is applied three times a day as soon as papules appear. When cases have been treated by this method, desquamation has been completed in half the usual time, the general symptoms being much modified. The method has been tried on a large number of hospital cases with excellent results.—*B. M. J. Epit.*, 2/96/99.

Turpentine as a Remedial Agent.—Walker, of Philadelphia, considers turpentine to be of special value as a remedy in catarrhal affections, and as a hæmostatic in lesions of the mucous membrane. It should be given in small doses of from 3 to 10 drops, sweetened with a little oleo-saccharatum anisi. It is also useful in the treatment of winter cough.—*Pediatrics*, iii., 561.

Cajuput Oil in Croupous Pneumonia.—Sinha has treated eighteen cases of croupous pneumonia with great success with oil of cajuput. The oil is given in the form of an emulsion in doses of 5 minims.—*Therap. Gaz.* [3], xviii., 332.

Therapeutic Action of Currents of High Frequency.—Oudin finds that many local affections, notably diseases of the skin, undergo a marked amelioration when submitted to an electric discharge of high frequency. In order to render the sparks painless the author employs as an electrode a metallic wire sheathed in a glass tube between the affected part of the patient's body and the glass; a shower of minute sparks passes, and is absolutely painless. Skin affections of either nervous or infectious origin are equally benefited by the action of these currents, cures being effected in acne and various forms of seborrhœa, as well as in molluscum contagiosum. In one case a patch of syphilitic eruption was cured in two months by the action of the current applied twice a week, while other patches on the same patient not so treated continued to develop in a normal manner. Cases of chronic psoriasis have been cured by this means, and also affections of the mucous membrane.—*Comptes rendus*, cxxiv., 1397.

EXTRACTS FROM CONSULAR REPORTS.

The Tobacco Plant has been known in Europe for the last three centuries, and during the same period its culture has been an annual one. Now, however, Wilhelm Daróczi of Budapest, the editor of an Hungarian tobacco journal, says that tobacco planters and botanists have made a mistake, and he is reported to have proved that tobacco is a perennial plant which may be kept in full vigour for years, and that it has fresh leaves every year. Should this prove to be correct and the leaves in the second year and later on prove of use for smoking material, this discovery will bring about the possibility of saving the tedious and expensive method of growing new seedlings every second year, or oftener, and thereby of reducing the cost of production of tobacco very considerably.

Foreigners at German Technical Schools are not wanted, according to the report of Consul Oppenheimer. He says that ever since fears were expressed abroad with regard to the superiority of technical education in Germany, certain endeavours have been made to exclude foreigners in pursuit of technical education, one method being by asking especially high tuition fees at the schools. Thus the Chemical School of the city of Mulhouse in Alsace, which only receives sixty-five students, has raised the school rate to 1000 marks per annum, without gaining its object, however, inasmuch as the greater part of students still consists as before of foreigners who are not discouraged by the high fee from procuring the benefit of the recommendation of having visited this technical school. It is principally the English and Japanese students who are regarded as foreign "spies," and in certain trades the manufacturers openly warned people to guard against them.

Ginseng is one of Corea's most valued products, and during 1896 realised about £30,000. For centuries past red ginseng has gone to Pekin with the annual overland embassy, the trade in ginseng being a royal monopoly, from which the King of Corea derived a considerable portion of his revenue, and its export by sea was prohibited. In November, 1895, however, an ordinance was promulgated legalising its export, the King receiving compensation by an addition to his privy purse, which now stands at some £60,000 a year. The annual crop of ginseng is limited in quantity to about 15,000 catties, upon which an excise duty of 10 dol. a catty is charged under the new regulations, to which is added an import duty of 5 per cent., *ad valorem*, levied on its arrival at a treaty port in China. The prescribed scale of taxation is not rigidly adhered to, and there is reason to believe that in practice the amount raised exceeds considerably 15,000 catties.

The Question of a Translator's Copyright has been raised at Shanghai in connection with the piracy by native printers of certain English scientific and literary works, translated into Chinese by eminent Sinologues. Cheap editions were being published underselling the original issue, and application was made to the authorities, who frankly recognised the translator's claim to have the result of his labour protected, and they also acknowledged his copyright.

The Question of Foreign Trade Marks has also been dealt with at Shanghai, and the Court has recognised the right of a foreign merchant to have his "chop" or trade name protected against fraudulent imitation by natives. In several cases the magistrate has ordered the confiscation of articles fraudulently marked, and has punished the imitators in the same manner as in Chinese law he would have done with Chinese imitating Chinese "chops" or trade marks.

Medicines, Chemicals, Drugs, etc., imported into Panama (Colombia) are contributed by the following countries :—from the United States, "patent" medicines; from France, perfumes; from Germany, aniline dyes and perfumes; from Great Britain, general chemical products and pure drugs.

The Perfumery imported into Persia is of the inferior classes from England and France, including the various styles of soap now so largely manufactured. In the harems English soap is in large demand, as the women think the Britons' fair complexion is due entirely to the soap; they utterly decline, however, to pay the high prices demanded for the best qualities.

Experimental Cultivaton of Vanilla.—A plantation of half an acre in extent is being prepared at Dunga (Zanzibar) for the cultivation of vanilla. Vines will be planted in September next, and in the meanwhile the shade necessary for the growth of the plant is being prepared for it. A specialist in agriculture has been appointed to the staff of the Zanzibar Government, and there is every reason to expect that the care requisite to the nurture of the plant will be exercised, and that a good yield will be obtained in consequence.

Chemicals and Chemical and Medicinal Preparations exported from Great Britain and Ireland during the month ending June 30, 1897, decreased in value £53,206, compared with the same period of 1896, but for the six months ending June 30 there was an increase of £180,580. The imports of chemicals, etc., decreased £95,556 in the shorter period, and £424,287 in the longer.

PARLIAMENTARY NOTES AND NEWS.

A Food and Drugs Bill was introduced by Mr. Chaplin on Monday (being holiday legislation). He explained that there was no intention of proceeding with it, as it had only been brought forward in fulfilment of a pledge given earlier in the year, and during the recess the Government hoped to be able to ascertain the drift of public opinion with regard to it. The Bill has for its object the carrying out of some of the less controversial recommendations of the Food and Drugs Committee, and it was read a first time, as the reporters say, amid "ironical laughter and cheers."

The Weights and Measures (Metric System) Amendments Bill has been agreed to by the Lords Committee. The Bill now awaits Royal assent.

South Kensington Museums, it has been pointed out, are in a very unsatisfactory condition in case of fire, and the Select Committee on Museums has made several recommendations for securing the buildings against that danger; so Sir F. Powell asked the Secretary to the Treasury what steps the Government propose to take in the matter. Mr. Hanbury thought the question should have been addressed to the First Commissioner of Works, but stated that the additional estimate provides for the immediate expenditure of £5000 on a number of alterations that are considered necessary for the safety of the museums.

The Sale of Opium in Ceylon was the subject of a memorial and statement presented to the Govenor of Ceylon, the former in January, 1894, and the latter in Febuary of this year. Mr. Sharpe therefore asked the Secretary for the Colonies whether his attention had been called to them, and also to the question of the Hon. W. W. Mitchell, mercantile member of the Ceylon Legislative Council on Febuary 6 last, on the same subject; and whether any steps had been taken by the Ceylon Government to prevent the spread of opium smoking in the Colony. Mr. Chamberlain, in reply, stated that the question had for some time past engaged the attention of the Colonial Government, and with his approval the Ceylon Government had decided to raise the import duty on opium from one rupee to two rupees per pound. Further proposals to prevent the spread of opium smoking being still under consideration.

The London University Commission Bill has died, owing to inanition, or rather the necessary time for members to breathe forth arguments and to settle this much-perplexed controversy. While deeply regretting its death, Mr. Balfour has great hopes that there may be a resurrection of the Bill next year, when the question, on which so many of the educational bodies are already agreed, may be settled.

Sessional Returns.—On the motion of Mr. J. G. Lawson (for Dr. Farquharson), a number of Sessional Returns, dealing with the numbers of motions for adjournment, of applications of the Closure, of Divisions, of Private Bills, of Public Bills, of Public Petitions, of Select Committees, of Sittings of the House, and of the days occupied by the Government and private members respectively were agreed to.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

Plant.—*Erysimum cheiranthoides.* [*Reply to* E. W. P.—105/8.]

Natal Pepper.—So far as is known, it is obtained from *Capsicum minimum*, Roxb. (*C. fastigiatum*, Bl.). [*Reply to* J. A.—105/2.]

Carthamine.—Try Squire and Sons, 413, Oxford Street, W., or use the pink saucers sold by Maw, Son, and Thompson and other druggists' sundriesmen. [*Reply to* E. W. P.—105/8.]

Student's Subscription.—There is no power to reduce the amount, but on paying the subscription you will receive the back numbers of the Journal from January 1. [*Reply to* L. D. S.—105/9.]

Starch Gloss.—Yes, a mixture of 3 parts of stearine and 1 part of spermaceti instead of the hard paraffin will probably answer better. We should advise you to use borax only, and omit the boric acid. This should, of course, be well mixed with the hot starch; it will not then separate. [*Reply to* E. B. T.—103/20.]

Oleo de Naphtha.—Unless we can see the context of the original prescription, it is impossible to tell exactly what is required. Possibly "oléonaphtine" is meant. This is a rarely-employed French term for liquid vaselin, much used as a vehicle for hypodermic injections, etc. [*Reply to* Puzzled.—104/36.]

Nutritive Pomade.—Oil of eggs, 4 ounces; almond oil, 12 ounces; prepared lard, 32 ounces; spermaceti, 2 ounces; white wax, 1 ounce; oil of bergamot, 4 drachms; oil of pimento, 1 drachm; cassia oil, 1 drachm. Melt the fats together on the water bath, remove from the heat, and add the perfumes; stir until cold. [*Reply to* W. W.—103/2.]

Fluid for Electric Battery.—Doubtless for a battery composed of zinc-carbon elements a bichromate solution would be what is required. When this is partly exhausted it would have a violet tint; that is no doubt the state in which your customer saw it. A solution composed of potassium bichromate, 3 ounces; sulphuric acid, 3 fluid ounces; distilled water, one pint, will probably make the battery "work" quite satisfactorily. [*Reply to* Countryman.—103/21.]

Whitening the "Cere" of Pigeons.—We do not think you will find sulphurous acid at all suitable. It is more likely to cause irritation or damage the bird. Possibly peroxide of hydrogen would have the desired effect, or a very cautious application of salicylic acid, but we should not like to try the latter on a valuable bird. If the whitening of the cere is to give the bird a fictitious youthful appearance we should advise you not to have anything to do with the matter, for, to speak plainly, such tricks are not honest. [*Reply to* S. H.—105/5.]

Carmine Colouring for Tooth Powder.—Yes, citric acid does alter the tint of carmine, especially if you damp it, as you say, with a little rectified spirit and then rub dry with the chalk. But we do not think the tint produced is so good as that given by the accepted method of first rubbing down the carmine with a little chalk, then adding a very little liquid ammonia and rubbing well with more chalk until all trace of the smell of ammonia has gone. This gives the maximum amount of colour with the minimum amount of carmine. If you will try it, we think you will prefer the result to that which you obtain with a trace of citric acid, although the tint is rather more purple. [*Reply to* C. J. A. H.—104/43.]

Botanical.—(1) *Daucus carota*; (2) *Chiococea racemosa*, a native of Jamaica; (3) *Epilobium hirsutum*; (4) *Veronica sp.*, a garden variety of which stem leaves should be sent, as well as flowering tops; (5) *Ononis arvensis*; (6) *Hypericum perforatum*; (6) *Galium verum*. [*Reply to* H. E.—104/20.]

Collodion for Producing Positives on Glass.—High temperature pyroxylin, 80 grs.; alcohol, 2½ ozs. Shake well and add methylated ether, 5 ozs. Dissolve ammonium iodide, 40 grs.: cadmium iodide, 20 grs.; cadmium bromide, 20 grs., in alcohol, 2½ ozs.; and add to the above. Allow to stand three days and then filter or decant from any sediment. [*Reply to* 104/19.]

Dark Essence of Vanilla.—Vanilla is better extracted with a weak alcoholic menstruum than by a strong one. Proof spirit is quite strong enough for the purpose. Possibly you might get the desired yellow tint, to resemble egg, by the use of a little saffron with the vanilla. This would certainly be preferable to annatto. [*Reply to* Associate.—104/7.]

Toning Bath for Ilford P.O.P. to Give Brown Black Tones.—Wash the prints in a solution of salt, 2 ozs., in water, 20 ozs., for five minutes, rinse well, and then tone in chloride of gold, 2 grs., phosphate of soda, 60 grs., water (hot), 10 ozs. Use when cold, and only carry toning on till the shadows have lost their yellow tinge and still appear red when held up to the light and looked through. [*Reply to* Optics.—104/30.]

Saline Without Sugar.—Sodium bicarbonate, 15 ozs.; potassio-tartrate of soda, 5 ozs.; tartaric acid, 15 ozs.; potass. citrate, 1 oz. Dry all the powders separately by spreading them out on dishes and putting in the warm kitchen oven at night, when the fire is out; they will be ready to mix in the morning, and should be bottled off into warm dry bottles. Cheap Saline: Sugar, 17½ ozs.; tartaric acid, 15 ozs.; sodium bicarbonate, 15 ozs.; dried sodium sulphate, 2½ ozs. Mix as before. [*Reply to* H. C.—103/22.]

Egg Julep.—Please note that we do not answer queries by post. The majority of the egg juleps are nothing but alcoholic solutions of soft soap suitably perfumed. In the following formula, however, the white of egg is used, as this has a very decided fixing property on the hair. Soft soap, 1 oz.; whites of two eggs; essence of opoponax, 4 ozs.; glycerin, 4 ozs.; rose water to make 40 ozs. Dissolve the soap in 10 ozs. of the rose water, gradually rub down the white of egg with another 10 ozs., and the glycerin. Mix, add the perfume, and then enough rose water to make up to 2 pints. [*Reply to* J. L.—104/37.]

Distorted Image on Plate.—You say you have a half-plate camera with a lens working at f/8, and on unscrewing the back lens you get a large image on the plate, but it is distorted, though by stopping down to abont f/16, a perfect image is obtained. By removing one of the combinations of a rectilinear or doublet, it will be found that the other is practically of double the focus of the two, and therefore the image would be just double the size; as the one combination is a single lens it is obvious that distortion must ensue, but true distortion is not cured by stopping down. Probably you mean that the image is not sharp; although it will be found that the centre of the plate may be sharp the edges will not be. This is due to the fact of the stop being in the wrong place; it ought to be further away. As to the exposure we can only say that you must first find the focus of the single combination, divide this by the diameter of the stop, and the result will be the f/x or ratio aperture of the stop. If the focus is just double, the aperture of f/16 would of course be f/32, and the exposure would be increased four-fold compared with the same stop with the doublet. [*Reply to* Optics.—104/30.]

ANONYMOUS QUERIES.

Query (105/16) is referred to the Special Notice printed at the head of this page.

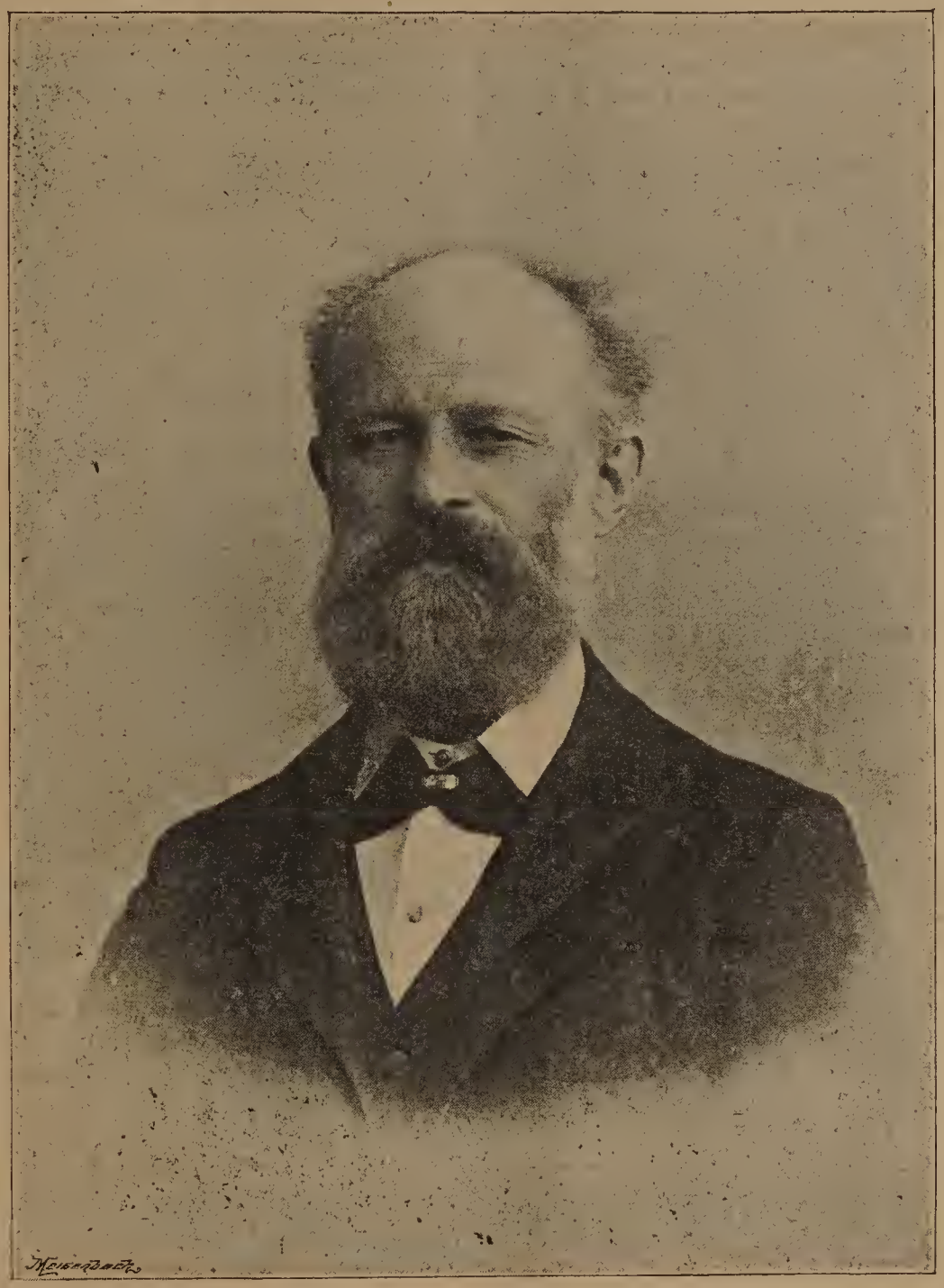
COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Aitken, Austen, Bennett, Boothroyd, Broicher, Bryant, Church, Coull, Eaton, Gohrt, Hill, Hogg, Hopkins, Hughes, Keith, Lockerbie, Lovatt, McLeod, Mair, Naylor, Newlands, Pollard, Proctor, Ransom, Rideal, Roberts, Scott, Seaborne, Stanford, Stephens, Trayner, Waddington, Widenmann, Wilson.

British Pharmaceutical Conference

PRESIDENTIAL ADDRESS by CHARLES SYMES, Ph.D.*

ROYAL COLL. OF SURGEONS OF ENGLAND 17 AUG 97

MEN of all conditions, societies of all denominations, communities of every description in the British Empire and its dependencies, have, during the present year, been celebrating the Diamond Jubilee of Her Majesty the Queen. In so doing, retrospective views have been taken of the growth and progress of science, art, literature, professions, and commerce during this record reign. The tendency in the present rapidly progressive age is to rush forward at a pace which leaves little opportunity for reflection, for looking back on the experiences of the past and endeavouring to find therein some solution of the difficulties which beset us in the present, or suggestions to assist us in developments for the future. The maxim, "Experientia docet," so often on our lips, finds little that corresponds therewith in our lives, and we are prone to forget the experiences of the past and the lessons which they would so readily teach. Then there is a certain amount of satisfaction and encouragement in reviewing the history of an institution, planned and developed by men of intellect and ability, many of whom are no longer with us, but whose works survive them and bear fruit, which it is our privilege to gather if we will. On the present occasion, therefore, I feel that it will harmonise with our environment, help us to realise our indebtedness, and stimulate us to greater zeal, if we look back at the past of our association, not, it is true, for sixty years, but from its birth in 1863.



CHARLES SYMES, PH.D.

The Origin of the B.P.C.

Several years previous to that date the late Mr. Schacht advocated "that for the best interests of the pharmacy of England it was expedient that the annual meetings of the Pharmaceutical Society should be held not always in one fixed place but in rotation at the various towns of importance where its members reside."

This idea, after lying dormant until May, 1863, was enlarged upon by Mr. Richard Reynolds in an article published in the *Pharmaceutical Journal* headed "Systematic Scientific Enquiry," in which he referred to the meetings of the American Pharmaceutical Association and the useful work it was doing, and suggested the meeting which subsequently took place at Newcastle. Although there was at first some hesitancy as to forming a distinct organisation which might detract from the interest felt in and the work being accomplished by the parent Society in England, it was soon felt that there would be abundant scope for both institutions, and some of the active members of the Society became the founders of the Conference.

A number of the leading pharmacists of that day, zealous for the good of pharmacy, desirous of doing something of permanent good for the calling they had chosen, self-denying and devoted to the cause, met at Newcastle-on-Tyne to inaugurate the British Pharmaceutical Conference, to formulate the objects for which it should work and the conditions under which its operations should be carried on.

The functions decided upon were these:—

* Delivered at Glasgow, on Tuesday, August 10, 1897.

1. To hold an annual conference of those engaged in the practice, or interested in the advancement, of pharmacy, with the view of promoting their friendly reunion, and increasing their facilities for the cultivation of pharmaceutical science.
2. To determine what questions in pharmaceutical science require investigation, and when practicable, to allot them to individuals or committees to report thereon.
3. To maintain uncompromisingly the principle of purity in medicine.
4. To form a bond of union amongst the various associations established for the advancement of pharmacy by receiving from them delegates to the annual conference.

How the Objects have Been Accomplished.

Now let us consider how far these objects (which, I am sure, everyone will admit are admirable) have so far been accomplished. On thirty-three annual occasions, exclusive of the present, have those interested in the advancement of pharmacy been called together in twenty-nine important centres, bringing members resident in those various localities into closer contact with each other than had been their custom, and often establishing friendships where estrangement previously existed. In some instances new local associations have been formed, and although this does not mean that on every occasion they have grown and flourished, the good seed has been sown, and more or less enthusiasm has been created. But the development and maintenance must necessarily depend on local effort. Then, more general fraternising influence is felt, and is so fully appreciated by us all that it scarcely needs mention. The "friendly intercourse" part of the programme must be regarded as an undoubted success. Some 700 papers have been read and discussed, all of deep interest, and many the result of much labour and research. The Conference has always fostered investigations, and often made money grants to promote research, the results of which have not been for the personal aggrandisement or pecuniary interest of individuals or for the benefit of the Conference itself, but have been made free to all. The 'Year-Books of Pharmacy' before you, containing as they do reports of the progress of pharmacy at home and abroad year by year, are valuable to every member of our craft, and those who do not obtain these volumes and peruse them lose much, not only intellectually but pecuniarily. The 'B.P.C. Formulary' has become a recognised work; some medical men use it regularly in their prescribing, and I trust that before long many more will do so. It has done away with that anomalous condition of things in which valuable drugs cropping up during the intervals which occur between the various editions of the Pharmacopœia were prepared in various ways and of various strengths, so that a prescription dispensed in different localities, or even by different pharmacists in the same locality, may have differed widely in character and strength. It has acquired a semi-official position, and the more loyal we are to it the sooner will uniformity prevail. Lastly, we have had thirty-three addresses delivered to us by Presidents of the Conference, all eminent in the profession of pharmacy, men whom I feel considerable diffidence in following, whose discourses have been on matters of deep interest to us all, and may be read at any time with pleasure and profit. So much is this the case that I have recently perused them, and propose to-day to say a few words about each, and so recall the views of men whose names have become, as it were, "household words" amongst us, and many of whom, I regret to say, are with us in person no more. If in the performance of this task I appear to dispose of any man's wisdom in very few words, believe me it is not due to want of appreciation thereof, but, as our chief business is listening to and discussing the papers which are to come before us, I am anxious not to weary you with a long and tedious address.

Meeting of Founders at Newcastle.

The first occasion, then, on which the founders of the Conference gathered together was in 1863, at Newcastle-on-Tyne. That model pharmacist, Henry Deane, presided, and dealt with the objects, aims, and constitution of the Association and the advantages likely to accrue from its formation, namely, brotherly unity, the raising of the practice of pharmacy as nearly as possible to a profession in the public estimation, increase of knowledge, to induce members of our calling to exercise their ability and to avail themselves of the opportunities they may possess to investigate matters connected with their calling and to communicate the results to their brethren, to improve and maintain the purity of medicines.

In 1864, at Bath (the first annual meeting), Mr. Deane dealt with the first British Pharmacopœia, which had been published since the previous meeting, the great responsibility of chemists, under Lord Campbell's Act in cases of accidental poisoning, and regarded the position as a serious one in which all were interested. He referred at some length to a case which had recently occurred in Liverpool, which seemed to strike terror into the heart of every member of the craft.

In 1865, at Birmingham, Mr. Deane again presided, and made further reference to the Pharmacopœia which was already under revision by a committee. He also dealt once more with the subject of accidental and also criminal poisoning, and further urged his hearers to strive to elevate the calling they had allied themselves to. He said: "There is no trade or calling with which I am acquainted that is so capable of a high development as that we are privileged to follow." In referring to unhealthy and questionable competition he mentioned "low prices" and the piracy and imitation of well-known and recognised preparations which had taxed the brains of those who had laboured to perfect and introduce them. He condemned the then growing tendency to use methylated spirit in medicinal preparations.

In 1866, at Nottingham, Professor Bentley addressed the meeting at some length "On the Study of Botany in Connection with Pharmacy." He showed how useful it would prove in the detection of adulteration, in the utilisation of indigenous herbs, in the search for new medicines, in determining the best conditions of growth, and the most active and suitable parts of plants for use in medicine, and, in short, proved to the satisfaction of his hearers that the science of botany was an essential part of the education for our profession.

In 1867, at Dundee, Professor Bentley continued his subject, regarding it as a healthy mental exercise, an agreeable and healthful recreation.

In 1868, Daniel Hanbury presided. He congratulated those present on the success of the Conference, the membership then having reached 550, and referred to the American and Continental associations which were doing similar work. He referred to the progress in science and pharmacy during the year, and passed on to consider a matter in which he was a special authority, viz., the cultivation of cinchona and other medicinal plants in India.

In 1869, at Exeter, Daniel Hanbury again referred to the continued success of the Conference, the new Pharmacy Act, to the investigations into cinchona by Howard and Broughton, and into ipecacuanha (which had then grown scarce and dear) by Lefort; the difference in medicinal value between dry and fresh drugs by Schombroodt, and into aconitine by Merck, and precipitated sulphur by Attfield.

In 1870, at Liverpool, Mr. Stoddart dealt with the education which, in his opinion, pharmacists should possess, both general and technical, remarking that "Chemistry, botany, and physics were to us only second in importance to a well-grounded general education." He pointed to the application of the spectroscope in the examination of some chemical and pharmaceutical substances, and detailed the various subjects which had been under the consideration of the scientific world during the preceding year.

In 1871, at Edinburgh, Mr. Stoddart continued to advocate a higher development of our calling, and enumerated some instances of scientific work which had recently been accomplished, more particularly the synthesis of organic bases, pointing out that if we were to hold our own and render pharmacy a profession, we must show our aptitude for scientific research and allow it to occupy the position of recreative change from the monotony of the more common-place duties which fall to our lot.

In 1872, Mr. Brady pointed out that now the 'Year-Book' had been published, it was no longer necessary for the President to review the progress of pharmacy during the previous year, and he proposed to deal with matters of present and future interest. He took as his starting-point a remark which had recently been made by Professor Huxley in an address which had reference to medical education, that "the standard British work on materia medica was a treatise *de omnibus rebus*, and that the science was a heterogeneous mass of facts referable chiefly to biological, botanical, and chemical science." He (Mr. Brady) argued that if this were so, the greater the necessity arose for pharmacists to acquire practical knowledge, and by inference the attainments of the pharmacist must be complimentary to those of the medical practitioner. He regarded the obtaining of the Pharmacy Act as a means of placing the profession of pharmacy on a sound scientific basis. Dealing with the examinations, he said "The Board of Examiners of the Pharmaceutical Society were fully alive to the importance of a higher standard of preliminary education." He thought that the Major should be regarded in the light of the fellowship of the College of Physicians and Surgeons, or of the Pharmacien de la Première Classe in France. He disapproved of the Pharmaceutical Society accumulating its unused balance of income, and suggested its application to the endowment of research in the laboratories at Bloomsbury Square. He made several other suggestions which have since been carried out by the Pharmaceutical Council, and concluded by describing the proceedings of the American Pharmaceutical Association, which he had recently attended, and which were conducted on a more extensive scale than those of our own Conference.

In 1873, Mr. Brady enlarged on the success of the Conference in the first decade of its existence. He remarked on the proposal for a general fusion of Pharmacœpias, on the introduction of new remedies, and on the value of many indigenous remedies, to some of which attention had recently been directed. On the introduction of cinchona plants into India and Java by the British and Dutch Governments, and the success attending the same. He criticised the new regulations of the Pharmaceutical Society's School whereby a five months' course of training for the purpose of preparing men for the Minor examination had been instituted, and compared the preparation and examinations required in Germany for obtaining the qualification with our own, to the disadvantage of the latter.

In 1874, Mr. T. B. Groves explained the reason for meeting in London instead of Belfast, where the British Association was then holding its meetings. The great differences which then existed between the apothecaries and the chemists and druggists of Ireland rendered it difficult to bring about that concerted action which was necessary to render the Conference meeting a success. He reviewed the condition of the School at Bloomsbury Square, and expressed his disapproval of shortening the course of lectures, etc., adding some excellent remarks on the training of youths entering the calling of pharmacy. He then justly and severely criticised the working of the Food and Drugs Act, and showed how the zeal of the inspector and analyst often exceeded their discretion; concluding with some remarks on the growing sale of patent medicines and on the proposed International Pharmacopœia.

In 1875, at Bristol, Mr. Groves delivered his second address, congratulating the Conference in again being in touch with the British Association; he feared that had it been otherwise, the meetings would soon prove a failure. Speaking of provincial associations, he suggested that when short of papers for their meetings, they may continue the consideration of some of the half-discussed papers which had come before the Pharmaceutical Society. He urged the desirability of earlier closing, and expressed regret that the Council of the Pharmaceutical Society had not seen fit to adopt Mr. Schacht's proposal to institute a practical pharmaceutical laboratory for students at Bloomsbury Square. Reference was made to the passing of the Irish Pharmacy Act and the founding of the Irish Pharmaceutical Society. Referring to the then recent meeting of the International Pharmaceutical Congress at St. Petersburg, he expressed a fear that it would be many years before its chief object would be accomplished, viz., the publication of an international pharmacopœia. He suggested that the Government should make money grants for physiologically testing new remedies by a competent commission. The new drugs mentioned in particular were jaborandi and its alkaloid, discovered by Mr. Gerrard, and araroba or goa powder. The obituary list included the name of that great pharmacologist, Daniel Hanbury.

First Visit to Glasgow.

In 1876, at Glasgow, Professor Redwood referred to the ethics affecting "counter practice," to the knowledge necessary for selecting special foods for those who required them, and to the effect of investigation on our drug supplies from abroad, and also to the separating of the active principles of drugs. He expressed a hope that science would soon enable us to unlock the secret of artificially preparing the vegetable alkaloids, and passed on to consider the germ theory of disease as enunciated by Professor Tyndall, and the operation of antiseptics and disinfectants in combating various maladies. He concluded by referring to the British Pharmacopœia, and supported the claims of educated pharmacists to assist in the production of its formulæ.

In 1887, at Plymouth, Professor Redwood dealt with the early history of pharmacy from the middle of the eighteenth century; its relation to early medical practice, the controversies between those representing the two branches of the healing art, and the ultimate separation of the two into distinct professions.

In 1878, at Dublin, G. F. Schacht said he would endeavour by consideration of the past and present to look into the future. He took as his theme "The Business Life of a Pharmacist," and traced up from his schooldays his ideal of what such an one should be, and the possibilities which surrounded him in his career. He drew a mental picture of a model pharmacist with high aspirations for his calling and a strong consciousness of duty.

In 1879, at Sheffield, Mr. Schacht took the counterpart of the previous address, and considered "The Pharmacist from the Public Point of View." He held that it was a loss not only to the pharmacist but to the medical profession and the public that he was not more highly appreciated by both. He felt that our social status would be much better and a professional character attained more readily if both medical and pharmaceutical students had to go through the same early training and pass the same Preliminary examinations.

In 1880, at Swansea, Mr. W. Southall took "Ancient Pharmacy" as his theme, giving a number of interesting quotations from the works of Celsius.

In 1881, Mr. Richard Reynolds gave a highly interesting address, taking first the old pharmacopœias, the polypharmacy which

obtained in olden times, the reaction which occurred, and the gradual building up of our materia medica. He spoke of the diversity of strengths which occurred in new and unofficial remedies, and regarded the 'Year-Book of Pharmacy' as the work in which semi-official formulæ should be published. He referred to the diminished cost and increased use of drugs which were at one time very expensive, the smaller number of prosecutions under the Food and Drugs Act, the increased facilities for early sound education, and suggested united action in passing a Bill through Parliament which would do away with the anomaly of the store question.

Pharmacists and the Public.

In 1882, at Southampton, Professor Attfield dealt with some vital questions which lie at the foundation of our art. As to the utmost efficiency in collecting, manufacturing, and distributing drugs, and whether the public and the State were served to the best advantage under the existing state of things? He made some valuable suggestions in reference thereto; also on pharmaceutical legislation and organisation.

In 1883, at Southport, Professor Attfield considered "The Future Supply of Drugs to the Public," taking the relation of the State to pharmacy as the second part of his subject. He considered that the Pharmacy Act of 1868 was a failure and required speedy amendment, and that nearly all drugs should be included in its schedules. The Professor had collected evidence from some two hundred districts in Great Britain, showing that drugs were being sold largely by grocers and other tradesmen at a marginal profit, and that chemists' businesses had largely depreciated in value. He then went on to consider some of the causes of depression in the drug trade, such as the tendency amongst medical men to prescribe more concentrated medicines, the smaller quantity of drugs taken by the public, the increased number of charitable medical institutions, the tendency to prescribe more proprietary articles, and the prominence which chemists had been in the habit of giving to so-called patent medicines. He considered the remedy would be found in an extension of the present Act.

In 1884, at Hastings, Mr. John Williams treated of matters which the world of chemical science around had been doing, and which had more or less bearing on pharmacy, mentioning more particularly the artificial production of substances representing several organic bodies. He then referred to the nitro-substitution compounds, such as nitro-glycerin and nitrite of amyl, being introduced into medicine; to artificial salicylic acid, which he did not consider possessed equal medicinal value to the natural product; to the recent liquefaction of some of the more refractory gases; to the vital processes in plant life; and to the approaching new pharmacopœia, emphasising the claims of pharmacists to official recognition in the production of the work.

Pharmacopœia Revision.

In 1885, at Aberdeen, Mr. J. B. Stephenson commenced by making some observations on the responsibilities placed on the Pharmaceutical Society by the State, and considered that the Society, in the fulfilment of these duties and responsibilities, had power to regulate the examinations, even to the extent of imposing a curriculum if it was thought desirable, and the approval of the Privy Council could be obtained. He dwelt on the advantages of the differentiation of pharmacy from the practice of medicine, and pointed out that fully forty years before that date Edinburgh had taken the initiative in that respect. He advocated that pharmacists should be appointed on the Pharmacopœia Committee; and further, that pharmacy being a profession, the services of those who practised it should receive professional remuneration. His concluding remarks had reference to the newly-published pharmacopœia.

In 1886, at Birmingham, Mr. Greenish also referred to the Pharmacopœia, and expressed an opinion that it did not represent the advance which had taken place in pharmacy since the issue of the previous one. Passing on to consider the work of the Conference, he suggested that it may be of use in solving a difficulty which was sapping the foundation of pharmacy—viz., the prescribing by medical men of factory-made articles, by publishing certain formulæ under its authority. On the question of education he suggested that the country should be mapped out into districts, and a committee be appointed in each district authorised to arrange for suitable educational provision in each district for the would-be pharmacist.

In 1887, at Manchester, Mr. R. S. Atkins presided. It was the year of the first jubilee of Her Majesty, and the address dealt with the history of chemical and other sciences and of the Pharmaceutical Society during the period of the Queen's reign, and some remarks, historical and prophetical, on our position and calling. Reference was also made to the work of the Conference and to the recently-introduced new remedies. He advocated an extended Preliminary examination, and hoped for greater unity amongst the members of our craft.

The Relation of Pharmacy to Pharmacists.

In 1888, Mr. F. B. Benger took as his text "The Relation of Pharmacy to Pharmacists," to ourselves, and the education and training most likely to improve that relationship. Whilst duly considering the higher claims which the professional side of our calling had for us, he took the very practical view that we had to live by that calling. He mentioned the processes which were at work which rendered it more difficult to do this as time rolled on, and then passed to consider how a better training and higher development of our art opened up opportunities for us. He quoted the opinions of a number of eminent men in different countries in support of these views.

In 1889, at Newcastle-on-Tyne, Mr. Chas. Umney based his address on one of the objects of the Conference, viz., "To Maintain Uncompromisingly the Purity of Medicines." Starting with the seventeenth century, when empiricism reigned supreme, he traced some of the causes which led to improvements in the purity, character, and preparation of medicinal substances, particularising in modern times the improved pharmacopœias—that published in 1885 being in his opinion a model one—the working of the Adulteration Act, and the more reasonable excise regulations which now existed. He advocated more extensive pharmaceutical research, and a more suitable training for chemists so as to enable them more frequently to fill the position of public analysts, and thought that this higher training would inspire the public favourably as to the importance of our calling. He approved of examinations, but felt that they were not an unmixed blessing so long as young men were content with the minimum of knowledge which could enable them to pass them.

In 1890, at Leeds, Mr. Umney, in a short but very suggestive address, treated on "Fashion in Medicines," mentioning some valuable remedies which had been discarded in favour of newer but not always better ones. He condemned the growing tendency to prescribe ready-made compounds, and to adapt the disease to the remedy rather than the remedy to the disease. He mentioned that the British public spent annually about one and a half millions sterling in so-called patent medicines, and advised the abolition of the patent medicine stamp, and concluded by pointing out that the Conference had done something towards bringing

about a better appreciation of the pharmacist by the medical profession.

W. Martindale as President.

In 1891, at Cardiff, Mr. Martindale first referred to the pharmacist in relation to the public, and pointed out that he rarely shared in the gratitude felt by the patient towards the doctor, nurse, and friends who tended him during a severe illness, but he considered that we met with more appreciation in our relation to the medical profession. He then dealt with the relation of the chemist to the physiologist, reviewing the introduction and use of some new synthetic remedies, more especially the coal-tar products, also the use of the various lymphs in the treatment of zymotic diseases, etc. He remarked on the tendency of the medical profession to ignore the necessity for a knowledge of drugs and preparations, and considered that this would deprive them of any confidence in prescribing them, and they would thus become a prey to advertising manufacturers of ready-made mixtures, etc. He took exception to the increase of synonyms in the British Pharmacopœia, and concluded by reference to the necessity for extension in the knowledge required for the Preliminary examination.

In 1892, at Edinburgh, Mr. Stanford dealt with a variety of interesting topics: The rise and progress of the Conference, national progress, including parcels post, telegrams, tramways, gas, electricity, steam, hygiene, chemistry, photography, some manufactures, education, general and pharmaceutical, pharmacy, botany, patents, poisons, ptomaines, etc. Mr. Stanford held that a pharmacist could not be over-educated, and expressed a regret that there were not more pharmaceutical chemists, mentioning Glasgow in particular, where there was only one pharmaceutical chemist to 41,012, whilst in Edinburgh there was one in 7061.

In 1893, at Nottingham, Mr. Corder, after some preliminary remarks on what he regarded as a proper apprenticeship (seven years being too long and three years too short a period), and insisting on the necessity for good early training, took up as the subject of his address "Some Herbaceous Plants in Common Cultivation, Especially those Connected with Medicine." Mr. Corder traced the early history of botany as a science with Aristotle as its founder, and then passed on to review the early herbals. The "Greta Herbal" by Treveris, in 1516, being the first published in English, Turner's in 1568, Lyte's translation from the Dutch in 1583, and Gerard's in 1597, all passed under review, and some interesting comments were made on them. He recommended the study of Gerard in particular, giving some curious quotations therefrom, and concluded by referring to some indigenous plants.

Medicine and Pharmacy.

In 1894, at Oxford, Mr. N. H. Martin took for his text "Medicine and Pharmacy," and dealt frankly and boldly with some of the evils which existed in both professions in their individual capacities and in their relation to each other. He showed that the condition of pharmacy in its own special domain was unsatisfactory, and attributed this to "the unbridled and dishonest competition in prices" brought about by the increased use of proprietary medicines and the publicity given to them by members of our craft. He held that the reason medical men prescribed them to such an extent as they did was because the medical student had insufficient training in the knowledge of the properties and uses of drugs. Mr. Martin pointed out the absurdity of attempting to practise pharmacy on a trade basis and yet retain the reward which properly belonged to professional services. He held that in the Pharmacy Act the public accorded to the pharmacist a professional standing, and adherence to that position was the only safe ground on which future pharmacy could stand. He pointed out a course of training which he held to be essential to the individual who should enter our craft and the principle on which his remuneration should be based, and concluded with a tribute to the usefulness of the British Pharmaceutical Conference.

In 1895, at Bournemouth, Mr. Martin again dealt with pharmacy. He considered that its condition in this country was most unsatisfactory, that it held a position between a false assumption of science and the whirlwind of modern trade. He referred to the dignity of pharmacy, and considered that the 1868 Act had failed to maintain that dignity by not providing for a curriculum of higher training for those who were to enter our craft. He held that the Major examination was the only one which should admit a man to membership of the Society, and advocated a still higher examination for a fellowship. He had doubts as to the success of Federation of Provincial Associations, and also of provincial schools until a new Act demanded a suitable training. He next considered the duties in pharmacy and the relation of pharmacists to the Pharmacopœia, expressing a doubt of the success of attempting to train young pharmacists in research work, suggesting that it would be better performed by those of more mature experience, and concluded by reference to the pleasures which accrue to those who practise pharmacy with a real love for the art.

In 1896, at Liverpool, Mr. Martindale remarked on the meeting in Liverpool twenty-six years previously, mentioning in particular an interesting pharmaceutical exhibition very free from objectionable details. He then proceeded to review the changes which had occurred and the medicinal substances which had been either newly introduced or had, from rare specimens, become common since that meeting. "The first practical pharmacopœia," that of 1867—new active principles, reduced cost of, and commerce in drugs, cost of distribution, progress of elegant pharmacy, medicines in relation to medical practice, the value of medicines as estimated by the medical practitioner in the treatment of disease, advertising pharmacy, and the future of pharmacy, which he considered somewhat obscure—all received attention. The address was delivered so recently that it will be fresh in your memories, and I need not detain you with further details.

A Few Historic Facts.

Having thus briefly reviewed the various presidential addresses, let me give you a few historic facts concerning the progress of the Conference. At first a very small volume of "proceedings" was published, and the annual subscription was 5*s*. Now we have a very complete 'Year-Book,' containing a review of chemistry, materia medica, and pharmacy, together with a valuable collection of notes and formulæ, which should be found in the pharmacy of every member of our craft, and the subscription is only 7*s*. 6*d*., so that in this respect we are giving far more value to-day than in the early days of our existence. At the first annual meeting, held in 1864, there were 150 members, a credit balance of £10, there were four days' sittings, and twenty-eight papers were read and discussed. A year later the membership had increased to 350, and by the end of the following year to 400; in 1867 to 478, and in the fifth year of its existence to 562, with a credit balance of £35.

Passing on to 1873, ten years after its foundation, the membership had risen to 2000, the credit balance had disappeared, and had left in its place a debit one to the extent of £4, and the subscription was increased to 7*s*. 6*d*. In 1874 a circular was sent to every member of the trade who was not already associated with the Conference, and as the result 500 new members were added, at the same time 115 were struck off the roll on account of being considerably in arrears with their subscriptions. In 1876 there was a credit balance of £430, and the Committee anticipated at least a further sum of £200 in excess of expenditure on the current

year. Grants amounting to £75 were made in aid of research. In 1880 it was decided to issue a general index of the 'Year Books' which had been published from 1870, and for the six numbers of "Proceedings" which had been issued before that date. In 1883 (twenty years after its foundation) Colonial Secretaries were appointed, and at the annual meeting 359 ladies and gentlemen were elected members, bringing up the total again to 2000, the credit balance was then £222. In 1884 the Committee had under consideration the growing tendency to lavish expenditure in entertainments at the centres where the Conference held its meetings, and a resolution was passed considering this undesirable, and expressing a view that the meetings should be held wherever mutual advantage was most likely to arise, irrespective of financial considerations. In 1885, 150 Colonial members were elected, and the general index (which had been delayed) was published, costing the Conference £150 over and above the amount received on sales at 2*s.* 6*d.* each. In 1886, the first reception by the President was held on the evening preceding the Conference meeting. In 1887, the first 'Unofficial Formulary' was published. In 1890, there were 1500 home and 200 foreign members, a credit balance of £86, and twenty-nine papers were read. In 1893 (thirty years after its foundation), the Committee were able to report as follows: "There is no evidence of any decline in the interest taken in the work of the Conference." In 1896, still fresh in your memory, the home membership was 1330 and the foreign 180, with a debit balance of about £50. Apart from this, the meeting was a very successful one, twenty-two papers being read and discussed.

Such, then, is the structure which in thirty-three years has been built up, and this a somewhat imperfect record of its work. The Conference has never possessed, has never desired to possess, any legislative powers to regulate the conduct of our business; that is the province of the Pharmaceutical Society. But from its inception it has, within the lines laid down as to its objects, recognised the fact that we have to live by our craft, and it has contributed considerably to that end.

Education and Examination.

There is one feature which predominates in the various addresses given, viz., the advancement of our calling by education, and if pharmaceutical education has kept pace with general education during these thirty-three years, assuredly we ought in the present day to be feeling some of the good results hoped for. There now exists a Pharmacy Act demanding compulsory, in the place of voluntary, examination, which has produced a larger number of men with a more complete knowledge of their business, and no one can doubt that as a body we are better educated than formerly.

But in this country reforms move slowly, and although it has been recognised almost from the first that the Preliminary or arts examination provided too low a standard for those who were to enter our calling, it is only within the last few months that any decided step has been taken to raise it, so that the entrance to the business has been left very simple; whilst the stringency of the Minor or qualifying examination has been increased, so that men have only become aware of their want of education for the business years after they have been committed to it; hence, in my opinion, the large percentage of failures which occur. Then, although there has from time to time been very determined attacks on the practice which is described by that ugly word "cram," our system of examination has offered a premium to it.

A youth passes his Preliminary on leaving school and becomes an apprentice, when, if he is determined to study, or his master insists on his doing so, all may go well. But the chances are that he thinks very little about an examination for which he cannot possibly present himself until the lapse of some five or six years, and he drops into that common and alluring belief that a large amount of recreation is necessary for his health and happiness, and with the imbibition of this belief the habit of study which he has acquired, and which has become quite easy to him, disappears. Neither, as a rule, does his master feel the responsibility of seeing him through an examination which the youth cannot pass until he is out of his apprenticeship, and no longer under his care. As a result of all this, when he approaches maturity he "crams" in a lot of knowledge such as is required by the examiners, and he may pass; but that knowledge, like so much undigested food, does him little good, and he may still remain uneducated in his art. We want examination to be regarded not merely as a test of a man's knowledge, but also as a part of his education. If an interim examination were instituted which could be passed say two or three years after registration as an apprentice or student, and which would comprise some of the subjects now taken in the qualifying examination, there would be an inducement for a youth to study from the commencement of his business career, there would be a gradual building up of his knowledge, it would become part of himself and would be permanent. Hitherto it has been assumed that this could not be done under the present Pharmacy Act, but such a view appears to me a mistake. The Act has practically nothing to do with the details of the examinations, but provides that they shall be conducted according to the provisions contained in the Bye-laws. Mr. Stephenson, in his address, expressed an opinion that the provisions of the Act were wide enough to enable the Council to introduce a curriculum of study if it were considered desirable and it met the approval of the Privy Council. And I now express my conviction that it would be perfectly legal to further divide the qualifying examination. As a matter of fact it is in practice now divided, the candidate often passing one portion in one week and the other portion during the next week, and I feel sure it would be for the benefit of the candidate if the examination were arranged so that two or three years intervened instead, and the legality of such an arrangement would be supported by the present Bye-laws. Section XI., paragraph 1, reads as follows: "The Registrar shall receive, and for at least five years preserve, the lists issued by the Examiners, signifying that examinations or parts of examinations have been passed."

Excellent as the qualifying examination now is, I believe there is still a want of more complete means of testing the power of the candidate to apply the knowledge he possesses, and the result of such would be that we should then have less complaint of the deficiency in practical knowledge of examined men, the qualification would be better appreciated when obtained, and would serve the owner a more useful purpose through life than it now does.

Pharmacists and the Pharmacopœia.

We are on the eve of the publication of a new pharmacopœia, and no doubt it will, in common with previous ones, receive a due amount of criticism. The last work was regarded in one address at least as a failure, whilst in some others it was mentioned as a success. Clearly, therefore, opinions differ as to its merits. There has been an effort to make the forthcoming work more fully appreciated throughout the British Empire and its colonies by including formulæ used in other than the "home land." Whether this be published at once or completed by an appendix there will be abundant opportunity for discussion, and we may hope that it will receive a better endorsement than did the first British Pharmacopœia. It is to be regretted that pharmacists have not yet been accorded the position which justice demands that they should possess as members of the Pharmacopœia Committee.

The Pharmacopœia is a pharmaceutical and not a medical work, and yet no pharmacist has any legal standing or position other than that accorded by courtesy. What would be thought of a work

on medical practice published "by authority" by a committee of pharmacists aided by medical men? The position is an anomalous one, and must sooner or later be corrected. The sooner the better will it be for all concerned.

The Medicine Stamp Duty.

In several addresses the rapidly-growing consumption of so-called patent medicines was referred to, and the impression seemed to be that, so far as chemists were concerned, the sale of them had almost become a thing of the past; that having been unwise enough to give them an undue prominence we had contributed to the increased sale, and then it had passed from us by competition from grocers and others. This to some extent is so, and that not altogether to the moral disadvantage of our calling, but we cannot get away altogether from what is known as the Medicine Stamp Act, and there exists a general impression that its operations hamper us considerably in the legitimate conduct of our business. At first sight it certainly does appear to be an unfair impediment to trade that we cannot label fully, describe and recommend the goods we sell without either bringing them into the category of "quack medicines," by the use of the duty stamp, or incurring the risk of infringing a somewhat complicated Act of Parliament, resulting in an excise prosecution.

My attention has, however, been directed to some of the evils which may follow its repeal if we were able to obtain it, and further there is a provision in the exemption clauses which, I think, well worth consideration, as we may find the Act a friend in disguise. It is really a drugs Act, and covers all kinds of medicinal substances, both simple and compound; then there are exemptions comprised in three paragraphs. The first, to certain drugs in the book of rates, the second to simple drugs which can be sold by surgeons, apothecaries, chemists or druggists, and persons holding a licence to sell medicines chargeable with stamp duty. The third exempts all mixtures, compositions and preparations the properties of which are known and recognised, and for the preparation of which no secret is claimed and the title of which is common property—so long as they are sold by a surgeon, an apothecary, or a chemist or druggist. Here then it seems to me we have a distinct recognition of our calling as a responsible profession, in a provision whereby we enjoy the privilege together with surgeons and apothecaries of being able to sell compounded drugs under the conditions specified without the use of the duty stamp, whereas such compounds cannot be sold under any conditions by grocers and other traders without bearing the medicine stamp.

Operation of the Pharmacy Act.

In several addresses which followed the passing of the Pharmacy Act in 1868 great hopes were expressed that it would not only elevate our calling and give it a decidedly professional character, but it would protect our interests also. Now after more than a quarter of a century we find the results of its operations to be very different from those which were anticipated, and considerable disappointment has followed. As a body we are certainly better educated than when the Act came into force, but the titles which we thought had been so thoroughly and completely safeguarded, whilst denied to unqualified individuals, can be used by stores with impunity. The decision of the House of Lords, which gave stores the right to sell poisons at the hands of qualified assistants, will, I fear, never be reversed, but the use of the title "chemist" by a directorate on which there is no qualified man is a gross misrepresentation, and one which in common justice to the public ought to be prevented.

Competition and Piracy.

The next subject which has received attention in many addresses is the cutting competition in prices, to the detriment of the business. Mr. Deane mentioned this in his first address, but if he had occasion to do so in his day, when there was no store competition, what would he think of the present state of things? Dr. Attfield dealt largely with the subject, and suggested as a remedy that nearly all drugs should be scheduled under the Act, so that they could be sold only by registered persons. Mr. Martin aptly put it that for professional services we ought to receive professional remuneration, but not so for commercial transactions. If, however, we separate the commercial portion of the average chemist's business, we find that the percentage of profit on it is far less than that obtained by the draper, ironmonger, etc. If this cutting competition were limited to stores we could hope that some remedy may be found, but it is the competition within our own body that it is most difficult to deal with.

In his first address Mr. Deane justly complained of the piracy and imitation of well-known and recognised preparations which had taxed the brains of those who had perfected and introduced them. In those days this class of medicines were not numerous, but they were really good and were prescribed by the medical profession. Now good, bad, and indifferent, their name is legion, and Imitator and Co. are as busy as ever, so that it would be difficult to say we have progressed in this respect.

Ready-made formulæ in a variety of fancy forms are now thrust on medical men by agents who were at one time known in America as "Drummers," but who have more recently appropriated the title of "Missionaries," as they regard the conversion of the medical profession to a belief in their nostrums as missionary work. This has brought about a state of things complained of in several addresses—Mr. Greenish mentioning the growing use of "factory-made articles," Mr. Martindale showing how medical men were becoming a prey to advertising manufacturers of ready-made articles, and Mr. Martin mentioning the tendency amongst medical men to adapt the disease to the ready-made formulæ of some special manufactures. Much as this is to be regretted, I believe it is the reaction from empiricism and over-dosing. Those branches of science which tend to assist the medical man in a correct diagnosis of disease have made rapid strides in recent years, and the importance of these has been so fully appreciated and a correct diagnosis has assumed such importance in the medical mind as to force the question of drugs into a very minor position. This, like every other reactionary extreme, will in due course find its level, and time will be the chief factor in determining the result. Meanwhile, it is not the duty of the pharmacist to stand still and wait, not to devote his energy and ability to pharmaceutical quackery, but by integrity, legitimate enterprise, and earnest scientific work to raise the standard of his calling, and thus facilitate the acceptance by the medical profession of a state of things in which he will reap the reward of his labours, and both professions will be accorded an enhanced amount of confidence and respect by the public.

Conclusion.

I cannot conclude this address without mentioning our indebtedness to Thomas Hyde Hills for his liberal donations in the early years of the Conference, whereby it was enabled to commence the endowment of research, and has since been enabled permanently to make a present of books to the association in each locality in which it holds its meeting; also to Mr. Thomas Hanbury for his annual present of books for a similar purpose. Neither must I omit to say how much we are indebted to the Honorary Secretaries for the success which the Conference has achieved. To their care, watchfulness and exertions through the vicissitudes of its career, its continued existence is largely due, and that it is to-day enabled to render so good an account of itself.

During thirty-three years the Conference has promoted the scientific advancement of our calling, has fostered friendly intercourse amongst us, has shown a deep interest in all matters affecting our material welfare, and should command the gratitude, sympathy, and membership of the whole craft.

Would that I could end this discourse here, but justice demands that I detain you a minute longer in the performance of a painful duty. This Conference, Pharmacy generally, and the whole scientific world are the poorer for losses by the unsparing hand of death since our last meeting. I cannot enumerate them all, but the name of George F. Schacht is so familiar to us, and the fine intellectual figure of the man has been so constantly before us, that it seems but a dream that he has passed away and we are to meet him here no more. Full of honourable and useful years, and a benefactor to his craft, he has left deep footprints in the sands of time. F. M. Rimmington, of still riper years, has recently gone to his rest after a long and useful career as a pharmacist, public analyst, a former vice-president of this Conference, and for some years a member of the Council of the Pharmaceutical Society. Arthur J. G. Tyrer (whose father is so well known to us, and whose brother is a contributor to our meetings) was a young man of considerable ability and promise; he had prepared a very excellent paper, which I understand was to have been read at this meeting but for his premature and tragic death.

The Philadelphia College of Pharmacy, in which we all feel much interest, has lost Dr. Bastin, the successor to Professor Maisch, and an aged vice-president, Mr. Robert Shoemaker. This does not complete the list, but I have said enough on this solemn subject to suggest that it is important for us all to work while it is yet day, for the night comes when no man can work.

THIRTY-FOURTH ANNUAL MEETING.

THE second Glasgow meeting of the British Pharmaceutical Conference duly opened on Monday last, when an unusually large number of members and friends assembled to discuss problems of interest to the craft, and enjoy a brief holiday in the capital of the West of Scotland. The Grand Hotel—the headquarters of the meeting—was overflowing with visitors, the Bath Hotel was in a similar condition, and the local officials of the Conference had their work set to provide accommodation for the large excess that still remained to be dealt with. The glorious weather that prevailed combined with the special attractions of the district, caused a larger influx of visitors than has probably ever been known at such a meeting before.

The Reception and Conversazione.

The reception was held by the President of the Conference and Mrs. Symes in the Corporation Art Galleries, Sauchiehall Street, on Monday evening, when some three hundred and seventy ladies and gentlemen attended, the latter constituting the large majority. A string band gave forth enlivening strains whilst the fine pictures and statuary were inspected, or little coteries were formed for conversational purposes, and in an upper room, light refreshments proved as attractive as such things generally are. The increasing temperature, as the evening wore on, caused quite a run on iced drinks of various kinds, and gradually the company melted away, to reassemble in the drawing rooms and smoke rooms of the different hotels.

The President of the Conference.

The more serious occupations of the Conference were inaugurated shortly after ten o'clock on Tuesday morning, when the chair was taken, in the Ball Room of the Grand Hotel, by the President, Dr. Charles Symes, concerning whose career a few facts may prove of interest to our readers.

Born in Somersetshire, he is now fifty-seven years of age. He was apprenticed in Gloucestershire, and there became registered as a student of the Pharmaceutical Society. A fondness for chemical experiments occasionally got him into trouble for time and material wasted and mischief done. Later he went to London and attended courses of lectures by Redwood and Bentley at Bloomsbury Square, his chief companion and fellow-worker in botany and materia medica being E. M. Holmes, now Curator of the Society's Museums. One of his fellow-workers in chemistry was Dr. James Beer, since deceased, who at the age of little more than twenty years got through the Minor examination, and at twenty-one passed the Major. The only competitive examination young Symes went in for was for admission to the Botanic Gardens, which privilege he gained along with a number of other students. Subsequently he went as an assistant to Leamington, where he studied the microscope, did some chemical work, and published some three or four papers in the *Pharmaceutical Journal*, the one to which he gave most attention being on "The Chemistry of Taraxacum Root." Next he went to Birkenhead and began to study for his Ph D. degree, whilst he commenced business there in 1864. Becoming elected a life member of the Pharmaceutical Society, he took, and has always continued to take, a keen interest in its work.

In 1869 he came to Liverpool and joined Mr. J. Hallawell, pharmaceutical chemist, who had recently returned from Brazil and had commenced an export business. The partnership lasted nineteen years, and on Mr. Hallawell's retirement, his son continued the export trade to Brazil, whilst Mr. Symes took over the remainder of the business, and for family purposes and with a view to making each assistant more or less a shareholder in the concern, he registered it as a private company.

Dr. Symes has been for over thirty years a member of the Liverpool Chemists' Association, of which he was elected President in 1865, again in 1874, and a third time in 1880. The papers and short communications which he has contributed at its meetings have been as follow:—"On Extract of Cinchona," "Pill Coating," "Preservation of Leeches," "The Preparation of Carbonate and Phosphate of Iron," "Criticisms on Some of the Preparations of the New Pharmacopœia," "Notes on Modern Science," "Cotton Seed and Its Products," "Pharmaceutical Honesty," "Nomenclature of the Natural Sciences," "Lin. Hydrargyri," "Observations in Practical Pharmacy," "Pharmaceutical Progress," "On Shea Butter," "Carnauba Root," "Chrysophanic Acid," "Pills and Pill-Coating," "Artificial Vanillin," "Baryta in Cream of Tartar," "Liquid Diffusion and Dialysis," "The Fungoid Growth in Chloroform Water," "The Phono-

graph," "Microscopic Germs in Pharmacy," "Suggestions for a New Edition of the B.P.," "Toughened Glass," "Continuous Extraction by a Specially-devised Apparatus," "Use of Microscope in Pharmacy," "Pao Pereiro," "Brazilian Jalap," "Filtration," "Green Ginger," "Pharmaceutical Apparatus," "Brazilian Vanilla," "Proposed New Bye-Laws of the Pharmaceutical Society as Affecting Study and Examination," "On Tayuya," "Observations on the Pharmacopœia," "Gelatin Pill Coating," "Essence of Senna Pods," "Modern Interpretation of Pharmacy and Patent Medicine Acts," "Pharmaceutical Organi-

sation," "Revision of the B.P." Dr. Symes took an active interest in the associated soirées of the literary, scientific, and art societies of Liverpool, and gave several popular scientific lectures during the first year they were held. He was for several years scientific secretary to the Birkenhead Literary and Scientific Society, has served on the Councils of the Liverpool Microscopic Society and the Liverpool Literary and Philosophical Society, as Treasurer and President of the Lyceum, and is now President of the Liverpool and District Somerset Society. Finally he served

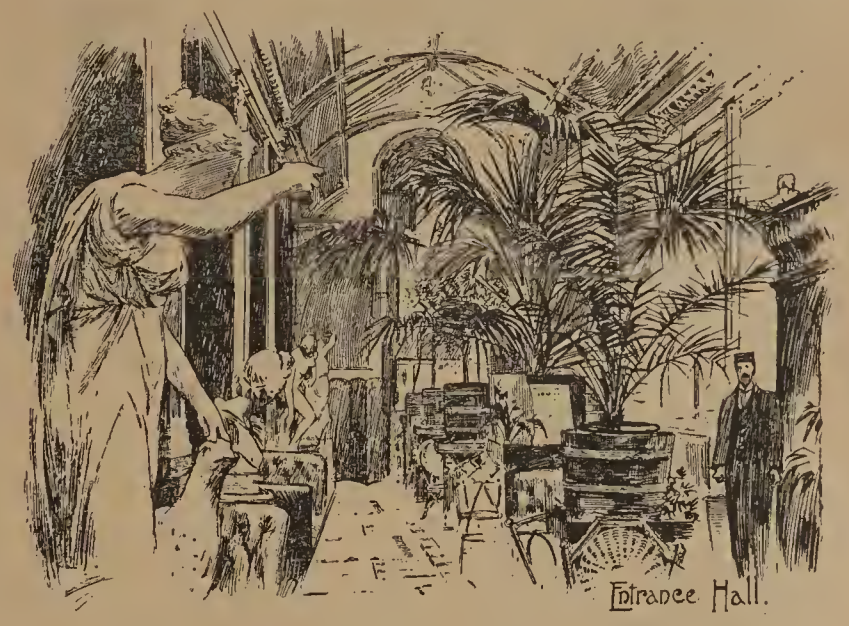
on the Council of the Pharmaceutical Society for ten years before his retirement, and is now again a member of that executive body.

The Business Proceedings.

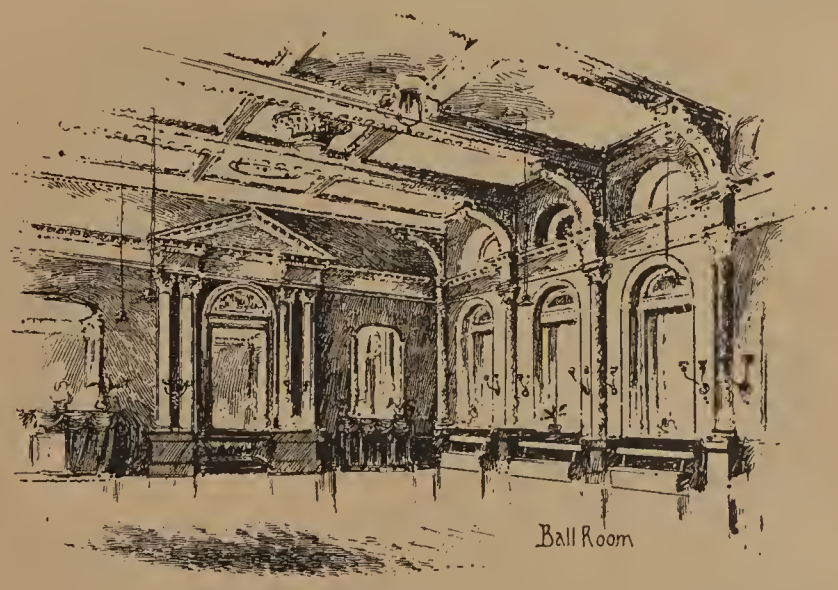
After taking the chair, Dr. Symes at once called upon the Lord Provost of Glasgow, who proceeded to welcome the assembled company to the city. Professor Remington of Philadelphia, and Mr. Champion, President of the Pharmaceutical Society of Natal were then introduced and asked to make a few observations, after which the meeting settled down to hear the presidential address. That finished, the reading of papers was proceeded with and continued, with a brief interval for luncheon, until half-past three. A general move was then made to Charing Cross Station, where a special train was waiting to convey the visitors to Balloch.

Excursion to Loch Lomond.

The special train left Charing Cross at 3.50 p.m. for Balloch, and on the way skirted the Alexandra Park, and passed some extensive locomotive works, and the workshops of the N. B. Railway at



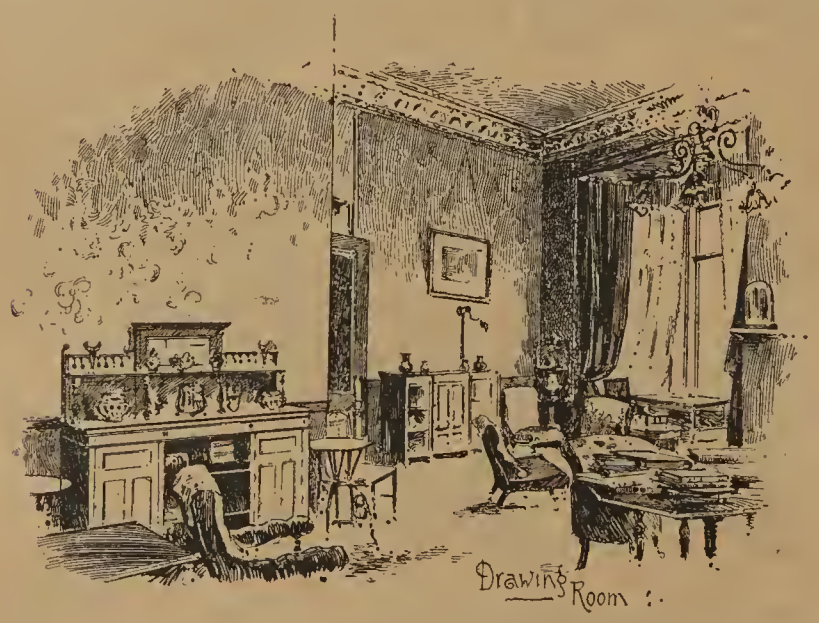
Cowlairs, Possilpark, and Maryhill. At this point Kilbowie and Dalmuir were reached. At the former place are the works of the Singer Manufacturing Company, whilst near Dalmuir stand the works of the North British Chemical Company, managed by Mr. E. C. C. Stanford, a past president of the B.P.C. Nearer the river are the engineering and shipbuilding yards of Messrs. Thomson, where many of the most recent types of fast cruisers have been built. On the opposite side is Erskine House, a seat of



Lord Blantyre. Passing Kilpatriek, said to be the birthplace of St. Patrick, the patron saint of Ireland, an exquisite view was obtained of the lower reaches of the Clyde and firth, with Dumbarton, Port Glasgow, and Greenock in the distance. A quarter of a mile beyond Bowling, Dunglass Castle was seen on a rocky promontory, a conspicuous feature being an obelisk erected to the memory of Henry Bell, pioneer of steam navigation. The royal burgh of Dumbarton was next reached, the train running

behind the rock which has played so many important parts in Scottish history. This rock, anciently styled Alcluith, has been used as a stronghold from time immemorial. In the year 368 the Roman General Theodosius made it the capital of the province, calling it Theodosia. All through Scottish history this castle comes to the front, and for long was a royal residence. In the town itself shipbuilding is carried on to a considerable extent, Messrs. Denny's works being the oldest and

largest, and famous all the world over. Branching off to the right, the train next ran up the Vale of Leven, passing Renton, Bonhill, and Alexandria, and soon reached Balloch, being landed alongside the steamer. Loch Lomond is aptly styled the "Queen of Scottish Lakes"; its majestic grandeur, and bewitching beauty throwing a spell and glamour over the mind of the most prosaic. In front lay the placid waters of the lake, with the Island of Inchmurrin breaking the expanse; while beyond towered the majestic "Ben." The nearer landscape here has a soft and lowland aspect, while the

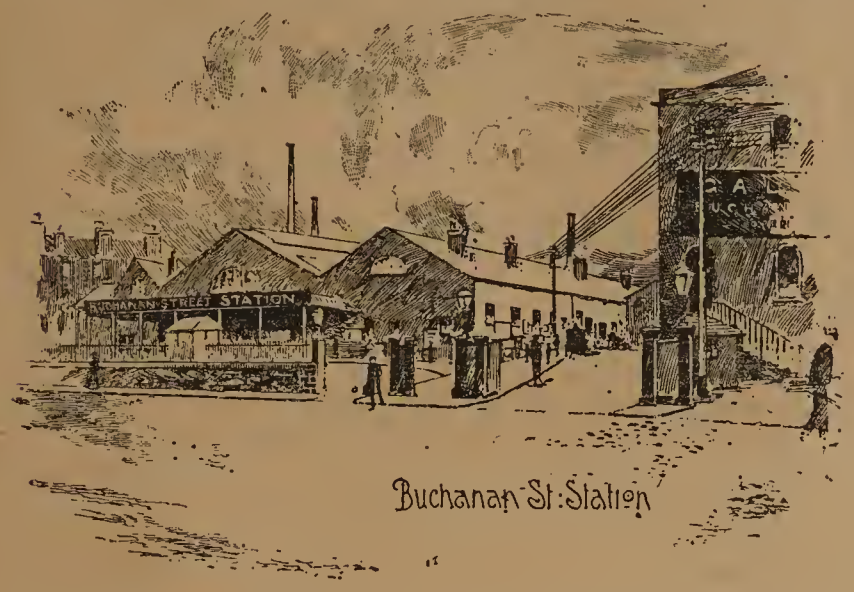


distance swells into a wild prospect of Highland peaks, glens and precipices. The loch is about twenty-five miles from south to north, and swells out at the widest part to about six miles, whilst it contracts towards the north to less than a mile. It is studded with about thirty islands of various sizes, the largest and most important being Inchmurrin, about a mile long, its highest point being 290 feet above sea level. As the vessel proceeded many points of scenic and historic interest were noticed. Balloch and Boturich Castles were seen to the right, perched on the side of a verdant, richly-wooded range of hills. The former marks the site of the principal seat of the ancient and powerful Earls of Lennox. Cameron House, on the left, is the seat of Mr. Alexander Smollet, whose family is one of considerable antiquity, the members of which have distinguished themselves as soldiers, lawyers, and statesmen; whilst in Tobias Smollet the family included a man of surpassing literary genius. Inchmurrin, an island seen to the

eft, at one time contained a castle belonging to the Earls of Lennox, and King James VI. of Scotland and I. of England, used at times to hunt the wild deer and follow the roe here. It now forms the deer park of the Duke of Montrose. Inchmurrin passed, Rossdhu House, the seat of Sir James Colquhoun, of Luss, was seen on the left. A little to the south of this stretches Glenfruin (the Glen of Mourning), which, in 1602, was the scene of fierce conflict between the clans of Colquhoun and MacGregor. Next came

the islet of Inchgalbraith, on which are the ruins of a castle, and the vessel then made for Inchtavannach, passing between it and the mainland. To the east of this is Inchlonaig, on which there is a deer preserve of the Colquhouns, of Luss. With the exception of one or two smaller islets there was now a clear course to the head of the loch, and as the vessel proceeded the landscape assumed more of an Alpine character. The loch rapidly narrowed, and Ben Lomond came more fully into view. A little further on was a rugged headland, popularly known as Rob Roy's Rock, and Stuckgown House, the much-loved summer

residence of Lord Jeffrey, the eminent literary critic. Next the vessel came alongside Tarbet, about one and a half mile from Arrochar, on Loch Long, and here was seen on the left "the Cobbler," who dwells on the rugged lofty summit of Ben Arthur, a mountain overhanging the head of Loch Long. At Inversnaid, on the east side of the loch, an exquisite view was obtained of the opposite hills and peaks of Ben Vane and Ben Vorlich, the latter



Buchanan St: Station

being 3092 feet above sea level. Immediately to the south of the pier is Inversnaid Fall, and on the left lie two small islands; the first Wallace's Isle, and the other, Inveruglas Isle; the latter contains the ruins of a castle. A deep cavern with a narrow opening passed on the right is said to have once sheltered Rob Roy, when hard pressed by his enemies. Bruce, too, is said to have taken refuge here. Some distance in advance was seen the small pine wooded island called

Royal Infirmary

Eilan Vow, containing the remains of a stronghold of the MacFarlanes. Arriving at Ardlui, where there is a pier and a station on the West Highland Railway, the steamer now turned and steered the same course down the loch until Ross Point was passed, beyond Rowardennan pier on the left, and the vessel then made for the east shore, passing the island of Inchlonaig (the isle of yellow trees) on the left. Balmaha pier, where the hills shoot up from the loch like a wall, was next approached, and the island of Inchcalliach passed. To the left was seen Buchanan House, the residence of the Duke of Montrose, whilst nestling at the margin of the lake was Ross Priory, the seat of Sir George Leith Buchanan, behind which towers the conical wood-clad hill of Duncruine, or "hill of the witches." It rained somewhat during the latter part of the trip. The steamer finally returned to Balloch, where the special train was waiting to convey the visitors once more to the city of St. Mungo.

The Events of Wednesday.

On Wednesday morning, which opened rather dull and showery, work was resumed at ten o'clock—the ladies being meanwhile driven through part of the city and some of the parks—and the programme was concluded early in the afternoon, after which those attending the Conference were conveyed by coaches to the Glasgow waterworks at Mugdock, near Milngavie. The water is brought mainly from Loch Katrine, and the total daily consumption averages 50,000,000 gallons, of which 45,000,000 gallons are taken from Lock Katrine, whilst the remain

Hospital for Sick Children.

ing 5,000,000 gallons come from the Old Gorbals Works. The average daily consumption per head of the population supplied is 51 gallons, of which 32½ are for domestic use, and the remaining 13½ for trade purposes. The capital expended on the Glasgow Corporation Waterworks amounts to £3,649,000. Of this sum £1,212,000 has been expended on the Craigmaddie reservoir and the new aqueduct, which is now almost completed. The Loch Katrine supply requires no process of filtration, the water being delivered at the consumers' taps as pure as it is in the Loch, where it is as clear as crystal. There is, however, a straining well at each of the "Mugdock" and "Craigmaddie" reservoirs, but these are used merely for the purpose of keeping leaves and such-like matter from being carried into the mains which convey the water from the reservoirs into the city. Returning to the city, the evening was devoted to the usual Drawing Room and Smoking Concerts, which were well patronised and greatly enjoyed.

Thursday's Excursion.

The whole of Thursday was devoted to a cruise through the Kyles of Bute, which started in magnificent weather, and a description of which will be published next week.

ODE OF WELCOME

TO THE

British Pharmaceutical Conference

GLASGOW MEETING, 1897.

BY

ALEXANDER LAING.

Hail, sons of ancient alchemy,
Ye lights of modern pharmacy,
Saint Mungo's city and the West
Of Scotland welcome you. Your quest
Is not the worldly dream of old,
To turn base metal into gold:
Yet haply, should the fates prove kind,
Elixir vitæ ye may find
In sights and scenes 'neath summer skies
To thrill your hearts and charm your eyes;
In Nature's beauteous display,
And in congenial company.
As autumn brings the riches of the year
To fill the world with gladness while she pours
Her luscious fruits and life-sustaining stores
Upon the lap of earth, so ye appear
Bringing the harvest-fruit your labour tills
With crucibles, retorts, alembics, stills,
Out of the treasures Nature's power secretes
In herb and plant and tree,
Bosoms in earth, in dark, obscure retreats,
Or hides in depths and caverns of the sea;
Whate'er there be the elements contain,
Above or under ground,
Where virtue may be found
For healing of the nations. To prepare
Weapons for doughty champions to take arms
'Gainst fell disease, vile germs, and aught which harms
Or threatens hurt to health and happiness
Is your peculiar care:
And noxious exhalations dire with fate,
By science's search-rays to sanitate.
Then ye have spells, beyond magician's art,
To call forth spirits from their saccharine sleep,
To imitate Jove's thunders, to impart
To light and heat withdrawn in primal years
Of carboniferous era from the sun,
A second birth and freedom. Ye can gleam
From fossil cycads every lovely hue
Of Eden's garden; rainbows might be spun
With dyes ye cull from ages ere flowers grew,
When Flora's garlands were of sombre green.
Bridging the flight of æons with a leap,
Ere yet evolved by time your arts disclose
The radiance of the violet and rose.
Even as ye strive life to prolong and bless,
Till armour-clad in vigorous healthfulness,
May sweet Hygeia follow in your train
With ozoniferous airs; and evil spirits
That Scottish soil from stubborn eld inherits,
In water-kelpies, brownies, trolls and fays
Of doubtful temper, while ye sojourn here,
Be banished to grim haunts beyond your ken
In Highland fastness, darksome linn and glen.
But wood-nymphs, hama-dryads, sprites ethylic,
Who crown the fleeting hours with joys idyllic,
And love to revel in an atmosphere
Of purity and light, guide all your ways,
And wreathe our western islands, lochs, and kyles
And freedom-loving hills in brightest smiles.
So may your visit, in its recollections,
Yield pleasant memories and dear reflections.

British Pharmaceutical Conference.

THIRTY-FOURTH ANNUAL MEETING.

A meeting of the Executive Committee was held at the Grand Hotel, Glasgow, on Monday, August 7, at 6.30 p.m.

Present:—Dr. Symes (President) in the chair, Dr. Attfield, Messrs. Atkins, Ewing, Hills, and Martin (Vice-Presidents), Messrs. Bird, Coull, Foster, Holmes, Russell, McAdam, J. C. Umney, Wardleworth, and Wells, Mr. John Moss (Hon. Treasurer), Messrs. Naylor and Ransom (Hon. Gen. Secretaries), and J. C. Nightingale (Asst. Secretary).

The minutes of the previous meeting having been read and confirmed,

The Treasurer's Financial Statement for the year ending June 30, 1897, was read and approved.

A draft report of the Executive Committee for presentation to the annual meeting was submitted by the Hon. Gen. Secretaries and agreed to.

A proposed list of officers for the ensuing year was adopted for recommendation to the general meeting for election.

The draft programme for the proceedings of the sittings of the Conference was laid on the table and approved.

The place of meeting for 1898 was considered, and it was announced that a cordial invitation from Belfast would be offered at the general meeting.

Thirty-five gentlemen having been duly nominated, were elected to membership.

SESSIONS OF CONFERENCE.

FIRST DAY'S BUSINESS.

The thirty-fourth Annual Meeting of the British Pharmaceutical Conference commenced its sittings for business on Tuesday, August 10, in the large and commodious hall of the Grand Hotel, Glasgow, Chas. Symes, Ph.D., President, taking the chair at ten o'clock.

In opening the proceedings, he said they were honoured by the presence of the Lord Provost of Glasgow, who had come at some sacrifice, being a very busy man, to welcome the Conference. They were already indebted to him and the municipal authorities for their kindness in placing at the disposal of the Local Committee the beautiful Art Gallery, in which they had met on the previous evening, although he understood that a much finer building was about to be erected as a home for the art treasures which the city possessed.

The Lord Provost said he came that morning with very great pleasure, but besides that he felt that it was a duty on the part of the municipality to offer a cordial welcome to the ladies and gentlemen, who had come from considerable distances to the City of the West. He hoped they would be able to see not only the beauties of Glasgow itself, but of the surrounding district, for he was proud to say, after having travelled in many parts of the world, that within a radius of forty or fifty miles of that city would be found as beautiful scenery as he had ever seen. He came, however, not to speak for the country district, but for the city, which, through him, gave an open-hearted welcome to the Conference. He understood that the Association existed for the purpose of encouraging research in the highly scientific profession in which they were engaged, and also a friendly feeling amongst those who were engaged in it. It had been his duty and pleasure to welcome many similar conferences, but never did he with more pleasure than on the present occasion. He could imagine nothing more conducive to good feeling and the advancement of science than such annual meetings held in various parts of the country, and he was pleased to see that they did not confine themselves to reading scientific papers, but included a little recreation in the programme. He found it was twenty-one years since the Conference last visited Glasgow, and he hoped that any members who had been present on the former occasion would feel that they received quite as hearty a welcome now as they did then. He also hoped that so long an interval would not again elapse before the next visit. The programme sketched out was admirable, including Loch Lomond, one of the most beautiful lakes in the world, and the

waterworks, of which the city was proud, and he only wished there had been time to examine carefully the whole of those magnificent works. At any rate, he thought they would be satisfied with the purity of the Loch Katrine water. If there were anything he could do to make their stay in Glasgow more comfortable they had only to mention it. He was glad to hear that the members had enjoyed their visit to the Art Galleries, though, as the President had said, the residents were not satisfied with them, and a more suitable building was about to be erected, of which H.R.H. the Duke of York would shortly lay the memorial stone. He hoped that at their next visit the Conference would find that building completed, and furnished with a still finer collection of pictures than they at present possessed. He concluded by again tendering a hearty welcome to the Conference.

The PRESIDENT said that although the Lord Provost had come there at a great sacrifice of his valuable time, he had extended to the Conference a very hearty welcome. It was a great thing that in a city like Glasgow, the commercial capital of Scotland, they were not utterly utilitarian. There was always a great tendency with people engaged in business in a particular direction to become one-sided, but the people of Glasgow spent their money and their thoughts on art and literature, and cultivated the sentimental side of their nature as well as the practical side. Glasgow might well feel proud of its water supply, and they might all be assured that the water was healthful.

A vote of thanks to the Lord Provost for his welcome was received with acclamation and briefly acknowledged.

DISTINGUISHED VISITORS.

The PRESIDENT then referred to the presence of Professor Remington of Philadelphia, and Mr. Champion, President of the Pharmaceutical Society of Natal. Professor Remington was the author of very excellent works on pharmacy, and had for many years been the Professor of Pharmacy at the Philadelphia College. The pharmacists of this country seemed to have an especial interest in that College, which was a pioneer institution, and had always boasted of excellent men who had distinguished themselves in the profession of pharmacy. It was a curious thing that in their own school at Bloomsbury Square until comparatively a few years ago, the art of pharmacy had not been taught.

Mr. MARTIN said the name of Remington was a household word, and nothing that he could say was necessary to commend the Professor to an English audience. He had had the privilege on more than one occasion of receiving the hospitality of American pharmacists, especially that of Professor Remington, therefore he was very pleased to support the President's hearty welcome. He had visited the School of Pharmacy in Philadelphia, which was the largest school of pharmacy, and had done more to disseminate a love of pharmaceutical study than any other school in existence. The mantle of Procter and Parrish had fallen on Professor Remington, and had been well borne by him.

Professor REMINGTON said his heart had been touched by the hearty welcome accorded to him by the Conference. He had had the pleasure of meeting a great many members of the Conference individually, but to meet them all together had been one of the events that he had looked forward to for many years. Eleven years ago he had the very great pleasure of coming to Great Britain for the first time, and to feel that every door was open, and every hand stretched out to him, gave him an idea of the hospitality of the old country that he should never forget. He was very glad to hear what the Lord Provost had said about water —the backbone of the pharmaceutical profession. He concluded by thanking the President for his warm words of welcome.

The PRESIDENT said Mr. Champion had come a long way to attend the meeting. Mr. Champion was President of the Pharmaceutical Society in a country where pharmacy had not advanced to the extent it had in the United States, but he had no doubt that in due course Natal would have a pharmaceutical society of which they would all be proud. He would call upon Mr. Walter Hills, the President of the Pharmaceutical Society, to welcome Mr. Champion.

Mr. WALTER HILLS, in welcoming him, said that Mr. Champion was the first President of the Natal Board of Pharmacy, and was specially interested in the examination work of that body. As he had been called upon quite unexpectedly to speak for Mr. Champion, he thought it would be better to leave Mr. Champion to speak for himself.

Mr. CHAMPION said it was an unexpected pleasure to have the opportunity of thanking the members of the Pharmaceutical Society and other gentlemen connected with pharmacy for the kindness and courtesy shown him in London. Up to quite recently the position of chemists in Natal had not been satisfactory, the Examining Board which granted certificates, consisting of medical men only, who were often somewhat rusty in their pharmacy, and naturally the candidates slipped through very easily. A Bill was therefore introduced about three years ago through the instrumentality of the Chemists' Society of Natal, which provided for the formation of a Pharmacy Board to consist of five chemists and one member of the Medical Council. Of the five chemists two were appointed by the Government, and three were elected by the chemists in the colony. The Bill was passed, and came into operation last year, the first meeting of the Board being held in November last. As he was making a visit to England with his family this year to witness the Jubilee rejoicings, he took the opportunity of visiting Bloomsbury Square, and getting some insight into the mode of conducting the examinations. Of course it would be premature at present to expect the examinations in Natal to attain such perfection, but he hoped as time went on they would be able to place their examinations on a par with those in Great Britain, and that they might be able to claim reciprocal recognition of their certificates. He concluded by again thanking British pharmacists for the kindness and courtesy they had shown him on every hand.

The Presidential Address (see page 121) was then delivered, after which

Mr. E. STANFORD moved a hearty vote of thanks to the President for his excellent address. When he had the misfortune to occupy the same position at Edinburgh it afforded him great consolation to know that criticism of the address was not permitted. But if he were able to criticise this address, he could only do so in the most laudatory manner, seeing that Dr. Symes had dealt so kindly with the addresses of all his predecessors. He would only say that it was worthy of the author and of the occasion. It was difficult to believe that it was thirty-four years since the little band which founded the Conference met in Newcastle, and it was sad to think how many of those noble men had been taken from them. They little thought then what the Conference would grow to, or that they should see such a meeting as the present.

Mr. W. L. CURRIE seconded the vote of thanks. In this year of records he thought they had established a record meeting of the Conference, and the President had certainly given them a record address.

Dr. ATTFIELD, in putting the motion to the meeting, said with regard to those who started the Conference in Newcastle-upon-Tyne in 1863, he could endorse every word that had been said by the President. No doubt the credit of the initiation of the idea of a conference must be given to their lamented friend Mr. Schacht. It was his idea that the Pharmaceutical Society of Great Britain should hold an annual meeting in the provinces, and this idea was laid hold of by Mr. Brady and Mr. Reynolds. At the first meeting held at Newcastle, he (Dr. Attfield) was glad to take up the position of secretary. He must not forget to allude to one who, in his day, was called the father of the Conference, not only by virtue of his years, but also because he was the first President; every credit must be given to their dear old friend, now long passed away, Mr. Henry Deane, for giving the Conference such a hearty god-speed, and such an initiation as he did. The admirable retrospect given by the President had in it an element of sadness, which indeed he had referred to at the close, but which he also might have extended when referring to the different Presidents who had addressed the Conference. When he took up one of the 'Year Books' and looked to those who had been President before him, he found to his sadness that out of the ten names there mentioned not less than eight were the names of men now passed away, and only Mr. Groves and Mr. Reynolds remained; but, on the other hand, of those who succeeded him, out of the first twelve names no less than eleven were still with them, all hearty supporters of the Conference. He was sure no one would more rejoice than their President when he looked around the meeting that day to see there assembled many men quite qualified to become future Presidents of the Conference, and to maintain its reputation for many long years to come. It was a happy thought of the President to summarise in the admirable way he did the utterances of those who had occupied the chair prior to himself. He must praise the President not only for his powers of concentration, but also for the fairness with which he had accomplished that task, and as regarded his concluding remarks, although he (Dr. Attfield) must not say one word

either for or against the position which he took up with regard to the British Pharmacopœia because of his official connection therewith, he would say that with regard to everyone of the subjects alluded to by the President, they were characterised in his humble judgment by sound common sense throughout.

The resolution having passed unanimously,

The President thanked the meeting for the very hearty manner in which it had been received by the meeting. He might say that he had been afraid of wearying them with a long and tedious address, but now that they had heard it they would be aware that it was almost impossible to curtail it.

Mr. Naylor (Hon. Sec.) announced that letters had been received from the following gentlemen regretting their inability to be present:—Messrs. Martindale, Groves, Farr, Rideal, Conroy, Wright, Southall, Maden, Alcock, Taylor, T. B. Groves, Carteighe, J. Harrison, Newsholme, Bateson, Reynolds, Gerrard, and Payne (Belfast).

List of Delegates.

The following list of delegates was read by Mr. Naylor:—

Pharmaceutical Society of Great Britain.—Mr. Walter Hills (President), Mr. G. T. W. Newsholme (Vice-President), Messrs. Allen, Atkins, Bateson, Carteighe, Cross, Grose, Harrison, Johnston, Martindale, Park, Savory, Storrar, Symes, Warren, Young, and the Secretary.

Pharmaceutical Society of Ireland.—Mr. W. F. Wells, Jun. (President), Mr. R. J. Downes (Vice-President), Mr. G. D. Beggs (Treasurer), Messrs. Conyngham, Kelly, Murray, Tichborne, and Walsh.

Aberdeen and North of Scotland Society of Chemists and Druggists—Mr. John Johnston (President), Mr. J. Cruickshank (Hon. Sec.), Messrs. Paterson, Ritchie, Strachan, Graig, and McWeir.

Brighton Association of Pharmacy.—Messrs. Savage and Yates.

Liverpool Chemists' Association.—Messrs. A. C. Abraham, Bain, Conroy, E. Evans, jun., Marsden, Wardleworth, and Cowley.

London Chemists' Assistants' Association.—Messrs. Guyer, Hill, Stephens, and Strother

Manchester Pharmaceutical Association.—Messrs. Johnstone, Pidd, and Wild.

Newcastle-on-Tyne and District Chemists' Association.—Mr. J. Maltby Clague (President), Mr. G. Foggan (Vice-President), Mr. G. F. Merson (Hon. Sec.), Messrs. Sharp and Whittle.

Nottingham and Notts. Chemists' Association.—Messrs. Bolton, Gill, and Vallance.

Plymouth, Stonehouse and District Chemists' Association.—Mr. C. J. Park.

Sheffield Pharmaceutical and Chemical Society.—Mr. A. H. Allen.

Forfarshire District Chemists' Association.—Mr. C Kerr (President), Mr. J. Russell (Hon. Secretary), Messrs. Anderson, Ferries, Cumming, J. W. Russell, Jack, Harley, Ford, Naysmith, Davidson, and Fleming

Glasgow and West of Scotland Pharmaceutical Association.—Messrs. Adam, Brodie, Currie, Dunlop, Foster, Fraser, Kerr, Laing, Lambie, McAdam, McKellar, McMillan, McMurray, Mitchell, Moir, Robb, G. Robertson, D. S. Robertson, Russell, Sutherland, Taylor, Tocher, and Watson.

Edinburgh Chemists' Assistants' Association.—Messrs. Lunan and McLaren.

Swansea and District Chemists' Association.—Messrs. Grose and Hughes.

Pharmaceutical Society (North British Branch).—Mr. J. L. Ewing (Chairman), Messrs. Currie, Bowman, Coull, Fisher, Henry, Kermath, Kerr, and Lunan.

Midland Pharmaceutical Association (Birmingham).—C. F. Jarvis, R. D. Gibbs, and Geo. E Perry.

Exeter Association of Chemists and Druggists.—J. Hinton Lake (President), Henry Gadd, J.P. (Vice-President).

Oxford and District Chemists' Society.—H. Druce and Mr. H. J. Matthews.

Report of the Executive Committee and Financial Statement.

The following report was next read:

"In presenting their annual report, your Committee have pleasure in stating that the efforts which have been made to increase the membership of the Conference appear to have resulted in some measure of success, the number of members at the present time being slightly in excess of that of last year. It is hoped that

FINANCIAL STATEMENT FOR THE YEAR ENDING JUNE 30, 1897.

The Hon. Treasurer in Account with the British Pharmaceutical Conference.

1896. *Dr.*	£ s. d.	£ s. d.
July 1. To assets forward from last year:—		
Cash in Secretary's hands	1 14 7	
Cash at Bank	16 12 7	
		18 7 2
,, 1. ,, Subscriptions, June 29, 1896	3 7 6	
,, 3. ,, ,, ,,	0 7 6	
		3 15 0
,, 3. ,, Cheques on Union Bank, Regent Street		1 8 9
1897.		
June 30. ,, Sales of 'Year Book,' by Publishers		13 13 4
,, Advertisements, 1896 Vol.		80 7 8
,, Unofficial Formulary, Sales by Publishers		2 2 2¼
,, Index Book, Sales of		
,, Members Subscriptions, from July 1, 1896, to June 30, 1897	397 19 6	
Less not cleared at Bank	1 16 0	
		396 3 6
,, Donations		32 1 6
,, Liabilities on Outstanding Accounts—		
Butler and Tanner	14 15 3½	
McCorquodale (wrappers)	5 9 6	
,, Assist.-Secretary's Salary and Rent, March 25 to June 30, 1897	13 15 0	
		33 19 9½
		£581 18 10¾

June 30, 1897. *Cr.*	£ s. d.	£ s. d.
By Expenses of 'Year Book':—		
Printing, Publishing, Binding	171 12 2	
Banding	3 18 2	
Postage and Distributing	14 15 3½	
Advertising, Publisher's Charges and Commission	21 19 11	
Editor's Salary	150 0 0	
Foreign Journals for Editor	5 17 6	
		368 3 0½
,, Unofficial Formulary:—		
Advertising and Publisher's Charges		0 4 3½
,, Sundry Expenses:—		
Assistant Secretary at Liverpool	10 0 0	
Copies of President's Address	0 14 6	
Forret's Paper	0 2 6	
		10 17 0
,, Assist.-Sec.'s Salary from July 1, 1896, to June 25, 1897	45 0 0	
,, Rent of Office from July 1, 1896, to June 25, 1897	10 0 0	
		55 0 0
,, Blue List, Printing	3 7 6	
Postage	2 12 2	
		5 19 8
,, Postages		10 17 1
,, Printing and Stationery		6 5 6
,, Stationery		2 2 0
,, Bank Charges		0 0 5
,, Petty Cash Expended		2 8 5
,, Liabilities of last year, since paid		
Butler and Tanner Postages, 1895–96	23 2 0	
Butler and Tanner, Outstanding Account	44 3 2	
		67 5 2
,, Cash in Secretary's Hands, Petty Cash	3 11 11	
Stamps	0 5 0	
		3 6 11
,, Cash at Bank		48 19 5
		£581 18 10¾

The Bell and Hills Fund.

1896.		£ s. d.	£ s. d.
July 1.	To Balance in hand	16 10 5	
1897.			
June 30.	,, One Year's Dividend on Consols	9 11 8	
			26 2 1
,,	By Purchase of Books for Liverpool	8 7 3	
			8 7 3
	Balance at Bank		17 14 10
	Assets—		
	Cash Balance at Bank	17 14 10	
	£360 2¾ Consolidated Stock	360 0 0	

July, 1897

Examined and found correct { ANTHONY S. BUCK. / WILLIAM L. CURRIE.

this may be regarded as an indication of increased interest in the Conference, and that the present year may see a further accession to membership.

"It was mentioned in the last report that certain alterations were contemplated in the production of the 'Year Book.' These have been carried out in the last volume, and a reduction in the cost has been effected, which it is believed has not been attended with any decrease in its general usefulness to members.

"Mr. Louis Siebold has been re-appointed Editor, and the MS. of Parts 1 to 3 is already in the hands of the printers.

"The Blue List has been revised by a Sub-Committee appointed for the purpose, and some additions and necessary alterations have been made.

"Members are again reminded that the funds of the Conference are available for money grants to assist in defraying expenses incurred in pharmaceutical research; no applications for such assistance have been received during the past year.

"In consequence of his removal to Calcutta, Mr. D. Hooper, F.C.S., resigned his position as Honorary Colonial Secretary for the presidency of Madras, and a resolution, expressing cordial thanks for his services, was passed by your Committee. Mr. W. E. Smith, of Madras, was elected as his successor. Your Committee venture to claim the assistance of all the honorary colonial secretaries in their efforts to extend the interest in and thus increase the membership of the Conference throughout the Empire.

"By the death of Professor G. F. H. Markoe, of the Massachusetts College of Pharmacy, Boston, U.S.A., the Conference has lost a distinguished member. He attended the meeting at Brighton in 1872, and was on that occasion elected an honorary member.

"The Conference has suffered an irreparable loss by the death of George Frederick Schacht, of Bristol, to whose initiation the very existence of the Conference may be said to be primarily due, and whose constant and active support has largely contributed to the measure of success it has achieved. He filled with distinction the office of President at Dublin in 1878, and at Sheffield in the following year. Exceptional ability and enthusiasm, combined with absolute integrity, produced in him the highest type of pharmacist, whilst his genial and kindly disposition commanded the affection and esteem of all with whom he came in contact.

"Amongst other members who have passed away during the year we have to record the names of Mr. A. H. Mason, of New York, who previously rendered valuable assistance as Honorary Colonial Secretary for Canada, and Mr. F. M. Rimmington, of Bradford, a former Vice-President of the Conference.

"The removals by death during the past year have been 26, and 8 by resignation, while 107 new members have been elected."

The Hon. Treasurer (Mr. Moss) said he was glad to be able to submit a little more favourable statement than had been the case with its immediate predecessors. They appeared to have arrived at the foot of the declivity, were now on the level, and he hoped were bracing themselves for the ascent immediately in front. The popularity of the meetings in Liverpool last year did the Conference an immense amount of good, and they looked forward to the same result being repeated in Glasgow, where there was every appearance of the meetings being equally popular. They had not lost ground during the year, for there had been a considerable accession of members, overbalancing the defections and losses. The full effect of that accession of members was not to be seen this year, but he hoped it would next, and that there would be a still larger balance to their credit at the bank. During the year there had been several donations from various sources given quite spontaneously, including £20 from the local committee at Liverpool. Of course they could not look to eleemosynary aid of any kind as a regular source of income; the Society must depend on its own merits for its existence, but like any other, they were open to receive, and were glad to receive, such assistance. The whole of the subscriptions had practically been expended on the 'Year Book,' and there had been no receipts at all from the Index, which seemed to show that a new one was required. Having referred more in detail to one or two items in the financial statement, he said he might as well take the opportunity of reporting on the Bell and Hills Fund, the working of which was very simple. There was a certain sum invested which brought in a regular income, and about the same amount was expended in the purchase of books.

Mr. Thos. Tyrer moved the adoption of the Report and Financial Statement. He certainly found the Index to the 'Year Book' most valuable, and hoped that a new one would soon be prepared. A meeting had recently been held in London under the auspices of the Royal Society to consider the question of making a collective index of the scientific literature of the world, so that really this matter was one of the first importance, and that from two points of view, the saving of time and labour, and the enormously increasing number of valuable and important works of reference. The Index, therefore, must be prepared, and of course it must be paid for one way or the other. The best way of doing so would be by such an increase of members as would provide the funds without difficulty. He was glad to see that the 'Year Book,' although the Committee had been able to economise considerably in its production, would compare favourably with any of its predecessors, and their cordial thanks were due to those who had prepared it.

Mr. W. Ward (Leeds) seconded the motion, and said he agreed thoroughly with what Mr. Tyrer had said as to the value of the Index.

The President, in putting the motion, also referred to the Index, and hoped they would soon be in such a financial position owing to the increased membership that it could be set on foot without any difficulty.

The resolution was carried unanimously.

The Unofficial Formulary.

Mr. Naylor read a letter from Mr. Martindale, in which he suggested that as the new Pharmacopœia would probably be published before the next meeting of the Conference, the Unofficial Formulary Committee should be re-appointed, in order that it might consider it.

The President moved that the Committee be re-appointed, which was at once agreed to unanimously.

Note on the Word Asafetida.

BY JOHN ATTFIELD, F.R.S.

Twice within the past fifteen years the writer has been called upon, in circumstances involving responsibility, to decide as to the orthography of the word "asafetida." Not himself a philologist he has on each occasion sought the aid of authorities, with the following results.

In 1883 the word was found to be spelt "assafœtida" and "asafœtida" that is, with one "s" and with two, in leading books on pharmacy in Great Britain; the spelling of the latter part of the word scarcely being questioned at that time in this country. Lescher, *Pharmaceutical Journal*, June, 1868, drew attention to Déniau's monograph on "assafœtida," in which 600 authors had been consulted, and gave his own conclusions as to the etymology of the word, but did not touch its orthography. Miller, *American Journal of Pharmacy*, March, 1875—reprinted in *Pharmaceutical Journal*, March 13, 1875—very fully discussed the orthography of the first portion of the word, the employment of one "s" being strongly favoured. He noticed the use of the word "asa" in 'Pharmacographia,' then recently published, and referred to Flückiger's treatment of "asa" in the 'Pharmakognosie des Pflanzenreiches,' Berlin, 1867. Spelt "assafœtida," in Latin and in English, in the British Pharmacopœia, 1867, it appears as "asafœtida," in Latin and in English, in the British Pharmacopœia, 1885. From that date onward the spelling with one "s" has been adopted generally.

To turn now to the latter part of the word. In the Pharmacopœia of the United States of America, "assafœtida" in Latin and "assafetida" in English appears in the 1860 and 1870 editions, "asafœtida" in Latin, "asafetida" in English in the 1880 and 1890 editions; that is to say, the diphthong "œ" was in that Pharmacopœia long ago displaced by the vowel "e" in the English word.

This continued publication in America of "asafetida" as the English equivalent of the Latin "asafœtida" raised the question in the writer's mind as to whether or not it would be desirable for Britain now to adopt the same spelling. A reference to the 'Oxford New English Dictionary' naturally followed, the parts already published including the first letters of the alphabet. There the following sentence was found: "Fœtid. (ad. L., 'fētid-us' [often incorrectly written 'fœtidus'], f., 'fētēre,' to have an offensive smell)." This seemed not only to decide that the vowel "e" should displace the diphthong "œ" in the English spelling of the word "asafetida," but at once to raise and decide the greater question of the orthography of the Latin word, which apparently could no longer be "asafœtida," but "asafetida"; in

short, that the "œ" was wrong and "e" right, both in the Latin and English words. Indeed, the only doubt was one arising out of the spelling of the initial word in the dictionary, just mentioned, namely, "asafœtida," here the diphthong being still retained.

A letter to one of the contributors to the dictionary, the Right Hon. Friedrich Max Müller, led first to an abortive attempt to find at the British Museum "a little book in which all these words are collected," "œ" and "e" variants, as "cœna" and "cena," a book in which, said this distinguished scholar, "you will find all the evidence in favour of 'fetida,' or 'fœtida' I should spell 'fetida,' and secondly, to an introduction to the editor of the dictionary, Dr. Murray, who to a letter replied as follows:—

"During the Middle Ages, and down till very lately, much confusion prevailed in Latin MSS. and texts as to the diphthongs 'æ,' 'œ,' and the vowels 'ē ē' in many Latin words. Since the application of comparative philology to throw light upon Latin, a good deal has been done to clear up the matter. Thus 'cœlum,' 'cœna,' which had been so long the accepted forms for 'heaven,' 'supper,' are now settled to be 'cælum,' 'cena.' In the case of the word you are dealing with, although all three spellings, 'fētidus,' 'fætidus,' 'fœtidus,' occur in MSS. and texts, it seems to be concluded that 'fētidus' is the more correct spelling, which, of course, gives 'asafetida.' See Lewis and Short, 'Lat. Dict.,' 1880.

"I am sorry that we did not know this when I prepared the A part of our dictionary, and that consequently we retained the time-honoured spelling 'asafœtida.' We have adopted 'fetid,' as the form of the English adjective.

"I am sorry also that I do not know what the little book is in which the 'œ' and 'e' words are collected. I have never heard of it, but I must inquire about it and get it. Meanwhile I shall be glad to help you whenever I can. As you probably know, the Americans have begun to substitute 'e' for both 'æ' and 'œ,' even when these are etymologically correct, so that, for instance, all the 'hæmato-' and 'hæmo-' words are written 'hem-,' and all the 'rhœas' 'rhea.' I think that this is not British practice. In scientific terms we like to keep the diphthongs when they are etymologically correct, though they generally 'go' in popular words, as 'celestial,' 'European,' 'Grecian.'

"But in this case the question is whether Latin had really 'œ,' and the conclusion of scholarship seems to be that it had not, but that the spelling with 'œ' is a mediæval or renascence mistake, probably after some false analogy.

"In Latin it is now known that 'œ' was a very rare diphthong, only occurring as an archaic spelling of 'u,' retained in some words as mœnia. Of course it was the regular Latinisation of Gr. 'oi,' and hence is common in Græco-Latin words like 'diarrhœa, with which pharmacy abounds." After this authoritative statement there can be little doubt that both in Latin and in English the word in question will be spelt "Asafetida." In exact quotations from the older authors their spelling of the word in question would probably be retained; but in such cases the context would prevent confusion.

Mr. John Moss asked if the author had gone into the etymology and meaning of other words beginning with "asa," indicating articles of materia medica. For instance, what did the prefix mean in the case of asarabacca? They all knew what it meant in *Asagrea officinalis*. The subject was a very wide one, and if Dr. Attfield went into everything in the Pharmacopœia with the same particularity as he had shown on this subject he did not know where his labours would end.

Professor Remington said American pharmacy owed a great deal to Dr. Attfield, and on this subject of etymology or orthography he had had some correspondence with him. He had always had a little controversy with America with regard to the word "officinal," and in some of the earlier editions of his 'Chemistry' he gave reasons for the use of the word "official." In America that word had not been adopted until the last revision of the U.S. Pharmacopœia, and perhaps the reason for that was not quite understood. There was more modesty in America, even among pharmacists, than many people thought, and Professor Procter, who was largely responsible in this matter, held very strongly that so long as the Pharmacopœia of the United States was not officially prepared by the Government, the word "official" should not be used. That state of things was now altered, and the word "official" was employed. With regard to the use of diphthongs generally, he was not going to defend the radical views held by some of his countrymen, being himself rather a conservative in such matters. He did not believe in changes where they interfered with the derivation of a word, or with the grand old English language, but in the case now under notice, where they had good authority to go upon, he thought they were much indebted to Dr. Attfield for bringing it forward. Though it might seem a small matter, he could assure them that Pharmacopœia Committees or Commissions were pestered to death with letters on this kind of thing, much more than on some of the most important questions affecting the character of a pharmaceutical preparation. It was very wise, therefore, to bring forward the justification for the change before it was made.

Mr. Druce said he quite agreed with the propriety of Dr. Murray's later view, adopting the "e" instead of the diphthong. There was a very good instance of the old form of diphthong being dropped in the name of the Linnean Society. He should like to know how Dr. Attfield would spell the botanical name "cœruleus," with "œ" or "æ"? There was an immense deal of time wasted in looking up words in an index through the confusion as to the use of these diphthongs. It had lately been pointed out that the name of the common blue pimpernel was spelt "femina" by the original describer (Miller) in 1768, and consequently in lists of English plants it would appear as *Anagallis femina*, in defiance of its orthographical derivation.

Mr. Holmes said Professor Remington had very properly called attention to the difficulties which occurred in little matters of this kind. Even in the pronunciation of the word asafetida there did not seem to be unanimity of opinion whether the "e" should be long or short, but the great question was, if the spelling of this word were altered, was it to be taken as a precedent, and how far was it to go? He had found on looking at Dr. Murray's dictionary that there was one more quotation of the word with "œ" than with "e."

Dr. Attfield, in reply, said, with regard to words other than "asafetida" in which "asa" occurred, he thought Mr. Moss would find that Flückiger had very well treated the subject in the paper to which he alluded as having been published in 1867. He was obliged to Professor Remington for his support in the spelling of the word, which of course was to be expected, seeing what was the practice in America with regard to the spelling of words with "æ" and "œ." He could assure them that Professor Remington spoke the truth when he said that gentlemen in the position he had to fill got worried, not by the big things, but by the little things, and it was as well that such matters should be settled beforehand rather than afterwards. He did not pretend to be any authority, but he would be loyal to our great English philologists, such as Professor Max Müller and Dr. Murray, and when Dr. Murray expressed his sorrow that his initial word was spelt with "œ" he thought it was for them as pharmacists unquestionably to follow such men, especially when they were agreed. He did not think that Mr. Holmes need be afraid of any precedent being created in the matter so long as they had men like Dr. Murray to follow, who very clearly distinguished between the many words, including the "œ" and the "æ," which he would not alter, as well as those which he would.

A vote of thanks, on the motion of the President, was passed to Dr. Attfield.

Further Note on the Pharmacy of Conium Maculatum.

BY E. H. FARR, F.C.S., AND R. WRIGHT, F.C.S.,
Pharmaceutical Chemists.

In the discussion upon a note by us on the strength of some of the official succi, read at the last meeting of Conference, the question of the standardisation of galenical preparations of conium was brought forward, and it was suggested by the President (Mr. Martindale) that our knowledge of the active principles of the drug was not sufficiently definite to admit of the standardisation of its preparations.

We reported to the meeting the ascertained willingness of Professor Cash, of Aberdeen, to conduct some experiments on the physiological action of conium, dealing more particularly with the question as to whether the action of a standard solution of conine, or of the mixed alkaloids of conium was similar to that of a standardised galenical preparation of the same alkaloidal value. We undertook to have the work carried out, and to submit a report embodying the results to this Conference.

The following preparations and solutions were subsequently prepared by us and forwarded to Dr. Wm. Findlay, who performed

the necessary experiments under the direction of Professor Cash:—

I. Fluid Extract of the Dried Unripe Fruits.—A pound of the fruits was reduced to coarse powder, and divided into four equal portions. One portion was moistened with 80 per cent. alcohol, and after standing for an hour was packed in a conical percolator. More alcohol was added, and percolation allowed to proceed. A second portion of the fruits was treated like the first, an equal volume of the percolate from No. 1 being substituted for the alcohol in moistening the fruits, and also for the subsequent percolation. The third and fourth portions of the fruits were treated similarly—the percolate from No. 2 being used for the moistening and percolation of No. 3, and that from No. 3 for the extraction of No. 4.

Percolation was then carried on continuously until twelve ounces of percolate from No. 4 in three fractions of four fluid ounces each, had been collected. The marcs were mixed and submitted to pressure. The percolates and expressed liquid were assayed and gave the following percentages of alkaloidal hydrochlorides:—

Fraction 1 = ...	3·37	per cent.
Fraction 2 = ...	·93	,,
Fraction 3 = ...	·10	,,
Expressed Liquid = ...	·07	,,

In order to produce a standardised fluid extract for experimental purposes, the first fraction of the percolate was diluted with a sufficient volume of fraction 2 to reduce the alkaloidal strength to 2·5 per cent.

II. Solution of Mixed Alkaloids.—Three and a half ounces of the dried fruits were reduced to a fairly fine powder. This was moistened with 70 per cent. alcohol and packed in a percolator. More alcohol was then added and percolation carried on until a pint of percolate had been collected. This was acidified with dilute sulphuric acid and placed in a retort, and the alcohol recovered by distillation. The acid liquor was allowed to cool, and was then poured into a stoppered separator. The alkaloids were extracted by the process previously employed by us, and were afterwards purified, being finally obtained in solution with a slight excess of hydrochloric acid. The solution measured about 100 cubic centimetres, and was found to contain 2·22 per cent. alkaloidal hydrochlorides. The alkaloids were again regenerated and a solution prepared containing exactly 2·5 per cent. alkaloidal hydrochlorides.

III. Succus Conii Fruct.—A quantity of fresh unripe fruit weighing two pounds was well bruised and mixed thoroughly with 10 fluid ounces of rectified spirit, and after standing for six hours in a covered vessel, pressed. The marc was then moistened with 9 fluid ounces of a mixture of rectified spirit, 1 part, water, 2 parts, and set aside in a covered vessel for six hours, when it was again pressed and the liquid added to the first product, then set aside to clarify. The total product measured 32 fluid ounces, and on assay yielded ·70 per cent. of alkaloidal hydrochlorides.

IV. Solution of Conine Hydrochloride.—1·96 gramme pure conine was placed in a stoppered cylinder with 50 cubic centimetres distilled water, a slight excess of hydrochloric acid added, and the volume made up to 100 cubic centimetres.

V. Solution of Conhydrine Hydrochloride.

VI. Solution of Pseudo-Conhydrine Hydrochloride.—These solutions were prepared in the same way as No. IV.

The conine was obtained from Messrs. Hopkin and Williams, and the other alkaloids from E. Merck.

Preliminary Note on the Action of Certain Preparations and Active Principles of Conium Maculatum.

BY WM. FINDLAY, M.A., M.B.

The following preparations were sent for experimental examination by Mr. R. Wright, F.C.S., Buxton, viz.:—Conine hydrochloride in solution (2·5 per cent.), a solution of the alkaloids in the proportions in which they occur in the unripe fruit (2·5 per cent.), conhydrine solution (2·5 per cent.), pseudo-conhydrine solution (2·5 per cent.), fluid extract from unripe fruit containing the various alkaloids to the amount of 2·5 per cent., and a succus containing 0·7 per cent. of alkaloids.

As a result of experiments on animals (guinea-pigs and rabbits), the same general action was observed as belonging to conine, the mixed alkaloid and the fluid extract. Conhydrine and pseudo-conhydrine acted in an analogous matter, but comparatively large doses are required to produce any distinct effect.

The doses necessary to produce a lethal effect in guinea-pigs are about:—

Conine, ·037 gramme per kilo.

Mixed alkaloids, ·039 gramme per kilo.

Conhydrine, not less than 0·257 gramme per kilo.

Pseudo-conhydrine, certainly above 0·257 gramme per kilo.

The fluid extract has not yet yielded results exact enough to allow of tabulation with the alkaloids, but it may be remarked that in experiments on frogs, in which the lethal sign is taken to be stoppage of the circulation, the activity of this preparation is as great as that of conine.

The succus, owing to its small percentage of alkaloids, proved rather inconvenient in attempts to compare it with much stronger bodies already noted; the experiments were consequently uncertain, as it was decided not to interfere with the bodies as forwarded.

This paper was read by Mr. Naylor.

The President, in inviting discussion, said it would be very interesting to hear the results of anyone who had worked in the same direction as the authors.

Mr. Cunningham said it was most important to find what was the active principle of conium.

Professor Attfield said the difficulty in all these cases was to isolate a single alkaloid that was active. To depend on the percentage of mixed alkaloids was to depend on something which would let them down.

Mr. Druce did not quite follow whether the different percentages of alkaloids were given in the paper for the respective parts of the drug. They wanted to know first of all whether the juice of the unripe fruit was stronger in alkaloids than the juice of the plant, or whether a preparation of the dry plant would not yield a larger amount of the alkaloid.

Mr. Naylor said that had been given in a previous communication of the authors.

Mr. Robert Brodie spoke of a sample of conium he had received from a London house which had the appearance of little spikes. He had submitted a sample of this to Mr. Roger Hendy, a lecturer on botany, who, on examination, identified it as the fruit of the *Anthriscus vulgaris*.

The Conference adjourned for luncheon.

Some Observations on Organotherapy.

BY J. C. MCWALTER, L.R.C.S.I., L.A.H.I.

The classical experiments of Professor Victor Horsley have awakened a new era of medication, which Dr. Malcolm Morris recently described as one of the most remarkable achievements of the Victorian reign. The dominant idea is to supply from the healthy organs of some animal the deficiencies of the patient's secretory glands. This idea cannot claim to be a novel one, it is probably older than Aristotle, and even in their most savage state men seem to have had some intuition of the propriety of appropriating the healthy organs of the lower animals with a view to becoming imbued with their particular virtues. Thus we are told that certain African tribes fortify themselves for battle by partaking of the orchitic extract of the lion, believing that thereby they become infused with conine valour.

All this is now ancient history, and it would be an impertinence to occupy the time of this distinguished assembly by referring to it, except as an introduction to some remarks on its effects on pharmacy.

Dr. Horsley's experiments proved that to graft the gland on the living animal produced the best results, but that to consume them as an ordinary article of diet was also efficacious, whilst even to cook them like ordinary meat did not destroy their virtues.

This evidence that the active principle of the gland, whatever it may be, is not of a protean or evanescent character, has unfortunately stimulated manufacturing chemists to take extraordinary liberties with it, and to indulge in a series of vagaries as to the forms in which it should be dispensed to patients. Thus the glands were dried, powdered, mixed with some foreign substance, and compressed into pellets. They were macerated in varying proportions in glycerin, alcohol, and sundry other solutions, and the most diverse and contradictory reports as to their effects are constantly appearing in the medical papers.

In my humble opinion the compressed tablet form is about the worst possible to elicit the virtues of the gland. I believe it to be a blunder to dry it, a worse blunder to powder it, and a grievous error to mix it with any other powder, whilst to compress the product is to still further attenuate the chances of the active

principle entering the system. I believe that the various serious symptoms which physicians have found to follow their administration were due to various poisonous toxalbumins generated by the action of moist air on the tablets.

If there be any animal extractive used in medicine of which we have anything like an adequate acquaintance, it is pepsin, and this ferment owes its present pre-eminence to the unselfish labours of pharmaceutical investigators, who have constantly striven to elaborate the active product, and to free it from inert, nauseous, and harmful constituents. If, therefore, any manufacturing house were to offer us a tablet and state that it was equivalent to 5 grains of a fresh pig's stomach, surely we would laugh it to scorn. Yet have we not firms, boasting to represent the newest and most elegant pharmacy, claiming no more for their tablets than that they represent an equivalent of another gland? I fear, gentlemen of the British Pharmaceutical Conference, that the responsibility for this state of affairs is in some measure due to the fact that you have allowed your proper functions as pharmacists—to elicit, abstract, elaborate and make elegant and effective the various remedies which the medical profession may wish to investigate—to be usurped by some large commercial firms. These houses seem to have monopolised for the moment the ear of the profession, whilst they hypnotise chemists by their stories of research laboratories, scientific staffs, unrivalled facilities, etc., and paralyse pharmaceutical criticism by the prices they pay to the press.

It may fairly be asked whether I have any better method to suggest for the exhibition of animal extracts than the compressed concoctions which I have just condemned? Without claiming to throw much light on the subject, I would premise that in administering glandular remedies, we seek to copy a physiological process, and therefore we should be guided by what takes place normally in the organism. Now the process of secretion in any gland may very roughly be considered as an osmosis—that is certain constituents of the blood are elaborated and allowed to filter through, by means of a differentiated epithelium and a basement membrane.

Copying this process then, I suggest that the proper plan to extract the active principles of animal organs is, to remove them immediately on the death of the animal, so that the molecular life of the organ may, if possible, be preserved, and at once macerate them in a sterilised solution of glycerin, made alkaline or acid according to the nature of the gland. Thus, for the pancreas one would use an alkaline solution, and for the stomach a slightly acid one.

The resulting solution should afterwards, I submit, be subjected to a process of dialysis which, as a method for extracting the active principles of drugs, is I believe of great value, and its employment in the preparation of animal extracts will be found very useful in separating the colloid constituents, and obtaining a close approximation to the active principle.

Since the demise of Dr. Brown Séquard, and the introduction of the tablet form, the orchitic extract has fallen into disrepute, but it will probably be found of great use, especially in cerebral cases, when a really active extract shall be produced. The method which I advocate for the preparation of this is to macerate fresh sliced glands in a solution containing 30 per cent. of glycerin, and 0·6 per cent. each of chloride of sodium, phosphate of sodium and bicarbonate of sodium. The same solution will probably be found the best solvent for the ovarian extract, though the virtues of this are much more dubious.

Extract of red bone marrow is best made, I think, by macerating the fresh marrow in glycerin. The effects of this preparation, when well made, are little short of marvellous, and it is well worth the investigations of physicians and pharmacists.

The experiments of Claude Bernard have proved that post-mortem changes in animal organs go on with such rapidity that for a very long period an unchanged organ seems never to have been investigated, hence the importance of asepsis in the preparation of these remedies, and the necessity of preserving them from such changes by their immediate immersion in some such preservative fluid as glycerin.

Gathered here to-day is the *élite* of pharmacists in Great Britain and Ireland, which proves by its presence its desire to lift itself above the level of mere money-grabbers, and to do some real service to suffering humanity. Proud shall I be if any feeble words of mine can induce them to investigate the properties and preparation of animal extracts, and to rescue them from those traders whose chief desire seems to be to reduce every organ and tissue of the body to their own special pill, pellicle, pellet, or potion, no matter how obviously unsuited such may be to present in its full potency the remedy sought after.

The President said this was a subject in which he was sure all were interested, and he was sorry the author was not present to answer any remarks that might be made. The author seemed to believe in the preservative properties of glycerin, but he (the President) had been rather against the use of glycerin for preserving pepsin. It was quite pleasant to find that there was a tendency among some members of the medical profession to see that every active medicinal substance could not be put up in tablets, and so be administered as to be most efficacious.

Mr. Martin said he understood on the best authority that some of the desiccated preparations were very effective. A great many of the substances which were being administered might be considered to be very tentative, but there was no doubt that organotherapy had come to stay. His experience was that the gland, when properly desiccated under aseptic conditions, was quite as active, and if kept dry, kept better than glycerin preparations.

Mr. Bird said the chief point seemed to be that in drying, the active principle of these animal substances seemed to undergo some change. The only way to get at the truth of the matter would be to try practical experiments side by side; treat one portion with glycerin, and the other portion in the usual manner by drying to powder.

Mr. McEwan said Dr. McWalter seemed to overlook the fact that the recommendation to dry the thyroid gland under proper aseptic conditions came from Professor Fraser, of Edinburgh, and the general opinion was that in this particular form thyroid, at all events, was decidedly active, and that method of administration had been found to be better on the whole than the one at first introduced by Dr. Murray, viz., subcutaneous injection of a glycerin solution. From the statements made by Mr. Bird and Mr. Martin, he did not think that Dr. McWalter's assertions were altogether justified, and therefore it was to be regretted that he was not present to bring forward some facts in substantiation of the very strong statements he had made. The investigation of what might be the active principle of thyroid had not been retarded, and they knew already of at least two active principles more or less associated, but apparently indicating that the active principle was an iodine derivative of some albuminoid body. Two principles of that nature had been isolated, but the general opinion was that these were not quite the same in action.

Mr. Stanford said there was no doubt whatever that there were at least two, if not more, principles in the dried gland. He could corroborate what Mr. Martin said, that the dried preparation was active if it was very carefully and properly dried. Then it must not be forgotten that the dried gland would contain anything that might be accidentally in the original gland, therefore it might be just as dangerous as using the raw preparation. They still needed some manufactured chemical product of the dried gland which did not contain anything deleterious that was contained in the original gland.

Dr. Attfield asked if Mr. Stanford could give them any hope that such a thing would be produced?

Mr. Stanford replied that he could not promise anything just yet.

Mr. Leo Atkinson pointed out that the gland itself might vary very considerably. The information he had received tended to show that the glycerin preparation was the most effective.

Mr. Stanford said the weight of the thyroid gland differed enormously, sometimes as much as 100 per cent., and at different times of the year it varied very much in appearance, and probably in the quality of its constituents. Some years ago he pointed out that he had discovered iodine in every marine animal he could get at, and in most marine vegetables, but it did not then occur to him to look for it in the throat of a sheep, and he could not at all tell even now where it came from.

The President, in moving a vote of thanks to the author, whose absence they all regretted, pointed out that they were not here dealing with a definite chemical compound, and it would probably require years of further experience before any very positive conclusions could be arrived at.

Further Observations on Commercial Oil of Citronella.

by John C. Umney, F.C.S., and R. S. Swinton.

In their report for October, 1895, page 18, Messrs. Schimmel and Co. called attention to the adulteration of three samples of citronella oil with substances that did not affect their solubility in

three to five volumes of 80 per cent. alcohol, but caused them to turn cloudy on the addition of further alcohol, and caused a precipitate of a foreign substance at the bottom of the flask.

This deposit they stated did not consist of petroleum, but probably of East Indian gurgun balsam or wood oil, the exact identification being prevented by the smallness of the samples.

Subsequently one of us described (*Chemist and Druggist*, March 7, 1896) several samples having similar characters met with on the London market, at the same time pointed out that the adulterant, if a wood oil, was not the ordinary gurjun oil, for neither did the oil itself, nor did any part of it, give Flückiger's reaction for that substance. Since that time doubts have been raised as to the sophistication of these oils, as the nature of the adulterant, if any, could not be determined.

The characters of these, as well as of several more of the same class of oils, which we have termed A, subsequently examined were :—A specific gravity as high as ·910 at 15° C., and an optical rotation as high as −14 in a tube of 100 millimetres, and slight deposition on treatment with five volumes of 80 per cent. alcohol.

This specific gravity is slightly higher than those obtained in 1891 (*Ph. J.* [3], vol. xxi., p. 322); from a comparison of many samples which represented practically the whole of the oil of citronella at that time met with in commerce in London, no oil amongst those then examined having a specific gravity exceeding 0 897. All of these oils differed markedly from the oils distilled by two English firms, Messrs. Fisher and Messrs. Winter and Son, in Singapore and Galle (Ceylon) respectively.

These oils, which we have termed class B, have the following characters :—

Specific gravity at 15° C., 0·886 to 0·889.

Optical rotation in a tube of 100 Mm., −4 to −6.

Readily soluble in 80 per cent. alcohol.

It seemed therefore desirable to thoroughly investigate the differences existing between these two classes of oil, and to determine whether they were due to sophistication of those first referred to (class A), or to a difference in the method of distillation of the latter (class B), by which certain of the constituents of the oils were eliminated.

We have addressed letters to the two firms mentioned on the subject of the method of distillation adopted, but although several months have elapsed, up to the present time have not received replies. We learn, however, from two independent sources, that the oil is not in the ordinary way distilled by steam, and that practically no differences exist in the grasses used for distillation. It is distilled in all cases from freshly cut grass, or grass cut within three days, as it is found that if the grass be left for more than the fourth day the yield of oil is not great enough to cover the distillation expenses.

The most important constituents which have hitherto been recognised as present in pure oil of citronella are camphene, dipentene, citronellic aldehyde, methyl heptenone, geraniol, acetate of geraniol, and borneol, all the physical and chemical characters of which have been worked out with almost complete exactitude. A difference in the relative proportion of these constituents, the characters of which vary very much, would account to some extent for difference in the oils, but the only body that would materially raise the specific gravity, would be a considerable quantity of acetate of geraniol (specific gravity 0·917).

Saponification showed that the proportion of esters did not exceed 5 per cent. in either the oils in class A or class B, and therefore the specific gravity of over 0·900 could not be due to geraniol acetate, as the other bodies present in large proportion have specific gravity lower than 0·885.

A considerable quantity of an oil of class A was therefore submitted to fractional distillation in a current of steam, fractions being collected corresponding to the following proportions :—

First fraction	7·9 per cent.	Sixth fraction	4·9 per cent.
Second ,, ...	15·2 ,,	Seventh ,, ...	4·3 ,,
Third ,, ...	7·4 ,,	Eighth ,, ...	5·7 ,,
Fourth ,, ...	4·4 ,,	Ninth ,, ...	6·0 ,,
Fifth ,, ...	7·2 ,,	Residue	37·0 ,,

The fact that this residue could only be distilled with the very greatest difficulty with steam suggested the probability that if the oils of class B were steam distilled, this fraction would not in all probability be present in the oil.

Submitted to fractionation with steam under precisely similar conditions, practically the whole of the oils of class B were readily distilled, thus making it evident that herein lay the very considerable difference between the oils of the two classes.

The residue of the oil of class A, amounting to 37 per cent. of the whole oil, was submitted to extended examination. It was distilled, refractionated under a reduced pressure of about 60 to 70 Mm., and was then found to distil at ordinary pressure between 245° and 280° C. It still contained, however, traces of geraniol as indicated both by the odour and by acetylation, and was therefore purified by repeated fractionation and distillation over sodium, until the metal remained practically bright throughout the whole process.

This body, which has all the character of a sesquiterpene, does not agree either in physical characters or in chemical reactions, with any of the hitherto described bodies of that class, of which the most important are cadinene, caryophyllene, clovene (see *Ph. J.*, vol. xxiii., p. 382), and the recently described humulene (Chapman, *Journ. Chem. Soc.*, 1895, p. 54). We are studying these characters and chemical combinations, but it is only necessary in this connection to point out that it is odourless, and consequently a valueless constituent of the oil.

It is, moreover, not nearly so soluble in alcohol of 80 per cent. strength as geraniol and citronellic aldehyde, and therefore materially affects the solubility of the oil. It is also quite devoid of optical rotation, and has a high specific gravity.

In a previous paper (*Chemist and Druggist*, March 7, 1896), we have referred to the percentage of acetylisable bodies indicated by saponification, which fell as low as 50 to 52 per cent., calculated in terms of geraniol in some of the oils of class A. We have at the same time found that the percentage of acetylisable bodies in all the samples of the oils of class B are as high as 90 to 92 per cent. We are now able to attribute this difference to the presence of quantities of this sesquiterpene in the oils of class A to the extent of from 20 to 30 per cent., and it is quite evident that the percentage of acetylisable bodies is much reduced by the presence of this body.

It should be borne in mind that the acetylisable bodies present include borneol, and also are influenced by the proportion of citronellic aldehyde present.

The difference in the rotatory power of the two oils being unexplained by the presence of the sesquiterpene, owing to its optical inactivity, the first fractions of the oils were carefully examined with a view to determining the proportions of terpenes present and their nature.

The first 6 per cent. of each of the oils was carefully collected after repeated fractionation, and in the case of A it boiled below a temperature of 170° C., and had an optical rotation of −42° in a tube of 100 Mm., and after distillation over sodium the optical rotation was found to be as high as −52°.

The specific gravity of this fraction was 0·859 at 15° C.

These characters do not correspond with camphene, the optical active terpene hitherto recognised as present in citronella oil; and as the absence of borneol was proved by the boiling-point of the fraction and freezing, it points to the presence of a strongly lævorotatory terpene other than camphene.

The absence of anything more than traces of camphene and borneol in this fraction was confirmed by acetylation, camphene being converted by this treatment into iso-bornyl acetate and borneol into the corresponding ester; saponification showing that only traces of these acetyl absorption bodies were present.

In contra-distinction to this, the corresponding fraction from class B oil had an optical rotation of only −11° in a tube of 100 Mm., and after acetylisation and saponification over 90 per cent. acetyl absorption bodies was indicated, showing that the highly optically active terpene of class A oil is nearly, if not altogether, absent from those of class B. The range of boiling-point was considerably higher, being up to 190° C., and there can be no doubt that this terpene is the cause of the higher optical activity of the former class of oils, and that it has either been fractionally removed from the oils of class B, or does not exist.

These results, we think, point to the conclusion that (1) The native-distilled commercial oils (class A) differ from those distilled by English firms (class B) in containing a highly optically active terpene, which raises the optical rotation, and a large percentage of sesquiterpene which raises the specific gravity, the presence of which constituents reduces the odour value and impairs the solubility in alcohol.

(2) That the oils of Messrs. Fisher and Winter respectively are possessed of approximately 30 per cent. greater odour value than most native-distilled commercial oils.

As we have already stated, we are thoroughly investigating the characters of the sesquiterpene which we have separated.

The President said this was a most interesting paper from a gentleman who was becoming quite an authority on the essential oils.

Dr. Attfield said there could not be very much discussion on this paper, especially considering that the author, as the President had said, was himself the great authority on the subject. Still, they could not let it pass without a vote of thanks, and one point, the isolation of a sesquiterpene having such an extremely high boiling point, and without odour, was of exceptional interest; its further examination would be looked for anxiously not only by pharmacists, but by medical men and scientific chemists.

The President asked if Mr. Umney could inform them whether in the distillation of the oil by the English firms in the East the oil was carried over by steam, or was merely distilled by steam heat in a jacketted pan? If the former plan were followed, no doubt the steam would carry over with it substances which would only boil at a much higher temperature than that applied outside.

Mr. Bird asked if the sesquiterpene was freely soluble in alcohol.

Mr. Umney said no, not freely, he called it partially soluble. When he came to this difficulty he wrote to the two firms, having factories at Singapore and Ceylon, and asked them as to the methods of distillation used, but they had not thought fit to reply. He had taken a great deal of trouble to obtain information as to native-distilled oils, which were not in any way adulterated, and were perfectly natural oils. He had recently had occasion to examine some lavender oils distilled by steam instead of fire heat, and found it was infinitely superior to the old oil distilled by fire heat at Mitcham. The oil he had examined was distilled by Sir Walter Gilbey from plants grown on his estate in Essex, where he was trying what could be done to relieve agricultural distress by the cultivation of peppermint and lavender.

The Pharmaceutical Value of Sumatra Benzoin.

BY THOMAS DUNLOP.

My attention was particularly drawn to the subject of this paper in the autumn of last year. When making simple tincture of benzoin the amount of barky matter left on the filter was so considerable that I dried it, and found that it constituted over 22 per cent. of the benzoin taken. To find whether this was exceptional, I procured commercial samples from various sources, and the results were such that I deemed them of sufficient importance to bring before the members of the Conference.

Before doing so, however, I will briefly quote the description of benzoin given in standard works on materia medica, from which it will be seen that although the presence of impurities is noted, the extent to which that may occur is not defined. In one work only, Christison, is the percentage of impurity stated, and in one case only, the B.P., is the presence of impurity unnoted.

Christison describes benzoin as of "two sorts, commonly called First and Second, or Fine and Coarse. Each dissolves entirely in Alcohol, Rectified Spirit, and Ether." The "coarse" sort only differing from the "fine" apparently in containing "1·6 of extract and impurities." The compositions being given as :—

Fine.		Coarse.	
Resin	80·7	Resin	78·5
Benzoic Acid	19·8	Benzoic Acid	19·7
Moisture	·2	Extract and Impurities	1·6
Total..	100·7	Total..	99·8

'Pharmacographia' says :—"Each sort occurs in different degrees of purity and under considerable differences of appearance. (In) Siam benzoin there is always a certain admixture of bits of wood, bark, and other accidental impurities. (In) Sumatra benzoin the mass, when the drug is of good quality, consists of numerous opaque tears set in a translucent greyish-brown resin mixed with bits of wood and bark. When less good the white tears are absent and the proportion of impurities is greater. Sumatra benzoin usually falls short of the Siam drug, and hence commands a much lower price."

The solubility and chemical composition, however, describe an absolute drug—a thing not to be met with commercially in that of Sumatra—no further notice being taken of the impurities that are admitted to be "always" present, and no distinction being made between the two varieties.

The 'U.S. Dispensatory' says :—"Siam benzoin is mixed to a greater or less extent with bits of bark, wood, etc." "Sumatra benzoin, bits of wood, etc., more abundant."

Maisch (5th edit.) says :—"Inferior kinds sometimes contain a large percentage of chips."

The B.P. (1885), although it does not specify Siam and Sumatra as sources of benzoin, practically describes these varieties, and in its "characters" of the drug, that of Sumatra is specified in the words "or greyish-brown translucent substance," descriptive of the agglutinating material of the tears. It, also, only indicates an absolute drug in stating its solubility—nothing being said of a residue being left when it is treated with rectified spirit or solution of potash.

Attfield (6th edit.), 1875, shows that the drug may contain 10 per cent. of impurity, his figures being :—

Benzoic acid from	12	to	15	per	cent.
Resins ,,	78	,,	84	,,	,,
Totals	90	,,	99		

Whilst in the 15th edit., 1893, he merely mentions benzoin as a source of benzoic acid (which is again given as 12 to 15 per cent.), with the additional statement, "the rest being mainly composed of two resins."

Lastly, as a contrast, in the 'Market Report' of the *Pharmaceutical Journal* descriptions like the following occur :—

"Sumatra Gum.—Good seconds with nice clean almondy centres but slightly false packed corners"; or "Fair quality with pale centres but rather false packed sides"; or "Ordinary ditto with fair centres but very barky sides." From which it appears that this variety is systematically doctored commercially, and investigation shows that the Sumatra benzoin of commerce agrees with the commercial rather than with the pharmacological standard.

For the sake of brevity and lucidness I have tabulated my investigation, and before you are the samples examined and also the residue left by each.

In Table I. details are given of the samples examined with results.

In Table II. the samples are arranged in numerical order of the residues.

In Table III. the samples are arranged in price order, with corresponding residue value.

The conclusions to be drawn from these are :—

(*a*) That Sumatra benzoin contains from 8 to 30 per cent. of barky and woody matter (*vide* Table II.).

(*b*) That the price paid for the drug is no criterion of the quality (*vide* Table III.).

(*c*) That if this varicty be used pharmaceutically it should be previously estimated, so that the proper allowance may be made for impurities; and,

(*d*) That in the forthcoming B.P. more accurate statements should be made regarding the actual "characters" and "solubility" of this drug.

For comparison I procured one sample of Siam benzoin, which I found to be "practically *entirely* soluble" in rectified spirit, the residue only amounting to 5 grs. per ounce.

I would also direct attention to the fact, that although the low price and greater solubility of No. 9 may seem in its favour, it proved to be Palembang resin, so that it is unsuitable for making even an unofficial tincture. A noticeable feature of the tincture made from it was that it took ten hours to filter 3 ozs.

The following considerations prompted me to take up this subject :—

1. I could find no authoritative information on it. I have dealt with this in the introduction.

2. I could find no literature on it. I have only come across two references, both foreign. The one in the *Amer. Journ. of Pharmacy*, fourth series, i., 485, where A. C. Curtis, in "Notes on Benzoin," says: "6. A known quantity of seven of the samples was treated with alcohol. The undissolved residue dried and weighed gave an average of 21 per cent. of insoluble matter." The other, in the *Pharm. Journ.* of May 1, 1886, in a letter from Pocock and Co., Capetown, giving the comparative assay of a salvage find of resin, 195 years old, with that of elect benzoin at that time. It says: "Having thoroughly exhausted the resin with S.V.R., we found it left 7·7 per cent. of wood, etc.; whereas a sample of 'elect' benzoin, as found in commerce at the present day, similarly treated, yielded no less than 34·9 per cent. of woody matter."

3. The fact that Sumatra benzoin is always supplied when benzoin is ordered. This only requires to be mentioned.

4. The therapeutic importance of the drug. Although Chris-

tison says, with reference to its "expectorant and specific properties in chronic pectoral complaints," that "its reputation has greatly declined of late years," and 'Pharmacographia' says "it appears to be nearly devoid of medicinal properties and is but little used," in modern practice it is esteemed as an inhalation in the treatment of congestion of the pharynx and larynx, and is recognised as one of the best remedies for nasal catarrh, hence the necessity for having a full strength tr. benzoin. co.

Were it "nearly devoid of medicinal properties" the question might well be asked "Why is it retained in the Pharmacopœias, seeing it is not the recognised source (on the large scale) of benzoic acid, which is its principal constituent"?

TABLE I.—Details with Results.

No. of sample.	Price.	Labelled.	Residue in grs. from 1 oz. of drug.	Percentage of impurity.	Grs. reqd. for 1 oz. soluble matter.	Remarks
	s. d.					
1	2 8	—	97	22·17	562	Second quality.
2	2 6	—	132	30·	626	Only quality. Described as white—fine.
3	3 8	Opt	35	8·	475	Highest price.
4	3 6	Elect.	100	22·85	567	Described as "Elect."
5	2 6	Opt.	120	27·42	602	Second price.
6	3 6	—	48	10·9	491	Highest price.
7	2 6	—	100	22·85	567	Only quality.
8	2 3	Opt.	126	28·8	614	Best quality.
9	1 5	—	56	12·8	501	Second quality.
10	4 0	Opt.	76	17·37	529	Highest price.
11	3 4	Opt.	70	16·	520	,,
12	3 6	Opt.	64	14·62	512	,,
13	6 0	Siam	5	—	—	

Those with a blank were labelled "Gum Benzoin" only.

TABLE II.—Numerical Order of Residues.

No. of Sample.	Residue.	Percentage.	Price.
			s. d
13	5 grains	—	6 0
3	35 ,,	8·	3 8
6	48 ,,	10·9	3 6
9	56 ,,	12·8	1 5
12	64 ,,	14·62	3 6
11	70 ,,	16·	3 4
10	76 ,,	17·37	4 0
1	97 ,,	22·17	2 8
7	100 ,,	22·85	2 6
4	100 ,,		3 6
5	120 ,,	27·42	2 6
8	126 ,,	28·8	2 3
2	132 ,,	30·	2 6

TABLE III.—Price Order with Residue Value.

No. of Sample.	Price.	Residue.
	s. d.	
9	L 5 per lb.	56 grs.
8	2 3 ,,	126 ,,
7	2 6 ,,	100 ,,
5		120 ,,
2		132 ,,
1	2 8 ,,	97 ,,
11	3 4 ,,	70 ,,
6	3 6 ,,	48 ,,
12		64 ,,
4		100 ,,
3	3 8 ,,	35 ,,
10	4 0 ,,	76 ,,
13	6 0 ,,	5 ,,

The PRESIDENT said this was a thoroughly pharmaceutical paper, and reflected great credit on the author. It showed how among the simpler drugs there were many which might be useful as forming the groundwork for a paper. The supply of drugs, as far as impurities were concerned, very largely depended on the demand; anything which tended to increase the demand for a better quality drug would tend to increase the supply.

Mr. UMNEY said the description that the author had given from the Trade Report of the *Pharmaceutical Journal* showed practically the condition in which the benzoin was received here; it then had to be broken and picked. The author had always referred to Sumatra benzoin being supplied and not the Siam, but he (Mr. Umney) thought that the Siam was always in the list, though the Sumatra was more in accordance with the Pharmacopœia. He was not sure that he caught Mr. Dunlop's words correctly, but he understood him to say that benzoin was not the general source of the benzoic acid of commerce.

Mr. DUNLOP said his expression was "on a large scale."

Mr. TYRER had no hesitation in saying that the concluding sentence of the author seemed to be entirely misleading in face of the facts. If it was Mr. Dunlop's query, he should be glad of the opportunity of disabusing his mind or anyone else's who had the same impression. As he understood the question was, why was it retained in the Pharmacopœia seeing that it was not a recognised source on a large scale of benzoic acid, which was its principal constituent? He wished to say that it was the source of benzoic acid. He would further like to remark that he knew of no instance in which the sophistication of toluol benzoic acid had been used without easy detection, and he had further good reason for knowing that it was not substituted in any degree, or mixed with the benzoic acid derived from gum benzoin. Without going into the question of the varieties of the gum benzoins, it was legitimate to use any gum benzoin of any kind or quality for the production of that which was its medicinal agent. It was quite another thing whether one gum might be substituted for another; that was more a question for pharmaceutical ethics. Benzoic acid as used in this country was derived from gum benzoin, and no adulteration with toluol acid was possible successfully.

Mr. MCEWAN thought the paper was of very great importance, expecially to retail traders; no doubt most wholesale men were aware that such a condition of things as there described existed. During the past six or seven years a good deal of work had been done commercially and chemically in respect to benzoins. In the first place, with regard to Sumatra benzoins, it was perfectly well known that the Chinese merchants, in whose hands this trade was, systematically manufactured it. They got it from the native collectors and mixed it up with woody matters, and so on, and prepared the benzoin very largely to suit the price that was to be obtained for it in London, and any who walked over the drug floors there could not help noticing the extreme variability of the drug. That led to the obvious conclusion that solubility, *per se*, was not altogether a reliable test; that was to say, you did not only dissolve benzoin, but you might dissolve some of these worthless resins which were added to it. That was where the contributions of Lüdy, Tschirch, and Dieterich came in. Dieterich, for many years following on Lüdy's investigations, systematically determined the saponification value of benzoin as well as the solubility. Lüdy's research in 1893 showed that Sumatra benzoin contained ten constituents, viz., free benzoic acid, free cinnamic acid, styrol, vanillin, benzaldehyde, benzol, styracin, cinnamic phenyl propyl ester, benzoresinol benzoic ester and benzo-resinotannol benzoic ester, the last two bodies constituting the resinous portion. The Siam resin, on the other hand, contained six bodies, viz., benzoic acid, vanillin, styracin, benzoic ester, benzoresinol benzoies and siaresinotannol benzoic ester, the amount of benzoic acid, free and combined, being 38·2 per cent. From this statement the real importance of the paper would be seen, because it was the first time for many years that any British chemist had approached the matter in this way, and it was really time that they had it determined what benzoin was to be used in medicine. Any pharmacist who had a true appreciation of his work would take advantage of the slight ambiguity of the Pharmacopœia, which did not definitely prescribe Sumatra, there being sufficient evidence in it that they might use Siam. Siam was altogether a more soluble resin; it was finer in aroma, and so on. A very large proportion of Sumatra resin was not used in pharmacy, and he thought it would be well, especially now there was a regular supply of Siam benzoin, if they had some authoritative expression with respect to it.

Mr. SEYLER said on lately examining into the subject, the first difficulty he encountered was as to the kind of benzoin to choose. He finally decided to take a good price Siam benzoin, and found it contained 17 per cent. of insoluble matter; it was chiefly woody matter. In the Pharmacopœia there were not sufficient directions as to the kind of benzoin intended to be used. In the tincture he prepared himself he found 17½ parts per 100 volumes of solid residue. Dr. Hill, of Birmingham, had found 18. He had himself determined the ester acid and the saponification number,

and to that he had added the iodine number, which he had found to be useful. There was very little available literature on the subject. One wanted to make a separation between the benzoic acid of resin and the neutral esters which were present. He thought it was high time that the subject was looked into by pharmacists, and he welcomed this paper as a very valuable and interesting contribution on the subject.

Mr. HOLMES said the importance of this paper lay in the attention it called to the variation in the quality of drugs. The wording of the description of many drugs was ambiguous, and it was very difficult to lay down a limit as to quality, but it seemed to him that in medicine only the highest qualities should be used. There was plenty of employment for lower qualities in other directions. Siam benzoin occurred in distinct tears, which had very few impurities, and getting the best kind was merely a question of price. With regard to benzoic acid being the principal constituent, he did not think it was ascertained how far the properties of benzoin as a remedy were due to other constituents. The benzoic acid of commerce might be derived from benzoin, speaking of the English article, but he would ask those in the wholesale trade whether there was not a considerable quantity manufactured on the Continent or elsewhere, not obtained from benzoin but simply flavoured with it. Some years ago, in the India Museum, he saw a sample labelled benzoin, looking very nice indeed, but on careful examination he found it was really a mineral—steatite or sulphite of calcium.

Mr. DRUCE said benzoin had two principal uses—one in medicine, and the other as a perfume for incense. For the latter purpose there was no doubt that the Siam was the more agreeable, giving a pleasanter perfume and being less irritating. The simple tincture of benzoin from Siam was more agreeable than the Sumatra benzoin, but he was not certain whether for inhalation the more impure article from Sumatra, after the impurities had been removed, was not the better. As Mr. McEwan had pointed out, the two differed greatly in chemical constitution. Some years ago in an old chemist's establishment he found a large parcel labelled "Siam benzoin," which contained something which was not benzoin at all, but gum acroides, the product, he believed, of an Australian plant, which contained benzoic and cinnamic acid. Whether the substitution was an accidental or intentional one there was no means of ascertaining, as it had been there many years.

Mr. MCEWAN said he discovered some years ago that gum acroides was largely used in the manufacture of sealing wax. It was a trade secret.

Dr. ATTFIELD, after referring to the interesting character of the paper, said it put the question, why was benzoin included in a Pharmacopœia? But the answer might easily be given. In the first place it was the source of benzoic acid, as had been stated authoritatively. It was equally well known that this acid had been obtained artificially, and one could imagine that in certain places a mixture was to be found on the market. It was also a source of antiseptic resins used in making benzoated lard, the whole efficacy of which was probably not due to the benzoic acid, but also to the odoriferous substances present. Two speakers had raised the question of the medicinal value of this article, but he did not know that it properly came within the province of the Conference. They must assume that medical men would not make use of such a drug on a sufficiently large scale to entitle it to recognition without good grounds. With regard to the characters indicated in a pharmacopœia, it was being recognised that pharmacists were becoming better educated, and that as a consequence less rather than more detail need be included in a description, especially in dealing with the qualities of substances which could not be well defined either chemically or physically. The odour of benzoin would come under that class. Again with regard to insoluble matter a Pharmacopœia could not recognise any proportion at all. It was generally stated to be soluble in rectified spirit, and it was not possible or desirable to go much farther, and say anything as to the exclusion of bark or anything of that kind. Here came in the value of this paper, not from a therapeutical point of view, which they could not expect, but as an aid to practical pharmacists in carrying on their business.

Mr. COLLIER said benzoin was largely used as a surgical application in the form of the compound tincture, as the old friar's balsam used to be. At Guy's Hospital they used some gallons of it in the course of the year, though they never used benzoin internally. Benzoic acid was also used in various forms, so there was quite a sufficient reason for including it in the Pharmacopœia.

Mr. DUNLOP, in reply to Mr. Umney's remark as to purity being simply a question of price, said the retail chemist, in buying Sumatra benzoin, had no guarantee whatever of the quality; he might pay four shillings and get no better an article than if he paid half-a-crown. This concluding query was suggested by two things: In the first place, a statement in Fownes' 'Chemistry' that hippuric acid was a large source of benzoic acid; and secondly, the relation between the commercial price of benzoic acid and the price of benzoin. At the present time, taking the cheapest sample quoted at 1*s.* 5*d.*, it would require 6¼ pounds of benzoin to give 1 pound of benzoic acid. Now 6¼ pounds at 1*s.* 6*d.* would be 9*s.*, and benzoic acid was quoted at 6*d.* an ounce in the same price-list.

Mr. MCEWAN asked if Mr. Dunlop allowed for the combined acid, or whether he only took the free acid?

Mr. DUNLOP said he made the calculation on the fact, which had been stated that benzoin yielded from 12 to 15 per cent. of benzoic acid. Mr. Holmes had referred to the different qualities of benzoin, and he remembered Mr. Martindale emphasising the same point at the London meeting, when he deprecated having any but the best quality of drugs. There should be definiteness to a great extent, and in many points that was what the Pharmacopœia lacked. The British Pharmacopœia recognised "tears" and "agglutinated masses." Squire recognised masses containing impurities which were left after treatment with rectified spirit; but the B.P. made no such reference. It should certainly go into such details as the odour of an oil, though at present it did do so to some extent.

The PRESIDENT hoped this paper would lead to the preparation of others of a similar character, which would be equally interesting. In commerce natural products of this kind were always liable to contain a certain amount of impurity, and it was not always easy to say whether they were accidental or not. There might be samples in the market which had very little value to the druggist, and yet might be very useful for the production of benzoic acid, just as morphine might be obtained from Persian opium, even more than from Turkey, though a druggist would not buy the former at any price. He proposed a vote of thanks to Mr. Dunlop.

The Conference then adjourned to the next day.

(Continued on page 146.)

NOTES AND FORMULÆ.

LACQUER FOR GLASS, CHINA, OR TINWARE.

Zinc oxydat., 150; ol. tereb., *q.s.*; dammar varnish, 90; ol. lini fervid.; bals. copaib., āā 20; oil ricini, 5; plumb. acet. subt. plv., 3. For painting tinware. To be applied as thinly as possible; two to three coats are necessary. For painting inscriptions, lampblack and resin mixed with a few drops of pure alcohol on a glass plate should be used. For red lettering, cinnabar should be used instead of lampblack. For direct inscription on glass, china, or tin, use the following lacquer:—Lampblack, 5·0; dammar varnish, 15; ol. lini fervid.; bals. copaib., āā 10; ol. ricini, 2·0; plumb. acet. or siccitav, 3-4.—*Pharm. Zeit.*, xlii., 201.

TO PREVENT THE CLOUDING OF SURGICAL MIRRORS.

An ingenious device is suggested by Wallis which, although very simple, is extremely effectual. It consists of smearing a thin layer of softened soap over the surface of the mirror and afterwards polishing with a dry cloth. The surface then remains perfectly clear, however much it may be breathed upon. With the laryngoscope the usual method of heating the mirror over a lamp can be dispensed with, and the above simpler process used.—*Med. Press*, lxiii., 286.

COCHINEAL AND AMMONIUM CARBONATE IN PERTUSSIS.

The popular English domestic remedy for whooping cough—"cochineal and salts of tartar"—has undoubted merits, although the precise explanation of its therapeutic action is not very clear. In Germany, Naegeli Ackerblon has successfully treated no less than eighty cases with the following elegant variant of this time-honoured remedy. Cochineal in fine powder, 5 to 20 centigrammes; ammonium carbonate, 1 to 2 grammes; syrup of orange, 20 grammes; distilled water, 100 grammes. Dose: A teaspoonful every two hours. Label: "Shake the bottle." The same author has found cochineal of service in several cases of intractable bronchial asthma.—*Bull. Gén. de Thérap.*, sec. *Pharm.*, ii., 169, after *Therap. Woch.*

PHARMACEUTICAL JOURNAL.

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THE CONFERENCE AT GLASGOW.

The second Glasgow Conference has been a great success, the weather (which on the whole was favourable), attendance, and smooth working of all the arrangements being even more satisfactory than could have been anticipated. Glasgow pharmacists have good reason to be proud of the success attending their efforts to entertain their brethren from all parts of the kingdom, whilst most of our important cities and towns are to be congratulated on being represented by large and influential delegations. Never, perhaps, has there been a more truly representative gathering of British pharmacists, and rarely has such general satisfaction been expressed. Messrs. M'Adam, Currie, and Anderson Russell vied with each other and with other members of the local committee in their efforts to secure the comfort of visitors, and the chemists of the West of Scotland must have spent money profusely to provide all the numerous conveniences—in the shape of guides, programmes, etc., etc.—that were freely available to all. The following summary of the papers read before the Conference, and published *in extenso* in our pages, is given in order to convey, in brief, the general conclusions of the authors:—

Attfield on Asafetida.

Having had occasion to pronounce authoritatively both on the English and Latin forms of spelling this word, the author has consulted eminent philologists, with the result that both the English and the Latin spelling of the word is to be "asafetida."

Farr and Wright on Pharmacy of Conium.

The authors describe the methods employed by them for the preparation of standardised products of conium, and solutions of its alkaloids, for physiological experiments by Professor Cash and Dr. Findlay. These consisted of (1) a fluid extract of dried unripe fruits, prepared by successive percolation, and standardised to contain 2·5 per cent. of total alkaloidal hydrochlorides; (2) a corresponding solution of the mixed alkaloids of the same fruits of the same strength; (3) Succus fruct. conii, prepared by maceration and pressing, using first rectified spirit and then with a mixture of spirit and water. This assayed 0·7 per cent. of total alkaloidal hydrochlorides. (4) A solution of pure conine hydrochloride; (5) solution of conhydrine hydrochloride; (6) solution of pseudoconhydrine hydrochloride.

Findlay on Conium Preparations.

Reporting on the preparations above mentioned, Dr. Findlay finds that conine and the mixed alkaloids are the most toxic, the lethal dose being for conine, 37 milligrammes per kilo body weight; for the mixed alkaloids, 39 milligrammes; for conhydrine, not less than 257 milligrammes, and pseudoconhydrine above that quantity. The fluid extract is as active on frogs as conine. The low percentage of alkaloids in the succus prevented definite results from being obtained, which would be comparable with the stronger preparations sent.

McWalter on Organotherapy.

For some time past it has been evident to physiologists and therapeutists that the dried powdered compressed tablets of various animal glands have not given such satisfactory clinical results, notably in the case of thyroid, as the fresh organs themselves or a suitable solution of their active secretions. The note of Dr. McWalter is practically an indictment of the popular tablet form of medication of this description, and he exhorts pharmacists to direct their attention to this branch of their calling. His opinion is that a glycerin extract of the gland, possibly purified by dialysis, will be found to be more efficacious than the preparations which at present monopolise attention.

Umney and Swinton on Citronella Oil.

A marked difference of physical characters has for some time been noted between the oil of citronella derived from native sources in Ceylon and that distilled by two English firms there. It has been suggested that the observed differences in specific gravity, optical activity, and other properties were due to sophistication with a wood oil, but the authors state that this is not the case. They attribute the difference to the presence in the oils distilled by natives of a sesquiterpene, which does not distil over in a current of steam, and which amounts to 37 per cent., whereas the products of the English houses on the island are readily distilled in that manner. The native oils were found also to contain a highly active terpene, giving a rotation of $-52°$ in 100 Mm. tube, a corresponding fraction of the oils distilled by the English firms having a rotation of only $-11°$. The authors are submitting the so-called sesquiterpene, which they have isolated, to thorough chemical investigation, the results of which will be awaited with considerable interest.

Dunlop on Sumatra Benzoin.

The author finds that price is of no criterion as to the value of Sumatra benzoin, as determined by the amount of foreign matter it contains insoluble in alcohol. This impurity ranges from 8 to 30 per cent. It would seem preferable to limit the pharmaceutical use of benzoin to the Siam drug.

Henderson on Soluble Arsenic Compounds.

It is proposed to use the soluble combinations of arsenic with the acid tartrates of the alkaline metals, salts which are analogous to the familiar tartar emetic, but in which the antimony is replaced by arsenic. The sodium arsenio tartrate is the salt advocated for medicinal use, since it is quite stable and readily soluble in water.

Atkinson on Pharmaceutical Ethics.

Some words in season on the subject of ethics have fallen from Mr. Atkinson, whose address on the subject will be read with profit and interest by all pharmacists. His views coincide in many points precisely with those which have been so frequently expressed in these columns. Not the least important part of his paper is that in which he treats of the question of much advertised and popular nostrums which profess to cure all diseases, and he calls for legislation to protect the public from the wiles of the advertising quack. In this respect the uneducated public are not alone in their gullibility; as we know too well the medical man is too often easily captured by enterprising "specialists," who pretend to present incompatible and nauseous drugs in "elegant and palatable forms" with any hook which bears a quasi-scientific bait; or even

go to the length of suggesting the prescription which should be used in certain cases, the chief ingredient of which is, of course their own specialty, and who frequently supply this "prescription" ready dispensed for the doctor's use. A healthy optimistic tone pervades the conclusion of the paper, a prophecy of an improved ethical status in our calling is delivered, and the path clearly indicated by which this desirable goal can be more rapidly approached.

Brodie on Easton's Syrup.

Brodie proposes to modify the B.P.C. formula for Easton's syrup by substituting hydrochloride of quinine for the phosphate at present used. He regards the small amount of hydrochloric acid which is thus introduced as immaterial, and states that most of the commercial syrups containing phosphates contain that acid in a larger amount.

C. Tyrer on Hypophosphites.

The characters and tests given in the present British Pharmacopœia are stated to be unsatisfactory, and indefinite, those of the U.S.P. being found preferable. A volumetric method for the quantitive determination of hypophosphites, based on their reducing action on cupric sulphate, is given and stated to be more accurate and generally applicable than those hitherto published. The odour of H_2S, which is sometimes developed by hypophosphorous acid, and the syrups of the hypophosphites is attributed to the use of charcoal as a filtering medium. Hypophosphorous acid usually contains a trace of free sulphuric acid, and in this condition when boiled with charcoal it evolves H_2S. It is therefore inferred that by mere filtering through charcoal, which is not conducted at high temperatures nor does the liquid remain for long in contact with the charcoal, H_2S will be generated. In our experience, however, the odour has often been apparent in pharmaceutical syrups which have not been in contact with charcoal at all. The author notes the necessity of testing barium hypophosphite for nitro-compounds derived from imperfectly-prepared barium hydrate. We have ourselves met with this impurity in hypophosphite of barium and in hypophosphorous acid, the presence of which is not generally suspected.

Bird on Medicinal Petroleums.

The author finds that the majority of white heavy petroleum oils of commerce, which are mainly derived from Russian sources, as well as some of the white petroleum jellies, contain notable traces of sulphur, probably derived from the sulphuric acid employed in the process of decolorisation. This impurity is particularly objectionable from a pharmaceutical point of view, since these oils are now much employed in the preparation of emulsions combined with hypophosphites. In the presence of sulphur compounds, such mixtures soon develop a marked unpleasant odour of H_2S. The author employs the following simple test to detect the presence of sulphur:—One drachm of the petroleum is shaken in a test tube with 30 minims of absolute alcohol and 15 minims of pure hydrochloric acid with a fragment of zinc. A strip of paper wetted with basic lead acetate is suspended in the upper part of the tube. This quickly indicates the presence of sulphur by darkening.

Druce on Scottish Plants.

The review of the Scottish flora by Druce contains much information of a practical nature, which will be useful to those who are able to visit the localities described. It will also be interesting to those less fortunate botanical pharmacists who have been unable to join this *réunion* at Glasgow, which is within easy reach of many localities rich in botanical treasures.

Seyler on Commercial Alkaloidal Tinctures.

Although in no case did the author find that tincture of nux vomica contained the full theoretical amount of total alkaloid, 0·229 parts per 100 volumes, several gave figures approximating with the limit of experimental error to that figure, and only one in seven samples of tincture examined fell very markedly below it; with the other tincture which is officially standardised, that of opium, only three fell within the limits of the author's test, the remaining eight containing considerably more than the prescribed amount of morphine. Belladonna tincture was very variable, two samples containing only about one-half the proper quantity of alkaloid, suggesting that inferior leaves had been employed for their preparation. Hyoscyamus tincture was too strong in alkaloid in three out of four cases, and tincture aconite gave results which showed great diversity of alkaloidal strength. Compound tincture of cinchona also showed great variation, the strongest, over strength, containing nearly five times as much alkaloid as the weakest.

Stratton on Phosphates and Platinum.

Attention is called to the fact that when phosphates are heated in a platinum vessel in the presence of carbon, a marked erosion and eventually an absolute fusion of the metal may result.

Stratton on Liquor Bismuthi.

The amount of citric acid found in combination in several of the samples examined was greatly in excess of the theoretical quantity, indicating that an attempt had been made to "improve" on the official formula by the addition of excess of ammonium citrate. Naturally this would, in some instances, cause a marked difference in appearance from the official preparation when dispensed with other ingredients. In one or two cases a marked deficiency of bismuth was observed.

Rideal on Disinfectant Soaps.

As a general basis, Dr. Rideal considers that an olein soap is preferable to one containing stearic or palmitic acids, since the latter give precipitates with hot water. Super-fatted soaps are considered to be useless for disinfectant purposes, since the free fat hinders the action of the disinfectant. The various disinfectants at present employed are discussed and suggestions made as to those most suited for use in this form. The fact that many of the so-called disinfectant soaps at present on the market have little, if any, greater germicidal action than good curd soap is shown by bacteriological tests.

Gordon Sharp on the Mydriatic Alkaloids.

The confusion which has arisen in the nomenclature of the alkaloids of the mydriatic group has bewildered chemists as well as medical practitioners. The slipshod manner in which many so-called researches have been conducted, has necessitated their laborious revision by experts, such as Ladenburg, Schmidt, Hesse and others, before even the groundwork of truth in this intricate subject came to light. It is not surprising, therefore, to find that medical men complain of the erroneous information that has been given them in past times on the subject of the mydriatic alkaloids. Dr. Sharp concludes that the names "daturine," "duboisine," and "scopolamine" should be definitely abandoned.

ANNOTATIONS.

In the Present Issue of the Journal the whole of the papers read before the British Pharmaceutical Conference at Glasgow, and the discussions thereon, are printed in full, this being the first occasion on which such a thing has been accomplished. It is believed, too, that practical accuracy has been secured throughout, for in spite of the great delay in receiving manuscripts, the authors have been able to correct proofs in every instance except three, and in those cases the papers were not in the printer's hands until Wednesday last. As has been pointed out on more than one occasion, those who contribute papers and delay sending the manuscripts in until the last day or two before the opening of the meeting, do not act fairly either towards themselves or towards the Hon. Secretaries of the Conference. Procrastination, however, is apparently innate in a large proportion of those who read papers before the B.P.C., and it is a question whether anything short of the printing of serious errors if even that will convince them of the extent of the risk they incur.

In Dr. Symes' Address reference was made to an interesting point in connection with the special exemptions under the Stamp Duties Acts. Those exemptions are stated both in the 44 Geo. III., cap. 98, and in the 52 Geo. III., cap. 150, and they plainly show that a distinction was made between those who were accustomed to deal in medicines and other tradesmen, as well as between proprietary preparations and medicines in recognised use. The Stamp Duty was applied to all chemical and officinal preparations to be used as medicines and exposed for sale, when the maker or seller had, or claimed to have, any occult secret or art, or any exclusive right or title for making or preparing the same. It was specified, however, that amongst the special exemptions were "all medicinal drugs whatsoever which shall be uttered or vended entire, without any mixture or composition with any other drug or ingredient whatsoever, by any surgeon, apothecary, chemist, or druggist who hath served a regular apprenticeship." Apparently, there was some advantage in having served an apprenticeship in those days.

A Further Exemption is equally interesting in its scope, as it applies to all "mixtures, compositions, or preparations whatsoever, mixed or compounded with or prepared from medicinal drugs, medicated or chemical preparations or compositions . . . . which shall be uttered or vended by any such surgeon, apothecary, chemist, or druggist as aforesaid (*i.e.*, 'who hath served a regular apprenticeship') . . . . the different denominations, properties, qualities, virtues, and efficacies of which mixtures, compositions, and preparations as aforesaid are known, admitted, and approved of in the preservation, cure or relief of any disorder, malady, ailment, or complaint, incident to or in anywise affecting the human body, and wherein the person mixing, compounding, preparing, uttering, or vending the same, hath not, nor claims to have, any occult secret or art for the mixing, compounding or preparing the same, nor hath, nor claims to have, any exclusive right or title to the mixing, compounding, or preparing, or to the vending of the same." The preparations must not of course be patent medicines, nor advertised or recommended in any way for the prevention, cure, or relief of disease.

Whether Apprenticeship Indentures, if produced in police courts, would in any degree influence the decisions of magistrates in cases brought to recover penalties under the Stamp Duties Acts would probably depend upon the circumstances of the case, but the experiment would seem to be worth trying. It is noteworthy that the only other persons, besides surgeons, chemists, etc., who have served a regular apprenticeship, who are mentioned as being permitted to sell simple drugs unstamped, are navy and army surgeons and persons "licensed to sell any of the medicines chargeable with a stamp duty." The last-named are not included amongst those persons entitled to sell mixed or compounded medicines unstamped, and as the latter statute of George III. has not been repealed, we have the interesting point raised by Dr. Symes. The fact of "any other person whatever licensed to sell any of the medicines chargeable with a stamp duty" being mentioned in one clause and not in the other may quite conceivably have the effect of prohibiting the sale of any mixed or compounded drugs, etc., by grocers and other tradesmen, except they bear the medicine stamp, whilst chemists and druggists who have served a regular apprenticeship would be exempt from that restriction.

Mr. Leo Atkinson's paper on pharmaceutical ethics was somewhat of a novelty for the Conference, the subject being on the borderline of what is or is not permissible as a topic for discussion at these annual meetings. The fact of the matter is that papers dealing with political and disciplinary questions encroach unduly upon the limited time available for discussions, as everyone, more or less, thinks himself competent to express an opinion on such subjects. At the same time the meetings would undoubtedly prove much more attractive to a larger number of chemists if contentious matters were allowed to be made the subjects of papers, and if an extra day were taken for the discussion of political, social, trade, and ethical questions, the Conference would probably become much more popular. Possibly the outcome of Dr. Symes' remarks, in cutting short the discussion on Mr. Atkinson's paper, may be the extension of the Conference days at Belfast to four.

The Numbers Attending the Conference this week are far and away in excess of those at any previous meeting. There were more than two hundred and seventy signatures in the Conference attendance book, and a large number of friends residing in the district also took part in the various social functions. Thus, there were over three hundred and fifty persons at the reception; some three hundred went up Loch Lomond on Tuesday afternoon; and about four hundred and fifty tickets were disposed of for Thursday's cruise. The visit to the Mugdock W[illegible]works did not attract so many on account of uncertain weather, but the rain was insufficient to damp the ardour of the visitors generally to any great extent.

The Appointment of Dr. Stockman as Professor of Materia Medica in the University of Glasgow appears to give great satisfaction, and there is no doubt of his fitness for the post. Pharmacology and therapeutics are his special subjects, and his reputation in this difficult department of experimental medicine is deservedly high. The materia medica of the medical man, including as it does the study of therapeutics, is, of course, a very different subject from the pharmacography of the pharmacist, which is narrowly limited in so far as it relates to knowledge of drugs rather than of their action. Nevertheless, pharmacy can hardly fail to profit by Dr. Stockman's appointment to this important chair.

The Chemists' Exhibition will be held at the Covent Garden Theatre, London, from August 16 to 20. There are numerous excursions arranged to London during that week from almost all parts of the Kingdom. Particulars are published in the advertisement columns of this week's Journal.

British Pharmaceutical Conference.

Sessions of Conference.

(Continued from page 142.)

SECOND DAY'S BUSINESS.

At the sitting of the Conference this morning,

The President said Dr. J. C. McWalter, whose paper was read on the previous day in his absence, owing to a slight misconception, was now present, and would like to say a few words on the points raised in the discussion.

Dr. McWalter, after thanking the President for his courtesy in allowing him to intervene at that stage, and after recapitulating the chief points raised in his paper, said his reasons for objecting to the use of dried and tabloid preparations of organic remedies were these :—The active properties of these glands were probably due to the presence in the gland of certain albuminoid substances, or of ferments, and either of these would in all probability be much altered or destroyed by the application of heat. Secondly any such process involved a certain amount of delay after the death of the animal, during which post-mortem changes would of necessity take place. In his opinion the gland should be treated not merely in the fresh condition, but absolutely warm ; if it were then treated with glycerin, the albuminoids and ferments would be dissolved, without any other constituents which might be harmful. It was futile to talk of a desiccated preparation being prepared aseptically, and kept perfectly dry. Such a thing was practically impossible, and probably the evil results which had occasionally followed the administration of these remedies were due to the production of toxalbumins by the moisture of the air acting on the tabloids. The glycerin preparation had also the advantage that it could, if desired, be injected subcutaneously.

Note on Some Soluble Compounds of Arsenic.

BY G. G. HENDERSON, D.SC., M.A.,

Professor of Chemistry in the Technical College, Glasgow.

In the course of an investigation into the reactions which take place between acidic oxides and the alkali salts of hydroxy-acids, I have prepared several compounds similar in type to tartar emetic, but containing arsenic in place of antimony. Some of these substances dissolve in water easily without undergoing decomposition, and may therefore prove of some value in the administration of arsenic medicinally. For this reason I have thought it desirable to bring a description of them under the notice of the Pharmaceutical Congress.

Arsenious oxide dissolves readily in hot aqueous solutions of sodium hydrogen tartrate, with the result that sodium arsenio-tartrate is formed according to the equation :—

$$As_2O_3 + 2NaHC_4H_4O_6 = H_2O + 2(AsO)NaC_4H_4O_6.$$

The new salt is best prepared as follows. The calculated quantity* of finely-powdered arsenious oxide is added in small portions to a boiling solution of sodium hydrogen tartrate. After all the oxide is dissolved, the solution is boiled for about fifteen minutes longer, and then filtered and concentrated to small bulk on the water bath. As the solution cools the salt crystallises out as a mass of delicate silky needles, which are collected on a filter, drained by the filter pump, and purified by recrystallisation from water or from dilute (50 per cent.) alcohol. A further crop of crystals can be obtained from the mother liquor by addition of alcohol.

Analysis showed that the formula of sodium arsenio-tartrate is $AsO.NaC_4H_4O_6.2\frac{1}{2}H_2O$. It crystallises from water in groups of colourless prisms, from 50 per cent. alcohol in colourless plates. If heated to 105°, or if left to stand over sulphuric acid in a vacuum, it loses its water of crystallisation. It is quite stable in the solid state, and may even be heated for several hours to a temperature approaching 200° C. without undergoing decomposition. It is easily soluble in water, has a rather sweet but not unpleasant taste, and is of course very poisonous. Its solution has an acid reaction. Seeing that this compound of arsenic is soluble in water without decomposition, it occurred to me that it might find useful application in medicine, and accordingly I handed some to the late Professor Charteris, of Glasgow University, who found that the physiological action of the new salt is practically the same as that of "liquor arsenicalis," for which, in many cases, it should prove an excellent substitute. It will be seen from the formula that 1 gramme of sodium arsenio tartrate contains arsenic equivalent to 0·3225 gramme of arsenious oxide.

Corresponding ammonium and potassium salts were also prepared in a similar manner, but for practical purposes the sodium salt has several advantages over these. Ammonium arsenio-tartrate is easily prepared, and crystallises in small lustrous needles, which are readily soluble in water, but it is less stable than the sodium salt. When kept for some time the crystals lose their transparency and begin to crumble down, and if then treated with water are found to have decomposed to some extent into arsenious oxide and ammonium hydrogen tartrate. Potassium arsenio-tartrate is obtained, though with greater difficulty than the others, as a white crystalline powder, which, however, is decomposed into arsenious oxide and potassium hydrogen tartrate when treated with water. (For details regarding these and other arsenio-tartrates, see *Journ. Chem. Soc.*, 1895, p. 102.)

Among the compounds which I obtained by the action of antimonious and arsenious oxides on salts of other hydroxy-acids, I may mention the antimonio- and arsenic-citrates. Both of these oxides were found to dissolve in boiling solutions of the primary citrates of sodium, potassium, and ammonium, and on addition of sufficient alcohol to the cooled solutions the new salts were thrown down in the form either of amorphous precipitates or of colourless syrups, which, however, became crystalline when left to stand for some time in contact with the mother liquor. The salts were purified by recrystallisation from hot 50 per cent. alcohol, and were found to have the composition indicated by the formulæ $(SbO)M_3(C_6H_6O_7)_2$ and $(AsO)M_3(C_6H_6O_7)_2$, where M stands for Na, K, or (NH_4) respectively. All form colourless crystals, which are easily soluble in water, and fairly soluble in dilute alcohol. The antimonio-citrates are quite stable, but the arsenio-citrates, while apparently stable when in the solid form, decompose if their aqueous solutions are heated. From a practical point of view they are probably less suitable for medicinal purposes than the corresponding compounds with tartaric acid, *i.e.*, the well-known tartar emetic and the arsenio-tartrate of sodium described above.

This paper was read by Mr. Naylor.

The President said they were indebted to Professor Henderson for bringing the matter before them, which was one of deep interest. They were so accustomed to look to the official solutions as almost the only practicable solutions of arsenic that any new combination, such as the sodium-arsenious tartrate, would be valuable. Its great solubility was an important point. In practice it remained to be proved whether the solution would keep any length of time, and further, to what extent it might be prescribed in combination with any drugs without decomposition. Those were points which experiment alone could prove, but in the meantime it seemed to be a very valuable salt, and one which deserved a trial by medical men.

Mr. Umney did not understand whether a definite formula was given for these compounds. If there were a loss of water on crystallisation it might be a very dangerous compound. He did not know whether the author said that the potassium salt was procured with pure sodium hydrogen tartrate, and he did not see why a potassium salt should not be formed equally well as the sodium salt.

Mr. Naylor said that point was dealt with in the paper.

Mr. Stanford wished to be allowed to propose a vote of thanks to Professor Henderson, who he was sorry was not present that day. He wished particularly to mention that this paper came from a celebrated laboratory at the old Anderson College, by far the oldest technical college in the Kingdom. This College was now merged in the Glasgow Technical College, which consisted of a great number of different establishments. It was not generally known to the citizens of Glasgow, and would not be known to the members of that Conference, that they had over 3000 students in this College, and that they were very indifferently housed, but they hoped in the course of another year or two to have a fine building, in which all the students could be accommodated. He should also like to mention that this was the only place in Glasgow where organic chemistry was taught.

Dr. Attfield said a little more attention should be given to this sodium salt, oxy-tartrate of arsenium and sodium. The

* 100 grams arsenious oxide to 192 grams crystallised sodium hydrogen tartrate.

formula given represented it as containing $2\frac{1}{2}$ molecules of water, which Professor Henderson would probably agree was theoretically impossible, it was only a short way of showing the constitution. But wherever half molecules were indicated, even only as a matter of convenience, it generally indicated that the salt was a mixture of two salts, one containing 2 molecules of water, and the other 3. This was a further indication that the salt was unstable, always varying in the proportion of water of crystallisation, and was therefore unfit for use in medicine. He thought medical men who desired a definite arsenical solution might pay a little more attention to the ordinary aqueous solution.

Pharmaceutical Ethics—A Retrospect.

BY LEO ATKINSON.

Thirty-one years have passed by since a paper was read by Mr. Joseph Ince before the members of the Conference at Nottingham. This paper is properly regarded as one of the classics of pharmacy. It occurred to the writer that reviving this subject might possibly induce some of our younger *confrères* to give consideration to the practical science of conduct, which there is reason to fear does not occupy a too prominent place in modern, or so-called up-to-date, business methods. At the time Mr. Ince's paper was written, the Pharmaceutical Society was a voluntary institution, and the Pharmaceutical Conference had only existed two years; anyone could keep open shop for the sale of drugs and poisons. The evil and danger of permitting medicines and dangerous drugs to be indiscriminately handled by ignorant traders was recognised alike by Parliament and the nation, so that two years later the Pharmaceutical Society was authorised by Government to examine and register all who hereafter should practise pharmacy as a business or profession.

Nothing could conceivably have been more opportune than the consideration of ethics in relation to pharmacy at this juncture. A new era was being inaugurated, and a new class of men bearing the stamp of educational fitness was expected gradually to replace and supersede the general traders who had appropriated the sale of drugs, and called themselves chemists and druggists. The pharmacist of the next generation must inevitably have some education and professional training; to such a man some code of ethics might be considered a part of his stock-in-trade. Consciously or unconsciously, everyone is guided by some principles in all social and business relations. Whether the moral standard be high or low depends mainly on education, intellectual bias, and environment. The great aim which ethics may claim to exercise on society is that each individual may so train his mind that his best actions become instinctive, and that which is mean or base repellant; it was this moral training which gave us a race of pharmacists in the past of whom any society might justly be proud. It is this training which has enabled us to retain men in our ranks at the present day who honourably maintain the high reputation of those who well and truly laid the foundation of British pharmacy.

Everyone will agree with Mr. Ince: "the first ethical rule of the pharmacist is the necessity of the absolutely genuine character of his drugs. No drug or remedy should be admitted into his shop other than that which, in case of dangerous illness, he would not hesitate to supply to the inmates of his own family circle."

The second rule is that the pharmacist degrades himself by the adoption of low and ruinous prices. So long as we sell articles sold by other classes of tradesmen we must submit to the same rate of profit. The guiding principle should be increased remuneration in proportion as the character of the articles makes greater demands on professional education and skill. The abstract soundness of this view can scarcely be questioned, yet the gradual reduction in dispensing charges is the most deplorable factor of these later days; the very foundation of professional pharmacy is being gradually whittled away. The ethical observance that dispensing charges should in no case be calculated on the initial cost of ingredients used is now held by increasing numbers to be unsound and untenable, yet to surrender this principle is to surrender the only title of professionalism pharmacy can claim. Exorbitant prices are in no wise to be defended, yet the man who cuts down his dispensing charges to the scale of pay of a bricklayer's labourer is an enemy to his order.

Advertising in its relation to pharmacy is a delicate subject. The fact is incontrovertible that advertising is the mainspring of commercial activity, and has been the means of building up enormous industries. We may concede at once the impossibility of framing any regulations in regard to the ethics of pharmaceutical advertising. We must, however, regretfully admit the advertisements of medicines and nostrums have an unenviable preeminence for qualities not very creditable. Unfortunately pharmacy has to bear the reproach of unscrupulous offenders outside its legitimate rank, the meshes of the Pharmacy Act did not encompass the manufacturer; any one, chimney sweep, costermonger, or a syndicate of quackery can flood the press and the country with lying undertakings to provide perfect health and happy old age for 1*s.* 1½*d.* the box or bottle.

The enormous increase in the sale of nostrums is evident from the Revenue returns, in the year 1872 the annual revenue from patent medicine stamps was £82,000, ten years later the amount was just doubled, in 1892 the tax produced £240,000, so that within the last twenty years the income from this source is tripled, and the people of Great Britain expend nearly three millions sterling on secret remedies.

The ethical attitude of the pharmacist in regard to advertised nostrums is replete with difficulty, many nostrums we recognise as useful and appropriate for the alleviation of ailments they are recommended for; of other specifics we may be ignorant alike as to composition or effect, but there is a third extensive class our intelligence assures us are hopeless frauds. Experience has taught most of us, the pill or potion will never be fabricated that can impartially cure consumption, cancer, tuberculous bones, kidney, liver, and brain complications, and all children's ailments. The public, we are quite aware, are induced to waste money and health on these wretched swindles. Amongst many anomalies is there anything more absurdly grotesque than a government which frames laws to deal with the length of a skirt, the quantity of glycerin in a hair-wash, the gestures of a clown or the innuendo of a song, yet a government that will not lift a finger to stay the brazen depredations of the quack on the health and lives of the people? We who are behind the scenes understand the subtle methods by which the public is influenced. Suggestive advertisements lead weak-minded people to fancy ailments purely imaginary. This method of imposing on ignorance and credulity has been reduced to a fine art. Surely the ethics of ordinary social life, as well as the ethics of pharmacy, impose an obligation upon us we should not shrink from observing. Though individually we can do but little to stem this torrent or minimise the evil, collectively it is not outside our power to bring this disgrace—clinging to us like the tunic of Nessus—under legislative interference and control.

There is another phase of advertising adversely affecting pure pharmacy; it seems paradoxical that in the domain of medicine the ordinary medical man should be quite as gullible as the general run of humanity. This discovery is presumably a transatlantic importation; our 'cute cousins have immeasurable refinements in gauging and catering for credulous man, be he medical or otherwise.

The modern medical curriculum has unfortunately restricted its requirements in pharmacognosy and materia medica to the narrowest limits; young medical practitioners have scanty opportunity of acquiring any real knowledge of drugs, thus it is they fall easy victims to the advertising manufacturer of ready-made physic. That which alluring advertisement fails to effect is accomplished by methods no self-respecting individual would descend to. The ethical casuistry is incomprehensible which admits of employing someone to undertake work you would be ashamed to do yourself. The old judicial maxim, *Qui facit per alium facit per se*, has lost its force in our trading morality.

Can we wonder the art of writing prescriptions is waning fast, and the national Pharmacopœia less frequently requisitioned than a heterogeneous collection of unofficial complexities? Medical disregard of professional ethics is extinguishing much that was best worth conserving in the joint interest of medicine and pharmacy; that this ethical neglect will bring its own Nemesis and exact a just retribution is not to be doubted. If medical men continue to be so stupidly irrational as to use and supply ready-made physic, the public will soon supply themselves without the intervention of either the doctor or the druggist.

Clearly, as dispensing diminishes, the pharmacist is bound to drift either into the ruck of general trade and sordid competition, or find salvation in catering for the higher requirements of science and scientific medicine. Man cannot live on abstractions. No amount of moral principles will replenish an impoverished exchequer. The downward trend of the bulk of pharmacy in one direction and the aspirations of others sufficiently indicate some unavoidable differentiation in the not distant future. There is no

special Providence watching over pharmacy to interfere with the inevitable laws of progress and decline. Excess of folly presages revolution, and circumstances apparently adverse may be hastening our avocation to a higher destiny.

It may not unreasonably be asked, Why discuss ethics if fierce commercial competition has virtually extinguished moral considerations in business affairs? What object can be attained by attempting to press forward when the aim of our desires moves farther off as we advance? History in this matter must be our guide. Above the cloud with its shadow is the star with its light. History has revealed to us that revolutions devour their own offspring. Does not science teach us that the aggravation of a disease not infrequently evolves a remedy? At this day, even with all the sidelights of biography and contemporary literature, it is impossible to determine the origin of the sudden great and salutary change in English manners and habits prevailing in the early years of this century. We can fix a period when the highest in the land esteemed hard drinking and foul language the prerogatives of a gentleman; we can fix a period a few years later when either the one or the other of these attributes would mean ostracism and exclusion from all polite society; this profoundly ethical change was uninfluenced by legislation or pressure of public opinion, it was silently and imperceptibly accomplished by force of examples lost in obscurity, but we rejoice to know this ethical change is binding to the present day.

Is it quite outside the range of reasonable probability that some such change may not sweep over pharmaceutical manners? A retrospective glance may assist our judgment.

Thirty-one years ago the passing of a stringent Pharmacy Act was considered the sole hope of effecting a great deliverance, expressed by Mr. Ince as follows: "Not that any legal measure will at one stroke like the wand of an enchanter transmute the incompetent and nondescript pharmacist into an intelligent and higher being; every Government measure must respect existing rights, and assign a date from which its operations must commence, The first visible effect of passing such an Act will be to flood England with little druggists' shops, and materially to swell the ranks of mediocrity. Time, the great restorer, will set matters right, and in due course we shall have men of superior culture and known ability; then, and not till then, may we truly talk of ethics not as polite observances, but as a code."

Thirty-one years have passed by. For twenty-eight years of this period we have had the Pharmacy Act and compulsory examination Mr. Ince so hopefully regarded. Must we not sorrowfully admit that so far neither by fulness of time or legislative restriction have those reasonable expectations been realised? We can now see clearly the incursion of mediocrity in the absence of higher educational qualification has been the perpetuation of a mediocratic class to whom ethical principles and their application vainly appeal. We see also the effect of the great democratic wave which has swept over all civilised communities. Strange would it be indeed if this revolutionary change should have affected in greater or less degree every business or profession to the exclusion of pharmacy. With past experience to guide us, we can see how far pharmaceutical ethics have suffered by the abnormal development of company trading; we discern the effect of an intense interest in trade and a reprehensible craze after cheapness, apparently inspiring every class.

Thirty-one years ago our aristocracy had little connection with trade in its general aspect. At the present day there is no branch of commerce, wholesale, retail, or industrial, our titled aristocracy have not invaded. Yet withal, we have reason to believe pharmacy is once again approaching the threshhold of a new epoch; the Pharmaceutical Society, whatever its backslidings may have been, has ever been steadfast in the cause of education; the latest effort is to raise the educational standard; to raise the educational standard of any business or profession must necessarily raise the status of the body corporate. Our hopes are centred in this upheaval; there is no more healthy force than vigorous all-round culture and the accession of men of wider culture will be welcome auxiliaries.

In view of these altering circumstances may we not usefully appeal to those who undertake the business training of young candidates for pharmacy? The apprenticeship stage is the stage when the mind is easily influenced yet permanently moulded, it is the time which, well or ill employed, affects a man's whole after life; habits at first cobwebs, at last become cables. There are a few practical corner stones on which any superstructure may be reared.

Take the inculcation of loyalty to the parent society as an ethical foundation; may part of the instruction be that it is a commercial blunder as well as a breach of pharmaceutical ethics to degrade the pharmacy to the level of a toy shop? Above all let it be understood that for a man to barter his intelligence and pawn his qualification to any trading adventurers is degrading to himself, degrading to his avocation, and a fraud on Society. There is a common breach of pharmacy ethics which calls for reform—the sale of scheduled poisons to friends or well-known customers without insisting on compliance with the Act. This is a constant trouble; it is not a small matter—it strikes at the very root of our position as responsible men, and is absolutely inexcusable on any ground or pretence whatsoever. It should not be a great tax on the memory to remember that a straight line is the shortest in morals as well as geometry. Bearing this in mind always in regard to our relations with our fellow-craftsmen, may we ever avoid the temptation to "convey a libel in a frown, or wink a reputation down."

As we expect to recruit our ranks in future from a higher class, it is not unreasonable to expect a higher sense of conduct. Ethical example and precept may yet become a living factor; it is idle to frame theories of moral perfection, which we know can never be more than theories. The observance of some rules of conduct may become customary; custom in those matters becomes stronger than laws. It is by custom the largest financial transactions are conducted without legal documents. Transactions involving millions daily are thus entered into. A large proportion might be repudiated on technical grounds, yet the positive morality of commerce is found sufficient to enforce them.

There is no association better fitted to foster and encourage practical ethics than the British Pharmaceutical Conference; its very *raison d'être* being mutual advancement and improvement. Individually each may do something towards the consummation of this object. Every man's mission here is to contribute his share to the sum total of labour. If we cannot attain the ideally possible there are many substantial stages of progress. In every great epoch some predominating idea is imperceptibly working, shaping the current of events and determining their ultimate issue. We need not therefore—

> "Deem the irrevocable past
> As wholly wasted, wholly vain,
> If, rising on its wreck at last,
> To something nobler we attain."

The President was sure that they had all listened with very much pleasure to Mr. Atkinson's paper. It indicated a large amount of thought, and his principles and arguments laid down were incontrovertible. They had something like 1400 members of that Conference, and he did not suppose there was one who could not say something on the subject; but he should point out that it would be necessary to curtail the discussion, because they had a great deal of business to get through that day.

Mr. Atkins, in thanking Mr. Atkinson for his paper, said he had no apology to offer for attempting to initiate a discussion on this paper, for some twenty-nine years ago he ventured to write a paper on the same subject. Mr. Atkinson, in his thoughtful utterances, said that they could not live on moral principles, but he (Mr. Atkins) ventured to think that they could not truly live without them. To regard pharmaceutical ethics from the point of view of their own body a man must work to eat, and he must eat to live, but that was not the end of him. Having provided for his existence, no man had a right to be a mere money grabber; they were sent into this world for loftier purposes than that. They should do something for the body corporate to which they belonged. What were the relations which they should sustain ethically one to another? He ventured to think integrity, generosity, sympathy with the distressed, and the hearty enjoyment of those who had been successful, should mark their progress. The function of the pharmacist was to make and to dispense, using the word in its wider sense, and it was the function of the medical profession to diagnose disease and write prescriptions. It was not the function of the pharmacist to poach on other men's property, but if they were found ethically lofty in the maintenance of purity and integrity in the manufacture of their preparations, they had a right to claim fair remuneration. With regard to the public generally, he believed it was very hard in these days for men to maintain a lofty ethical consideration of their position. The times were very hard to the smaller men. They would have to show that as pharmacists they were worthy of the trust reposed in them as

educated, honest, intelligent, cultured men, and he did not see how differentiation in regard to their work could well be avoided. It was cruel business that the grocer who had been fined for selling poisons should be able to at once contract himself out of the Pharmacy Act by turning himself into a company.

Professor Remington said the subject of patent medicines was perhaps as closely connected with this question as any, for the grand old principles which governed all honest men were well known to all on both sides of the Atlantic. He gave an amusing story of an American editor who had written articles and even prepared a Bill for introduction into the State Legislature, with the object of abolishing the use of Latin for prescriptions, and necessitating a clear statement in English of all the ingredients in any medicine to be affixed to every bottle, but who changed his views and abandoned his crusade in favour of the vernacular on its being pointed out to him that the indirect result would be to abolish the advertising of patent medicines. There was an established code of ethics in the Philadelphia College, which was enshrined in all their breasts, and adhered to by some, but he need not say anything about those principles of common honour and honesty, which were the same all over the world. Returning to patent medicine advertisements, he thought his countrymen got the idea originally from some of the old English wrappers, such as Godfrey's cordial, but they had certainly carried it to a great excess, the last development, which he had not seen in England, being to advertise what the medicine was not good for. For instance, you would have "Jones' influenza cure," as to which it would be said, "Good for consumption, influenza, bronchitis, pneumonia," and about forty other things, and then at the bottom, "Not good for corns."

Mr. Gadd (Exeter) suggested two ways in which they might all promote pharmaceutical ethics. One was in their educational relationship to one another, and especially to assistants and apprentices. A good deal of attention had been paid to this matter in Exeter, the Pharmaceutical Society having kindly given substantial assistance, and they were paying great attention to organic chemistry, so that any pupil could obtain the best teaching and access to a splendidly-equipped laboratory. The other point to remember was their fraternal relationship, which was too often neglected, and so long as the great majority of registered men were outside the Pharmaceutical Society it could not be said that they were truly loyal to their brethren. He hoped every local secretary would do all he could to get registered men to join the Society, for if they would all come in, the President of the Society would be able to approach the Government with a force which would be irresistible, and there would be some possibility of getting an amended Pharmacy Act.

Mr. Mackenzie thought they were all much indebted to the author of this paper, and suggested that the subject should be brought forward annually and thoroughly discussed, until some practical effect was produced. The question had so many ramifications, that with all the high culture which they could obtain, on which they all agreed, he must say emphatically that unless a man were in a position to carry out his higher aspirations, they would all come to nothing. Still, he never lost faith in the ultimate triumph of right principles. Many years ago an immense deal of good work was done in the direction of preventing the adulteration of food by the publication of a little book called 'Death in the Pot,' and he thought similar results with regard to medicines might be produced by a similar exposure in the case of some of the quack remedies. If they all united their energies they would soon see the time when the honest pharmacist and the skilful physician would be left alone to administer to the health of the public.

Mr. Anderson was delighted with the tone of the paper, and the discussion that had followed. It was pleasing to him that the Conference should take up such a subject, for surely its function was not confined to merely discovering what was best in pharmacy and promoting knowledge with regard to it, but it should also be extended to the application of that knowledge to the purposes for which it was intended. They in their work-a-day lives knew that the influence of trade upon them was almost overwhelming. He hoped that something useful might come from the discussion, and not merely the expression of pious wishes; and he thought the point that they should seek after in their discussions at local associations was to back up the Society and the Council so that they might have additional powers of administration over the general body.

Mr. Stanford said they heard of a general public which spent three millions a year on secret remedies, and this was a public that required a great deal of education. It was impossible to over-educate the people, no Board school could do it, not even in Scotland. The original Mr. Holloway said it was not the 5 per cent. of sensible people that he advertised for, it was the other 95 per cent.

The President was sorry that the pressure of business made it necessary to curtail the discussion on this interesting subject, but it was a matter which was worth consideration, whether a whole day at some future time should not be set aside for the purpose. They were just approaching the opening session of all the provincial associations, and he did not see why a paper on the subject should not be read at every association, as well as at Bloomsbury Square, during the coming winter, when the whole matter might be thoroughly sifted.

Mr. Atkinson briefly returned thanks for the way in which his paper had been received.

Note on Syrupus Ferri, Quininæ et Strychninæ Phosphatis. (Easton's Syrup.)

BY R. BRODIE.

The introduction of the phosphate syrups into the officinal materia medica is of comparatively modern date, but since their introduction they have formed a prolific source of communications to the trade journals, to local associations and to the Pharmaceutical Conference.

In an article on syrup of phosphate of iron and other syrups containing phosphoric acid, contributed by Carteighe to the *Pharmaceutical Journal* in 1871—a lengthy extract from which appears in the 'Year Book' of that year—Mr. Carteighe says: "First introduced to the notice of the profession by Mr. Greenish in a form more or less opaque, it was not until about ten years ago that it came into very general use.

"About this time Gale and Schweitzer each read a paper at one of the evening meetings of the Pharmaceutical Society, detailing processes for the preparation of this syrup in a form which should remain perfectly bright and free from deposit.

"Gale's process was introduced into the British Pharmacopœia of 1867, and since the publication of that volume the demand for this medicine has vastly increased.

"Its tendency to darken in colour after having been kept for some time was soon noticed, and Umney made some experiments with the view of preventing or retarding this change, but the results were not practically satisfactory."

The syrup of the phosphate of iron is as yet the only one official, but a number of compound syrups have been introduced, and have come more or less into general use, but the most important, or, at least, the most popular, are Parrish's syrup and Easton's syrup.

The formula for Easton's syrup seems to have been defective to begin with, as it was shown authoritatively and conclusively that a syrup prepared according to it could not possibly contain the active ingredients in the proportions stated, while the methods of preparing the ferrous phosphate and of obtaining the quinine alkaloid made the actual strength of the syrup depend upon the care or carelessness of the operator.

Besides, the syrup, inheriting the weaknesses of its progenitor, soon changed its complexion and became dark in colour, sometimes throwing down a precipitate and at other times becoming a solid mass.

These changes were attributed to various causes, and, of course, in the communications made at different times to the trade journals, etc., suggestions were offered for the improvement of the formula, according to the views of the authors, as to what caused the changes. For instance, excess of acid gets credit for producing disturbance, therefore the quantity is reduced. The amount of sugar is considered to be too great; it also is reduced. The quinine is also considered to be in excess, and it also is reduced at least a fourth; but something is lacking yet, perfection has not been reached; but a long step nearer it was made when the ferrous phosphate came to be prepared by the direct action of the acid upon metallic acid. This insured at least a definite and constant amount of phosphate of iron being present, also the use of phosphate of quinine instead of an indefinite amount of the alkaloid obtained by a very wasteful process insured the presence of a definite quantity of that salt, but the syrup does not yet remain "perfectly bright and free from deposit."

Mr. R. Wright read a note on Easton's syrup at the Conference

held at Nottingham in 1893, in which he criticised the original formula, pointing out some of its defects. He also gave a list of some writers on the subject, and mentioned the points to which their attention had been directed, and after summarising their opinions as to the cause of, or the remedy for, the various changes which occurred in the syrup, he concluded his paper by offering a formula for the consideration of the Conference.

Whether it be that the formula then given has proved thoroughly satisfactory or not, I do not know, but nothing further has been said or written on the subject since, as far as I am aware.

I incline to the opinion that the syrup is now made extempore by means of the concentrated liquor supplied by the wholesale manufacturer.

Now, while this may be the easiest way, it certainly is not the most satisfactory, for I hold that these liquors are not all that they are represented to be.

For the benefit of those who would prefer to make their own syrup, provided they could get a good working formula which would produce a syrup "perfectly bright and free from deposit," I beg to submit the subjoined formula, which I have made use of for a few years with considerable satisfaction.

Take of—

Iron Wire free from Rust	90 grains.
Phosphoric Acid Sp. Grav. (3 ozs. avoir.)	1·52 fl. oz.
Hypophosphorous Acid	1 drachm.
(Strychnine in Crystal)	6 grains.
Hydrochlorate of Quinine	120 grains.
Sugar	16 ounces.

Distilled water, sufficient quantity to produce 24 fluid ounces.

Put the acids into a flask and dilute with 2 ounces of the water, introduce the iron wire previously cut up into inch lengths, plug the neck of the flask with cotton wool and set aside, allowing the action to proceed without the application of heat. Dissolve the strychnine by means of a very gentle heat in an ounce of water to which has been added an additional drachm of phosphoric acid, after the strychnine is dissolved, add the hydrochloride of quinine. Filter both solutions into the syrup previously prepared by dissolving the 16 ounces of sugar in 8 ounces of water by means of heat, but care must be taken that the solutions as well as the syrup be thoroughly cooled before being mixed.

As the B.P.C. formula which appears in the 'Year Book' for 1887, and as the formula given by Martindale and by R. Wright, gives 120 grains of phosphate of quinine to 20 ounces of the finished product, it would appear at first sight that my formula contains considerably less quinine, but the difference is very small indeed, and not worth considering if a more permanent preparation be obtained.

However, I may just mention that the actual amount of difference is less than half a grain per ounce of finished product, as you will find by making the calculation for yourselves.

Remark.—I do not think any serious objection can be urged against the use of hydrochloride of quinine instead of the phosphate, because the quantity of HCl contained in the 120 grains of hydrochloride amounts only to about 11 grains, and I am led to believe that the most of the phosphate syrups to be found in commerce contain a much larger proportion.

The President said this was a good practical paper. He had always found it best to keep the syrup in small bottles, so as to prevent exposure to the air as much as possible. The principal point in Mr. Brodie's formula was the substitution of hydrochloride of quinine for phosphate, which might be all right from one point of view, but physicians might not think it quite the same thing.

Mr. J. C. Umney said there was one advantage in the use of anhydrous quinine, or the hydrochloride over the phosphate, which had often been referred to, viz., the existence of more than one phosphate, which had been the cause of a good deal of crystallisation in syrup. Speaking from memory, the difference in the proportion of anhydrous quinine was as 71 per cent. to 76 per cent. between different phosphates. That difficulty was got over by the use of the hydrochloride, or by the use of anhydrous quinine, which was constant.

The President then proposed a vote of thanks to the author, which was carried unanimously.

Hypophosphites.

BY CHARLES T. TYRER.

Apart from actual practice, the wording of the descriptions of processes for the qualitative analysis of hypophosphites is not conducive to a belief in their accuracy. The B.P. for testing sodium hypophosphite directs 5 grains to be dissolved in half an ounce of distilled water, and states that the solution when boiled for ten minutes with 11·5 grains of potassium permanganate and filtered should afford a nearly colourless solution. Five grains of calcium hypophosphite if of good quality will almost decolorise a solution of 12 grains of potassium permanganate on boiling the mixture for about ten minutes. The words "almost" "about," and "nearly" indicate a want of preciseness in the permanganate method.

According to the U.S.P., if 0·1 Gm. of dry sodium hypophosphite be dissolved in 10 C.c. of water, mixed with 7·5 C.c. of sulphuric acid and 40 C.c. of decinormal potassium permanganate V.S., and the mixture boiled for fifteen minutes, it should require not more than 3 C.c. of decinormal oxalic acid V.S. to discharge the red colour (corresponding to at least 97·96 per cent. of the pure salt). Even with an absolutely pure salt in excess the permanganate method is not quite satisfactory, the rate and violence of boiling making a difference of ·2 to ·5 per cent.

Of the above I have found the U.S.P. to give the most accurate results, the great advantage being the addition of acid sulphuric in excess, which keeps the manganese in solution and does not require filtration. The progress of the reaction can be observed much better. An improvement on this method is to add a slightly greater excess permanganate, say 1 per cent., and titrate the excess with acid oxalic. The permanganate method is of use only in the absence of other impurities, but no hypophosphite is absolutely pure. Quantities of calcium phosphate, sodium phosphite, sulphite, and hyposulphite have been added to the hypophosphites in percentages up to 2 per cent. and more, and apparently answer the B.P. permanganate test, the cause being that phosphite, sulphite, and hyposulphite reduce permanganate. The phosphate reduces it indirectly, that is, as the result of boiling calcium phosphate with calcium hypophosphite produces phosphite with the evolution of hydrogen.

Some authors allow to calcium, sodium, and potassium hypophosphites one molecule of water. This only occurs when the salt is deposited from a saturated solution in the cold. I note that Attfield (p. 400) gives "hypophosphite of sodium, $NaPH_2O_2H_2O$, sodii hypophosphis B.P.," whereas the B.P. gives "sodii hypophosphis, $NaPH_2O_2$."

In the directions for the calcium hypophosphite test, a "solution" of permanganate is to be used. In directions for sodium hypo test the word solution is left out.

The following experiments were carried out in order to arrive at a satisfactory method of estimation, and to observe the faults of the various reduction processes applicable.

Reactions with mercuric chloride:—

Calcium, sodium, and potassium hypophosphites react in the same way, whether excess of the hypophosphite or excess of the mercury salt.

In the cold, partial reduction to subchloride; on boiling, reduction to mercury: but when hydrochloric acid is present in excess, complete reduction to subchloride in the cold and on standing in cold to mercury.

This process is only available with success to the barium hypophosphite, as noted by Mr. Coull (B.P.C., 1895), who estimates as subchloride, and then only if his directions are exactly carried out. I have not found it yield satisfactory results with the other hypophosphites, there being a greater tendency to complete reduction to mercury.

Reactions with copper sulphate:—

Calcium, sodium, and potassium hypophosphites react in the same manner with copper sulphate.

(*a*) When the copper salt is in excess a mixture of protoxide of copper and copper is formed.

(*b*) When the hypophosphite is in excess copper results.

These reactions do not take place in the cold, even on standing for several days. More boiling is required to start a reaction when the hypophosphite is in excess, and when once started it is more violent. More boiling is required for the sodium than for the calcium, and for the potassium than for either. In all cases reduction is accelerated by the addition of a small quantity of sulphuric acid.

Reactions with copper chloride :—

With calcium. (*a*) Copper in excess, no reaction in the cold, reduction to subchloride on boiling.

(*b*) Hypophosphite in excess partial reduction to subchlor. on standing, reduction to subchlor. on boiling.

With sodium hypophosphite. (*a*) Copper in excess, partial reduction to subchlor. in the cold, complete reduction to subchloride on boiling.

(*b*) Hypophosphite in excess, partial reduction to subchlor. in cold, complete reduction to copper on boiling.

With potassium hypophosphite. (*a*) Copper in excess, partial reduction to subchloride in cold, to subchloride on boiling.

(*b*) Hypophosphite in excess, partial reduction to subchlor. in cold, to copper and protoxide on boiling.

With acid hypophosph., with copper sulphate, whether the copper is in excess or the hypophosphite in excess, reduction to copper.

With copper chloride, whether the copper or the hypophosphite in excess, partial reduction to subchloride on cold, and complete reduction to subchloride on boiling.

In the above, where a mixture of protoxide and copper or of copper alone results, hydride of copper is an intermediate product decomposed on boiling.

Estimation of the hypophosphites by reduction of copper sulphate solution has been found to be very accurate. One Gm. of the sample is dissolved in distilled water and barium chloride solution (5 per cent.) added in slight excess (5 C.c. in these experiments) to precipitate any soluble sulphite, sulphate, phosphite, or phosphate present. Allow to stand for fifteen minutes, filter and wash any precipitate; the impurities, if appreciable, can then be weighed or kept for the tests given below. Copper sulphate solution, 10 per cent., is added to the filtrate in excess, with 5 C.c. H_2SO_4 conc. The solution is then boiled in a beaker which will hold double the amount of liquor used to prevent loss by spurting. In ten minutes' boiling the whole of the copper is reduced to metal with a proportion of protoxide present, together with some barium sulphate. This precipitate is now washed by decantation, dissolved in nitric acid, 30 per cent., sodium carbonate added until a slight precipitate is formed, add acid acetic in excess; add potassium iodide solution in excess, and titrate with thiosulphate solution, adding starch liquor towards end of reaction. This is the best method. An alternative method is to neutralise the copper nitrate solution with ammonia, and titrate with volumetric solution of ferrocyanide. The addition of 5 C.c. H_2SO_4 is to enable the reaction to take place more quickly, and to commence at a lower temperature; not so much boiling is required. In this method there is a point of obvious importance to be noted. If acid sulphuric is added in large excess (say 20 C.c. in the above example), only one molecule of copper is precipitated against two molecules if there is only a small percentage of acid present. In the application of this method to the iron salt, this is dissolved in 20 per cent. solution of citrate of potash, and well diluted before reduction.

A method giving good results, but somewhat more troublesome than the above, is to reduce cupric chloride solution 10 per cent. to subchloride by boiling with the hypophosphite solution, wash the precipitate by decantation, dissolving in dilute hydrochloric acid, with the addition of a little nitric acid to oxidise, and boiling to expel excess of nitric acid and titration with volumetric stannous chloride. The critical point can be very exactly noted in this method, but the volumetric solution requires standardisation before using, as it is so liable to change.

Qualitative Tests.—In all cases the tests of the U.S.P. are more comprehensive and better than those of the B.P.

The barium chloride precipitate in cold solution comprehends all impurities likely to be present.

This precipitate includes phosphate, phosphite, sulphate, and rarely sulphite. An average commercially-pure sample will contain phosphite as its greatest impurity, it being on a manufacturing scale impossible to exclude this. Indeed, the general statement given in text-books gives no idea of the numerous bye reactions which occur on a large scale, owing to the influence of mass action, in several of which phosphite may be formed, and which render manufacturer's difficulties very great.

It has been stated that sulphites are reduced from sulphate present. I have made experiments with all the hypophosphites and acid hypophosph. on insoluble and soluble sulphates, preserving the mixtures for weeks, boiling for several hours, and keeping at a temperature of 120° F. for three weeks, paper soaked in lead acetate solution being suspended just over the solutions, and in no case has reduction taken place (SO_2 or a sulphite reacts immediately with a hypophosphite to form S and then H_2S). Thus confirming Mr. Naylor's experiments.

I have also taken mixed solutions of soluble and insoluble phosphites and hypophosphorous acid and hypophosphites, have boiled for hours, and stood for weeks, with silver nitrate paper and lead acetate paper suspended over the surface (H_2S discolours silver nitrate paper and lead acetate paper; PH_3 does not discolour lead acetate paper, but only silver nitrate paper), have also suspended Mr. Naylor's cup arrangement at a temperature of 120° F. over various mixtures, and have obtained no reduction to PH_3.

To differentiate between the barium chloride precipitates I use the following methods :—

(1) To a portion of solution of a hypophosphite is added magnesia test solution, phosphate is precipitated.

(2) Add barium chloride, acidulated with HCl, then boil for two minutes, add dilute acid nitric and boil; residue will be sulphate.

(3) Add barium chloride to the neutral solution of the hypophosphite, collect the precipitate and wash, scrape the precipitate off the filter paper and place in a test tube with 5 C.c. water, add some pure zinc gran., then hydrochloric acid and boil, suspending some lead acetate paper in the mouth of the tube. Any discoloration will indicate presence of sulphite; ·01 can be indicated thus.

(4) Take another portion of the above precipitate with 5 C.c. water, heat to boiling, and add 3 C.c. hydrochloric acid, continue well boiling for one minute, when all SO_2 will be driven off if sulphite present without having time to act on the phosphite. Then add granulated zinc, phosphite will be indicated by action of PH_3 on silver nitrate paper. (A piece of lead acetate paper should be also suspended over in case H_2S is present.)

In experimenting for the above tests I found that both acid hypophos. and acid phosphorous were reduced to PH_3 by zinc and HCl, so that it is very essential that the above precipitate should be well washed.

In examining samples of recent date, and of some years old, in no case did I find sulphite present. In the above experiments various percentages of sodium sulphite were added. The only way in which sulphite could be present would be if gases from coke furnaces accidentally found their exit in a room in which the hypophosphite was prepared. To test this I placed a plate containing moist sodium hypophosphite near an open coke furnace for two hours, a trace of sulphite was distinctly present.

The cause of the presence of H_2S in acid hypophosph. and hypophosphite syrups has been the subject of much discussion. Having failed by any means to reduce a sulphate by hypophosphite or acid. hypophosphorus, I looked for it as due to some other cause either in the process of manufacture or in its treatment in making syrups. Finding that zinc and sulphuric acid when added to acid hypophosph. evolved PH_3 and H_2S, I sought for an analogous reaction. Iron was found to act in like manner. Charcoal, however, was the only likely source, being used in filtration. Acid. hypophosph. has a slight trace of sulphuric acid in order to free it entirely from barium. I found that if such acid. hypophosph. was boiled with animal charcoal H_2S was evolved. Here I think is a possible cause of the trouble. Usually charcoal has been used for filtration, as it gets rid of any colour and frees from suspended barium sulphate, and the acid has been filtered hot through charcoal, the acid. sulph. is decomposed by the charcoal, forming SO_2, which is acted on by the acid. hypophosph., forming H_2S. The action also takes place in the cold on long standing.

There is, however, a slight distinctive odour generated in pure sodium and potassium hypophosphites which is neither PH_3 or H_2S. I have noted this odour in some experiments in the hydrogen compounds of phosphorus, and am inclined to attribute it to spontaneous decomposition of the hypophosphite resulting in gaseous P_2H_4.

Qualitative Tests.—Calcium. The solubility is 7·2 at 15° C., and commercial samples are not completely and clearly soluble under this.

The B.P. ignition test gives an incorrect impression. Hydrogen as well as PH_3 are evolved. A slight latitude should certainly be allowed in the presence of precipitates by barium chloride, say ·2 to ·3 per cent.

Sodium and Potassium Hypophosphites :—The U.S.P. tests for the detection of potassium in sodium should be included in the B.P

Some latitude with regard to barium chloride precipitants should be allowed as in the calcium salt. The nature of the article and the conditions of manufacture on a large scale render complete absence of phosphate and phosphite impossible. Indeed, the U.S.P. gives a latitude of 2·04 per cent. in the sodium salt, and 1·3 per cent. in the potassium salt. More phosphite will usually be found in the sodium salt than in the others.

A trace of carbonate is always, and should be always present for two reasons. First, to insure the complete absence of calcium, the latter being more soluble than is generally supposed ; and secondly, to prevent generation of the odour above mentioned on keeping. This has been found a very effective preventative to this decomposition. Under these circumstances if the salts are kept hermetically sealed and free from any contact with moisture, atmospheric or otherwise, no gaseous reduction products result.

BARIUM HYPOPHOSPHITE.—This salt, if completely soluble and neutral, would generally be found pure. It should be neutral. If alkaline, barium hydrate may be present and will deposit on boiling ; if acid, acid phosphate of barium may be present, or the excess may be due to acid. hypophosph., in which case it is particularly liable to gaseous reduction products on keeping.

One point of particular importance is the testing for nitrates, which can be carried out by the usual iron sulphate test. The presence of nitrates may be due to use in its manufacture of imperfectly prepared barium hydrate, which is usually made from the nitrate of barium. Mixtures of barium nitrate and barium hypophosphite are particularly explosive.

IRON HYPOPHOSPHITE.—The extended use of this article warrants its inclusion in the B.P. That according to the U.S.P. tests should be insisted upon. This is the ferric hypophosphite. The commercial article is unsatisfactory. It is often chosen on account of whiteness regardless of chemical composition. It is generally a mixture of ferrous and ferric hypophosphite. Further, the whiteness cannot satisfactorily be retained and lime be absent unless sulphate is present. It is not very soluble in acid. hypophosph. and pot. cit. neutral solution. The ferric salt, however, can be made perfectly soluble in these solvents. Latitude should be allowed in the presence of chlorides as from its manufacture and peculiar property when freshly precipitated, forming a solid mass, it cannot be quite free. Complete solubility and its freedom from excess of chloride, sulphates and phosphates are the chief points in testing. It is not, as U.S.P. states, quite stable in the air, being slightly deliquescent, and when damp liable to formation of phosphate when in contact with the air, and somewhat sensitive to the action of light, like most of the metallic hypophosphites.

ACID. HYPOPHOSPH.—This article is used as a reducing agent in analysis as well as in pharmacy. It should be of a special purity as regards the presence of dissolved salts. Barium hypophosphite is a possible impurity. The slight solubility of barium hypophosphite in acid. hypophosph. renders the presence of a trace of sulphuric acid desirable. There should not be more than a slight residue left upon evaporation and ignition on a porcelain crucible dish. The presence of excessive quantities of silica due to evaporation in bad porcelain is indicated by diluting acid with nine times its volume of water and standing for twenty-four hours, when any appreciable quantity of silica will separate out. Nitrate should be tested for as in the barium hypophosphite. The acid should not darken with H_2S., and it should be free from odour and colourless. The specific gravity should be 1137, corresponding to 30 per cent. of the acid.

Arsenic should be tested for in all hypophosphites, being a possible impurity in badly refined phosphorus.

These experiments were made in the laboratory of Messrs. Thomas Tyrer and Co., of Stratford.

The PRESIDENT said this paper indicated a large amount of thoughtful and careful work on the part of Mr. Charles Tyrer.

Dr. ATTFIELD said his view was that this paper supplied to pharmacists exactly what was wanted in the way of knowledge respecting hypophosphites. He had had the paucity of that knowledge very forcibly brought before him within the past twelve months, and all who had had anything to do with the making of pharmacopœias would agree that their knowledge generally respecting hypophosphites was extremely limited. The writer's research would go very far towards supplying, at all events, the knowledge that was wanted in pharmacy. He regarded the paper as a model pharmaceutical research—that was to say, a research in the applications of chemistry to pharmacy.

Professor REMINGTON said he realised that this was just the kind of paper that a pharmacist wanted. Properly directed criticism was never objected to by pharmacopœia committees.

Mr. BIRD said some time ago he was very much interested in these salts, and, like Dr. Attfield, was struck with the paucity of the information available. After all, it was only natural that it should be so, because it was only a manufacturer who had the opportunity of viewing these operations on a large scale, and pointing the means by which the impurities could be obviated. He understood that the reactions which occurred on a large scale were by no means so simple as those represented in the text-books. He was rather surprised that Mr. Tyrer found no sulphite in commercial hypophosphites, which was rather contrary to his own experience. The author had given a very ingenious explanation of the causes of the development of sulphuretted odours in phosphite syrup. With regard to the use of animal charcoal as a filtering medium, he (Mr. Bird) was afraid that it would have a tendency to remove a portion of the alkaloid. He had advocated a method of removing the impurities which consisted in the precipitation of them by a solution of barium hypophosphite. If a solution of sodium or calcium hypophosphite were taken and a solution of barium hypophosphite added to it very carefully a point would be found at which the filtrate after boiling with nitric acid would give no precipitate with sulphuric acid or barium salt. It was a curious thing that in a cold solution a barium salt would produce a further precipitate, and by that method it did not appear possible to remove the whole of the impurities, although the most objectionable of them could be so removed. In some samples of sodium hypophosphite he had found the barium precipitate to amount to nearly 10 per cent. of the weight of the original salt. Mr. Tyrer mentioned the presence of carbonate in sodium hypophosphites ; it was interesting to know the reason of its presence, but surely the large quantities which were found in the commercial salt were not necessary. Many samples of sodium hypophosphites were extremely alkaline. Mr. Tyrer did not mention the lead acid test of the Pharmacopœia, and he presumed his intention was that the barium chloride test should be substituted for it. As a matter of fact, no samples of hypophosphites with which he had ever met had ever been able to stand the lead acetate test. Some time ago he obtained some re-crystallised hypophosphites, and in the case of the calcium he got a slight precipitate, and in the case of the lead acetate a very copious precipitate.

Mr. J. C. UMNEY said he noticed that Mr. Tyrer now put the solubility of hypophosphite of calcium as 1 in 7·2 ; the B.P., 1855, put it as 1 in 6, and he had repeatedly had to call the attention of manufacturers to the fact that the solubility did not come up to the requirements of the Pharmacopœia. After this paper he hoped they might have an authoritative statement on the subject. Mr. Tyrer also referred to the presence of the nitrate in barium hypophosphite, which had been the subject of some controversy between Mr. Tyrer and himself. He used the barium hypophosphite for preparing the strong solution of iron hypophosphite according to the B.P.C. formulary, and detected the presence of the nitrate by ferrous sulphate, which was a very delicate indicator. He found that every syrup made from barium hypophosphite with nitrate in it went absolutely brown. Mr. Tyrer's explanation was that the barium hydrate from which the hypophosphite was made contained nitrate, and it being thus explained, he presumed that in the future the difficulty would not recur.

Mr. NAYLOR hoped Mr. Chas. Tyrer would give some further attention to this question of malodour, for he did not think pharmacists would accept his explanation as being complete. He did not question it so far as it went, but one could adduce instances of making syrupus hyp. phos. co. in which no charcoal had been used. He was surprised to hear that in testing so many samples Mr. Tyrer had not been able to find a trace of sulphite, but most samples in which that occurred were undoubtedly of foreign make.

Mr. MABEN said he used to be troubled a great deal by the development of a sulphur odour in making the syrup, but he satisfied himself some time since that it was due to the sugar employed. Quite 99 per cent. of refined sugar was faced with ultramarine, which was the cause of the trouble. It was very important in the case of all syrups to use absolutely pure cane sugar.

Mr. NAYLOR said that even using pure glycerin, you might get an unpleasant smell.

Mr. BIRD asked if, supposing a pure solution of the hypophosphite could be prepared, it would be possible to evaporate that and

produce the salt in a dry state and perfectly pure. He thought very few manufacturers would come forward and give as much information as Mr. Tyrer had done.

Mr. McEwan thought Mr. Maben did not mean to be taken quite seriously. He had been testing some sugars recently, and made it a point of always adding sulphuric acid to a thin syrup, and there was no development whatever of the sulphuretted odour, though there was when hypophosphorous acid was used. Sugar could now be obtained in any quantity quite free from any facing.

Mr. Nesbit (Portobello) said he came to the conclusion some years ago that it was the sugar which was in fault; pure sugar giving a pure syrup, and impure sugar the H_2S reaction. When oxidised by the addition of a little permanganate of potash, it gave no reaction, the sulphites being converted into sulphates. He was convinced that the trouble arose from the sulphites present in the sugar. No doubt they were also present sometimes in the other chemicals.

The President, in moving a vote of thanks to Mr. Tyrer, said his own experience coincided to some extent with of Mr. Maben; there was a certain peculiar odour, not purely sulphurous, which was sometimes noticed, but which was never found when sugar free from blue facings was used. Pure sugar could now be readily obtained, one firm in Liverpool making such sugar a special feature of their business.

Mr. T. Tyrer thanked the meeting for the criticisms on his son's paper. It was due to his son to say that he (Mr. C. T. Tyrer) was entirely responsible for all the statements contained in the paper. He appreciated and had anticipated almost all the criticisms that had been made, but he was sure in his own mind he had made a wise discretion in not editing the facts that his son had thought fit to publish. When he and his son took up in the last few years the manufacture of hypophosphites they went into it with total ignorance on the subject, having simply the text-books to go by, which helped them very little. Their business was to obtain as nearly an approach to a practically commercially pure article as could be found, and he agreed with the statement that the U.S.P. was the nearest approach to complete literature on the subject. It was gratifying to hear that his son's efforts to do something in the direction of pharmaceutical ethics, in the way of making a good article for the least possible money had been appreciated. Mr. Umney had referred to a matter which was directly the cause of greater care being taken. In the manufacture of hypophosphites you never knew where the trouble was coming from, you bought your hydrate, and ninety-nine times out of a hundred it would pass the test. Mr. Umney wrote to his firm in the course of business pointing out a certain defect, which they denied of course in good faith, bnt Mr. Umney was good enough to give details, as all should do when making complaints. His son immediately took notice of the matter, and was careful that that source of error should never occur again. As to the sulphites he was bound to say that he had not found them. He knew that this point was a matter of difference, and he had therefore made it his business to check some of the results and the statement that had been made. He did not like criticising foreign manufactures, but was sure there were some of unassailable purity. The Conference must take the paper with all its defects as the work of his son; he was pleased that they appreciated what he had done, and he was sure that he would be encouraged to do his best to place all the information that could honestly and legitimately be placed at their disposal.

Medicinal Petroleum.

BY F. C. J. BIRD.

Petroleum in the form of *paraffinum liquidum* and *paraffinum molle* has lately acquired considerable prominence as a medicinal agent, and the object of the present note is to direct attention to an impurity, of frequent occurrence in commercial samples, which interferes with the keeping properties of those combinations in which petroleum is usually administered.

When certain samples of petroleum oil are emulsified—a pure hypophosphite being one of the accompanying ingredients—the emulsion is found to develop, after a time, a strong sulphuretted odour. This naturally suggests the presence of sulphur in some form, and in order to ascertain to what extent this impurity occurs in the petroleum products of commerce, an examination was made of a number of samples obtained from various sources.

The principal tests available for the detection of sulphur are the following:—

(1). *The Combustion test.*—From 1 to 2 fl. ozs. of oil are burned in an apparatus similar to that used in the estimation of sulphur in coal-gas. A lamp is substituted for the Bunsen burner, and to ensure perfect combustion, the end of the trumpet-tube should be closed by an asbestos disc pierced with a circular hole to admit the flame of the lamp. Lumps of carbonate of ammonium having been placed on the disc, the lamp is allowed to burn for seven or eight hours, the condensed products of combustion (including washings of the "tower") heated with excess of nitric acid, and the sulphur precipitated as sulphate with barium nitrate. Several samples were burned in this manner, results being obtained in each instance agreeing with those given by the reduction test mentioned later on.

(2). The sample of oil is boiled for some time in a flask under an inverted condenser, with a fragment of metallic sodium. After cooling, water is added drop by drop until the sodium is dissolved; more water is then added and the liquids separated. If the petroleum contains sulphur, sodium nitro-prusside solution strikes a fine violet-blue colour. This test is only effective with sulphur compounds which form sodium sulphide with metallic sodium.

(3). On boiling with nitric acid, sulphur compounds are oxidised more or less completely, and may be precipitated as barium sulphate. This, however, is not a convenient method, for to ensure complete oxidation it is necessary to heat the oil for some time in a sealed tube with a large excess of nitric acid.

(4). Oils containing sulphur compounds give a brown coloration when boiled for a few minutes with alcohol, to which a few drops of ammonia and a little nitrate of silver solution have been added. This test has not proved satisfactory in my hands, being somewhat erratic and wanting in delicacy.

(5). No change in colour is produced by sulphur-free oil when boiled with a solution of litharge in caustic soda. The test solution is made as follows:—Caustic soda, 1½ dr.; distilled water to 10 fl. drs. Heat to boiling-point, and whilst boiling add litharge to saturation. Decant the clear liquid. It is by no means an easy matter to boil this solution with oil, for the mixture is liable to such excessive bumping that the contents are almost certain to be projected bodily from the test-tube with explosive violence. Moreover, this test, although giving a black to brown colour with much sulphur, is insensitive to fairly pure oils. I have been able to devise an improved test which is very sensitive, acts in the cold, and gives results agreeing closely with the indications of the reduction test. Place in a test-tube 1 fl. dr. of the white mineral oil to be examined, add ½ dr. absolute alcohol, and shake well; then add 2 drops of the litharge solution, and shake again for a few seconds. The mixture quickly assumes a deep orange tint with very impure oils, and according to the amount of impurity present passes through all the gradations of orange and yellow up to white with pure oils. The full depth of colour is attained in about a quarter of an hour. At present this test does not answer satisfactorily, either with yellow oil or yellow petroleum jelly.

(6) The reduction test with Zn and HCl is convenient, easily applied, and delicate. It only differs from the official test for sulphurous acid in the substitution of alcoholic HCl for the aqueous solution, the former being more satisfactory in every way. Reduction does not readily take place in dilute aqueous solution, whilst if stronger acid be used the action becomes violent and unmanageable. Petroleum oil or jelly 1 dr., absolute alcohol, ½ dr., are shaken in a test-tube, and 15 Mm. pure HCl added, with a fragment of pure zinc. A strip of paper wetted with subacetate of lead is suspended in the upper part of the tube, spurting being prevented by a plug of cotton-wool. The presence of sulphur compounds is indicated by the paper turning brown or black. The hydrogen evolved in contact with pure oils has a pleasant ethereal odour, which the presence of a slight trace of sulphur modifies in a marked degree.

From the examination of a large number of samples the following conclusions are arrived at:—

White petroleum oil having a sp. gr. of about 0·885 can be obtained more free from taste and odour than lighter oils, but it is evident from the above table that the bulk of the white oil found in commerce, much of which is sold as chemically pure, contains a greater or less proportion of sulphur compounds.

White petroleum jelly is frequently a mixture of cerasine and white oil, and partakes of the impurities of the latter. Very pale jellies which are true non-crystalline petroleum residues, generally contain sulphur, probably due to an analogous process of bleaching.

Yellow oils, although generally free from sulphur, are in many cases so tainted with a "paraffine" flavour as to be unfit for internal use.

The yellow petroleum jellies, as far as sulphur is concerned, are the purest, samples being now met with which are fairly pale in colour, contain no sulphur and are both tasteless and odourless.

In the preparation of white petroleum oil, solar oil (which is a distillate having a sp. gr. of about ·870) is stated to be redistilled, and after rejecting the strong-smelling lighter fractions, the remainder of the distillate is thoroughly dried and agitated successively with sulphuric acid and fuming sulphuric acid. This causes evolution of sulphurous acid and rise of temperature. The acid is separated, the last traces removed, with some of the products of its action by washing with caustic soda followed by water, and purification completed by filtration through animal charcoal, or sometimes by redistillation. I have endeavoured to ascertain, by inquiries made in various quarters, if this represents the process usually adopted, but my impression is that the details of the methods actually in use have not been made public. Some manufacturers say they do not employ sulphuric acid, yet their oils contain sulphur compounds. Another process of purification depends entirely on the use of animal charcoal. Petroleum is distilled *in vacuo*, and the selected fractions are filtered through granular animal charcoal in steam-jacketted filters.

Paraffinum Liquidum can be obtained either from Russian or American petroleum. There is every reason to believe that most of the commercial oil is derived from the former, as it lends itself more readily to the ordinary process of purification.

Russian petroleum consists chiefly of naphthenes, whilst the American variety is principally composed of hydrocarbons belonging to the methane series; the products of the two thus differ widely in composition. In the few instances in which the origin of the samples in the table could be traced with certainty, it was found that those derived from Russian oil contained sulphur compounds, whilst those oils originating in American petroleum were free. This suggests the possibility of the sulphur existing, either partially or entirely, in combination with the hydrocarbons as sulphonates. Crude petroleum contains on an average ·5 per cent. of sulphur (sulphides of methyl, ethyl, propyl, and other alcohols). These come over with the lighter fractions, and it is quite certain that the sulphur in white petroleum oil is introduced during the process of bleaching.

If an oil gives but a pale brown tint when tested with Zn and alcoholic HCl, an excess of hypophosphorous acid will prevent for a long time the development of any sulphuretted odour. When emulsified with hypophosphites about 3 minims of hypophosphorous acid to the fl. oz. of oil is sufficient excess to preserve such a mixture for several months, but clearly, decomposition is best avoided by the use of a sulphur-free oil or jelly. Many oils are all that can be desired in point of colour, freedom from taste, odour, and fluorescence, the sulphur compounds alone unfitting them for use in pharmacy, and although most manufacturers maintain that the removal of this impurity presents great practical difficulty, it is to be hoped that the efforts now being made at several works will result in the production of oils really meriting the designation, which they often so unworthily bear, of "chemically pure."

The physical characters of a few typical samples, together with their behaviour towards the litharge and reduction tests, are given in the following table:—

White Petroleum Oils.

No.	Sp. Gr.	Colour.	Odour.	Taste.	Litharge Test.	Reduction Test.
1..	·865	Water white	Odourless	Castor oil-like	Very deep orange	Black
2..	·880	,,	,,	Tasteless	Very deep orange	,,
3..	·885	,,	,,	,,	Pale yellow	Pale brown
4..	·885	,,	Faint odour	Castor oil-like	Yellow	Brown
5..	·875	,,	,,	Nutty taste	Orange	Deep brown
6..	·885	Faint straw	,,	Faint, disagreeable	Very pale yellow	Very pale brown
7..	·870	Water white	,,	Faint, disagreeable	Orange	Deep brown
8..	·865	Faint straw	,,	Faint taste	Orange-yellow	Brown
9..	·875	,,	,,	,,	Full orange-yellow	Deep brown
10..	·885	Water white	Odourless	Tasteless	Full orange-yellow	,,
11..	·870	,,	,,	,,	Orange-yellow	Brown
12..	·885	,,	,,	,,	Very deep orange	Black
13..		,,	,,	Faint, agreeable flavour	Colourless	No coloration
14		White	Odourless	Faint, nauseous taste	Orange	Brown
15		,,	,,	Tasteless	No coloration	No coloration
16..		Very pale yellow	,,	,,		Pale brown

White Petroleum Jelly.

Yellow Petroleum Oil.

17..	·890	Full yellow	Slight petroleum	Marked petroleum		No coloration
18..	·885	Pale ,,	Very faint	Tasteless		,,
19..	·870	,, ,,	Faint, agreeable	,,		,,
20.	·890	Full ,,	Faint	Marked petroleum		,,

Yellow Petroleum Jelly.

21		Full yellow	Odourless	Tasteless		No coloration
22		Yellow	,,	,,		,,
23		Pale yellow	,,	,,		,,

Professor Remington said the first use of soft petroleum was due to Mr. Houghton, of Philadelphia, who introduced a preparation which he called "Cosmoline," because he thought it would have a world-wide reputation and use. Shortly afterwards the Chesebrough Company, of New York, produced what was known as vaseline. Mr. Houghton, unfortunately, died before his preparation came into universal use, but it made a great fortune for those who succeeded him. In preparing the U.S.P. for 1880, the Committee were anxious to introduce this substance, but the two names he had mentioned were trade marks, and secret processes were used in their production. Fortunately, one of the Committee, Mr. Shepherd, went into the oil district of Pennsylvania on a tour of inquiry, and there met with a man who was willing to go into the matter, with the result that in a short time petrolavin was produced at the rate of 3*d.* a pound, whereas the cosmoline, which was practically the same, sold for 50 cents the ounce. He was put on the right scent by finding that the manufacturers were buying up the residue which was left in the immense tanks in which the crude petroleum was stored. In the bottom of these tanks, particularly in cold weather, there accumulated a deposit of what was called "B.S. oil," which was a great nuisance to the petroleum makers. Mr. Shepherd found that by running this stuff through animal charcoal in a steam-jacketed percolator without any chemical treatment, he could produce an article identical with cosmoline or vaseline. It was introduced into the British Pharmacopœia as the result of Mr. Shepherd's experiments, and since then it had been sold by pharmacists very largely in America, and he believed the boast that there was no chemistry in the process employed was well founded, for he did not think at the price at which it was sold it would pay to employ chemicals.

Mr. Stanford said it was very remarkable to find a perfectly odourless oil which contained sulphur, as it was generally understood that the sulphur compounds which were so difficult to remove were the cause of their characteristic odours. It was quite certain that the same treatment would not do for Russian oil and for American petroleum. The best he ever received, for a certain purpose, was sent him by Mr. Stewart, chemist, to the Broxbourne Oil Company; that was a Russian oil, and was perfectly tasteless and colourless. It was tried for a certain time by medical men as a substitute for cod-liver oil, but it was given up with the conviction that it had no effect whatever, and was not assimilated by the human stomach.

Dr. Attfield asked if Mr. Bird could state concisely what he considered were the characters which should be required in the fluid which he called paraffinum liquidum, for use in pharmacy? They knew a great deal about the solid and spirituous constituents of crude petroleum and something of the gases, but not much about the liquid. Could Mr. Bird suggest any additions to the characteristics indicated in the German Pharmacopœia?

Mr. J. C. Umney said the presence of sulphur in these refined white mineral oils was of importance for another reason. These oils were now being used largely in the south of France to replace pomades for *enfleurage* purposes, and it was very important that they should contain no sulphur. It was found that after standing liquid perfumes made by extraction with these pomades developed curious odours, but by the use of white mineral oils absolutely free from sulphur a good many manufacturers were now preparing concentrated liquids corresponding to the pomades, from which the perfume could be

shaken out with spirit, and which kept perfectly well. No part of the petroleum passed into solution, which had been the disadvantage hitherto of making perfumes from the old-fashioned pomades, in which, with a fall of temperature, some of the fats came out of solution, when rancidity and other troubles ensued.

Mr. Thomas Tyrer said sulphur seemed to be as malodorous as ever. In connection with the hypophosphite question he had been unfortunately the subject of severe criticism, the cause of which he knew to be the petroleum used in the emulsion. It was therefore very gratifying to him to find an authority like Mr. Bird coming in at the psychological moment to his assistance. He knew a case in which a very large quantity of petroleum emulsion had gone bad and had to be destroyed, and on investigating it to a certain extent he satisfied himself that the petroleum was of the character Mr. Bird had described; and further, that there was no reason why an article perfectly free from sulphur compounds should not be produced. In fact, he availed himself of an opportunity to do so, and found it pay him very well.

Dr. McWalter asked if Mr. Bird had not found a decidedly acid reaction by the tests commonly used? He had not found any of the soft paraffins as useful as vaseline for that reason, but even vaseline would get acid if it were kept a short time, and that was the great drawback to its still more extended use for skin affections.

Mr. McEwan asked if Mr. Bird had looked for any amylin products, to which the fluoresence sometimes noticed had been ascribed, and which might to some extent account for the odour?

The President remarked that the statement by Professor Remington that no chemistry was used in the production of the American preparations probably applied only to the yellow ones, not to the white oils.

Mr. Seyler asked if Mr. Bird could give any data as to the quantity of sulphur in these oils?

Mr. Bird said he had been much interested in Professor Remington's reminiscences of the production of vaseline and cosmoline; which reminded one of the early days of the gas industry when the by-products were really of no value, whereas at last they became almost more important than the gas itself. As to the odour of these sulphur compounds, that was the deceptive part of it. They were practically free from taste and smell, and there was no indication to the senses of any sulphur being present. In reply to Dr. Attfield, the only addition he could suggest to the characters mentioned in the German and American Pharmacopœias was the sp. gr. 0·885 to 0·890, and in addition to the other tests, one of the two he had mentioned; the hydrogen was applicable to yellow samples, and had that advantage over the lead. He sympathised with Mr. Tyrer when his hypophosphites got a bad name through the fault of the petroleum emulsion, but did not think it was the first instance of the kind. He knew of preparations of petroleum which had gone wrong, and as they contained hypophosphites, the malodour had been attributed to them. The manufacturers with whom he had been in communication said there was great difficulty indeed in removing sulphur compounds from the white oils, but he noticed that the products of different manufacturers varied very much in the proportion they contained, so that evidently some processes were better than others. As far as he had observed, these oils when agitated with alcohol gave a perfectly neutral solution; he found no free acid whatever. He had not time to make any quantitative experiments, and could not say how much sulphur was present.

The Conference then adjourned for luncheon.

The Salient Features of the Scottish Flora.

By G. C. Druce, M.A., F.L.S.

The following is an abstract only of a short extempore lecture by Mr. Druce under the above title:—

Our British flora includes altogether about 1800 species, of which between sixty and seventy are confined to Scotland, some of which are very interesting; but they are not spread all over Scotland, nor are they seen by every tourist, but only by those who go outside the beaten track, and up into the mountains, for the majority of them are essentially mountain plants. Taking the natural orders, there is of the Ranunculaceæ only one species peculiar to Scotland, and that a doubtful one. Of the *Cruciferæ* there are two. Of the Caryophyllaceæ there are six or seven, mostly alpine species. Of the Leguminosæ, four or five, one of which, *Lathyrus niger*, or black pea, is not a mountain flower, nor yet positively made out to be an absolutely wild plant. In the romantic pass of Killiecrankie it may be found, but it requires searching for. Of the Rosaceæ there are only two or three species peculiar to Scotland, one of which is only found in the Isle of Arran, and it is rather an open question whether *Pyrus scandica* is a distinct species or a hybrid of the mountain ash and the true *Pyrus*. The Umbelliferæ are not specially represented in Scotland, but of the Compositæ there are four or five species. Of the Ericaceæ or heath tribe there are four or five only, and some of these are only found in very limited areas. One, the very beautiful blue heath, *Phyllodocæ taxifolia*, is found only on a certain mountain in Argyllshire, though it is common enough in Norway. Another ericacious plant, though not at all like the heaths, is one of the wintergreens, *Pyrola uniflora*, which is scattered over four or five localities, extending up to Ross-shire, but is more frequent in the locality adjoining Perth, on Lord Mansfield's estate at Scone, from whence the coronation stone was brought. At one time Dr. Buchanan White, one of the greatest of Scottish botanists, went with him to try and discover this plant there, and after walking about a long time he thought he had found it. Dr. White thought it was not the real thing, and they sat down and argued it out for some time until, at length, they saw a plant actually in flower. It was really very abundant in that locality, but was not often noticed because it rarely flowered, being nibbled at so much by the rabbits. Of special Labiates there are none, but the dwarf beech is not infrequent, and there are four species of willows, which do not exist southwards. Of liliaceous plants there is one species, a Solomon's seal, not the one common in Britain, the root of which is, or was, used in medicine, but differing considerably from it, the leaves being in whorls of three, and the plant altogether of different aspect. In the beautiful district round Craigendall, and near Blair Athol, this *Polygonatum verticillatum* was found; he was once taken a good many miles when a youth to find a specimen, which proved to be a white foxglove, though he had not the heart to disabuse his guide of his error. There are four or five plants of the rush family not found South of the border, two not being of an alpine character, although called so, the *Juncus alpinus* and *Juncus balticus*, the latter being common on the coast of Aberdeenshire. Of the sedges there are eight or nine, two of which are not alpine. *Carex salina* was discovered not long ago at Thurso, and the following year at Beauly, north of Inverness. It is a common plant in Norway where it is extremely variable and has had some twenty different names given it by Scandinavian botanists. Another sedge had recently been found in Argyllshire which was formerly supposed to belong solely to Ireland, and there was only found in one place, and was gradually disappearing. Of grasses there are five or six peculiar to Scotland, one of which the holygrass or *Hierochloe borealis*, a beautiful species, had an extremely interesting history. It was said to have been discovered in Glen Carig by George Doune, of Forfar, but Hooker, who did not treat Doune with much respect, spoke of it as a "reputed discovery," and no one else ever found it at Glen Carig. Recently, however, Robert Dick, of Thurso, had found it in the Thurso river, and he (Mr. Druce) was proud to possess a specimen gathered by Robert Dick himself in that locality. So far he had mentioned only those plants which grew away from the ordinary routes; the others massed themselves pretty much in four localities. First, the mountains of Ross-shire and Sutherlandshire, where the *Arctostaphylos alpina* is found on the shoulders of the mountains. Somewhat higher, from 1200 to 3000 feet, you get a pretty little plant, the *Azalea procumbens*, or *Loiselluria procumbens*. It reaches its maximum of frequency not in Ross-shire, but further south on the Cairngorms. In Ross-shire also there is a lowland plant, one of the Ranunculæ, *Caltha radicans*, belonging to the same group as the marsh marigold of English meadows. The Scotch species differs slightly in the outline of the leaves, and by the habit of rooting at the nodes. This again was discovered by Doune, of Forfar. He had had the pleasure of finding it in Forfarshire, and also in Ross. It grew only in extremely shady places, and this had no doubt caused the modification in its habit. The next locality was further south, viz., Kirriemuir, better known as Thrums, a district to be recommended to anyone desirous of a rich harvest of Scotch botany, and it also included some very beautiful scenery. There may be found at least ten or twelve species which it would be difficult to discover elsewhere, even in Scotland. Conspicuous amongst them was the *Ergaron alpinus*, a beautiful blue composite plant which only grew in very inaccessible places. In England the sow thistle is yellow, but this alpine

species is blue; it grows at an elevation of 7000 to 8000 feet in a few rocky fissures in Forfarshire and Aberdeenshire. Farther north is a distinct area, best visited from Dee-side, and there in the secluded forests of the Duke of Fife and Mr. Farquahar, on the mountain called Craigendall, is found an extremely rich selection of Scottish plants, which can be gathered without danger. *Astragalus alpinus* last June covered acres of ground, and several sedges also abounded. The richest district of all, however, is found in the Breadalbane Mountains. Ben Laws was one which nearly every tourist climbed, and when he got to the top he was well rewarded, especially if he were a botanist. He might be quite sure of seeing *Saxifraga cernua* and *Carex vistulata*, which were found in no other part of Great Britain. It very rarely flowered, but is reproduced by little bulbules in the axes of the leaves, and despite the depredations of botanists, still holds its own. With it is a plant not exclusively Scotch, the blue *Myosotis*, much deeper in tint than the forget-me-not found by English streams or in the Scotch lowlands, and somewhat different in aspect, having a beauty peculiarly its own. Out of the sixty-five plants peculiar to Scotland, something like thirty may be found on Ben Laws alone. His object in coming to Scotland this summer was to try to add one more to the flora of that district, because some time ago a friend brought him a sedge he had recently found there, which he thought must be investigated on the spot, and he had reason to believe that it might prove to be *Carex helvola*, a species not known as yet in any precise locality of Great Britain.

The President moved a hearty vote of thanks to Mr. Druce for his communication, which would be valued by all botanists, especially those who were about to visit the localities he had named.

Note on the Strength of Commercial Samples of Alkaloidal Tinctures.

by clarence a. seyler, b.sc., f.i.c.

Among the subjects of investigation suggested for the present meeting of the British Pharmaceutical Conference was the strength of commercial samples of alkaloidal tinctures, and a number of these having been submitted to me as analyst for the Glamorgan County Council during the past and present year, I thought it would be of interest to collect the results, which I have now the honour to communicate.

The tinctures examined were the following:—Nux vomica, belladonna, hyoscyamus, aconite, cinchona, and opium.

In most cases the amount of extract and the specific gravity was determined as well as the total alkaloids.

With regard to the methods employed, the solids were determined by drying 5 cubic centimetres upon coarsely powdered pumice contained in a flat nickel dish and heated in a current of air in Soxhlet's drying oven at a temperature a few degrees over 100 C. The specific gravity was taken by the picnometer. The total alkaloids were determined gravimetrically according to the methods employed by Farr and Wright in their admirable series of papers to be found in the 'Year Book of Pharmacy' and elsewere.

The following scheme indicates the method of procedure:—

A. 10-100 C.c. tincture evaporated to drive off alcohol—volume being made up with water. Cool, add 1 C.c. semi-normal acid and filter through cotton wool into separator. Shake up with 10 + 5 + 5 C.c. chloroform till this is colourless. Separate.

B. *Purified Acid Tincture.*—Add 2 C.c. liquor ammon. B.P. and shake with 10+5+5 C.c. chloroform till this, on evaporation, gives no precipitate with Mayer's reagent. Separate.

C. *Crude Coloured Chloroform.*—Wash with three portions of acidified water (20 C.c. water and 2 C.c. semi-normal acid). Separate.

D. Washed coloured chloroform. Reject.

Add washings to B.

E. *Crude Alkaloid.*—Shake with 3 portions of acidified water as in C. Separate.

F. Residual tincture. Rejcct.

G. *Alkaloidal Salt Solution.*—Add 2 C.c. liquor ammoniæ and shake with 10+5+5 C.c. of chloroform as in B.

H. Chloroform on evaporation must give no precipitate with reagent. Reject.

K. *Pure Alkaloid*—Evaporate, weigh, and titrate.

L. Alkaline residue. Reject.

In the case of nux vomica and of quinine wine, it was found more difficult than was expected to extract the alkaloid so completely that the residual tincture shall yield no trace of alkaloid when shaken with a fresh portion of chloroform. 10+5+5 C.c. only extracted the alkaloid completely when not more than 10 C.c. of tincture of nux vomica were used; with 25 C.c. the treatment had to be often repeated. This is especially the case if violent agitation is avoided with a view to prevent the formation of those obstinate emulsions which render the process so tedious. In this case a further extraction with 5 portions of 5 C.c. often failed to remove the alkaloid completely, and violent agitation seems to be necessary.

I can strongly recommend the suggestion of Platt, in the *Journal of the American Chemical Society*, for the separation of the resulting emulsion. The emulsion is simply filtered through a layer of about 2-4 centimetres of tightly-packed cotton wool by means of the filter pump. The following apparatus has been found very practical:—

The filter is made of a piece of combustion tubing drawn out into a long tube about the thickness of a knitting-needle. A tap separator is fitted with a cork through which a glass T tube passes, the horizontal limb of which is connected with the pump, while the filter tube passes through the vertical limb into the separator, connection being made by a piece of rubber tubing. The pump should be fitted with a three-way tap, by means of which, by a single motion, the interior of the separator may be connected with the exhaust or with the outer air. The emulsion is gently sucked through the filter, when it separates into two clear layers, the lower of which is chloroform, and can be cleanly tapped off.

The same apparatus I have found most convenient for filtering in titrations with Mayer's reagent, the cotton wool being replaced by a prop of glass wool and a thin filtering layer of fine asbestos. A few drops can be rapidly filtered through, tapped off and tested. By this means a separation can be effected in a few minutes which would otherwise require several days and the labour of the process is much lightened. The chloroform was finally distilled off in a small flask dried in the air bath with the aid of the hand bellows and weighed.

Although the principle of titrating the residual alkaloid is a good one, I have not been able to get quite satisfactory results with any of the indicators used. With iodeosin the end reaction was not sharp enough, the colour becoming very faint, but then vanishing slowly. Solution in excess of semi-normal HCl, and titrating back with N/100 baryta and hæmatoxylin, gave on the whole the best results, but they were very erratic, the end reaction being often inexplicably indistinct.

In the case of tincture of opium I employed the method of Teschemacher and Smith modified by Dott. This I prefer to the B.P. process or any modification of it for the following reasons:—It requires a small quantity, 25 to 50 C.c, of the tincture, it avoids the uncertainty involved in taking aliquot parts of the whole and allowing for the volume of the precipitate as in the lime methods. The precipitated morphine was collected upon the filtering disc of a Hirsch funnel, sucked as dry as possible, and the moisture displaced by a very small quantity of morphiated spirit, and the precipitate then washed on the filter with benzene to remove any narcotine, dissolved in excess of N/20 HCl, and titrated back with baryta water, using hæmatoxylin as indicator. Here again the indicator is the weak point, the end reaction being sometimes very sharp, but at other times unsatisfactory.

The results are shown upon the following table, all being expressed in parts per 100 volumes:—

Nux Vomica.

Solids.	Total alkaloids.
1·30	0·226
1·21	0·216
1·66	0·202
1·04	0·200
1·07	0·196
1·28	0·192
1·24	0·114

The tincture should contain 0·229 part of alkaloids per 100 volumes. In no case was this amount reached, and in several the amount fell very considerably below. Still even this imperfect method of standardising the tincture is without doubt of great value, the variations being with one exception without much importance.

Tincture of Belladonna.

Alkaloids.	Solids.	Specific Gravity.
0·028	1·38	·9297
0·023	—	·9233
0·019	1·05	·9273
0·014	0·96	·9355
0·014	0·55	·9568

Farr and Wright suggest 0·026 part of alkaloids. These results show a variation of 50 per cent., and in the last case proceedings were taken on account of the deficiency of alcohol. The low alkaloid seems to show that in several cases foreign leaves were used instead of the English ones directed by the British Pharmacopœia. The strength of the alcohol on the average was only about 3° under proof except in the last case, which was over 30° under proof.

Tincture of Hyoscyamus.

Alkaloids.	Solids.	Specific Gravity.
·003	3·92	·9310
·011	2·96	·930
·013	—	—
·014	—	—

Farr and Wright suggest 0·010, so that except in the first case all the samples were above this strength.

Tincture of Aconite.—This should contain about 0·050 part of alkaloids and 2·3 of solids, and have a specific gravity of about 0·8550. On this basis we may classify the samples as follows :—

	Alkaloids.	Solids.	Sp. gr.	Remarks.
3 over strength	0·0628	2·80	0·0544	
	0 060	1·29	0·8517	
	0·052	3·05	0·8729	Spirit weak.
3 good or fair	0·050	2·37	0·8591	
	0·045	2·02	0·8410	
	0·044	0·70	0·8472	
3 weak	0·036	1·97	0·8627	Spirit rather weak.
	0·026	3·19	0·8528	
	0·025	0·63	0·8530	Spirit rather weak.
1 very weak	0·012	2·24	0·8605	Spirit rather weak.

In the absence of any reliable method for the estimation of the aconitine separately, the total alkaloids were determined. The solids show remarkable variation, quite uncorrelated with the amount of alkaloids.

Compound Tincture of Cinchona.—This should be made from bark containing between 5 and 6 per cent. of alkaloids, which, if completely extracted, would give 0·5 per cent. for the compound and 1 per cent. for the simple tincture. Making allowance for the imperfect extraction of the B.P. process, I think 0·4 and 0·75 per cent. respectively would be fair quantities to expect. The compound tincture of cinchona is one of the most unsatisfactory preparations I have examined. The following table classifies the results :—

Compound Tinctures.

	Alkaloids.	Solids.	Sp. gr.	Remarks.
1 over standard	0·73	3·87	0·9436	
2 fair strength	0·42	3·44	0·9495	Spirit rather weak.
	0·37	5·32	0·9445	
5 rather low strength.....	0 348	3·88	0·9384	
	0·346	5 4	0 9439	
	0·33	3 93	0·9385	
	0·32	4·79	0·9405	
	0·30	3·98	0·9422	
2 very low strength	0·20	—	0·9178	
	0·15	2 79	0·9507	Spirit weak.

Simple Tinctures.

1 low strength	0·586	3·01	0·9404	
2 very low	0·42	3·57	0·9466	
	0·15	2·19	—	

Tincture of Opium.—This is directed to be prepared from standardised opium containing about 10 per cent. of morphine by the B.P. process, and if the alkaloid were completely extracted, would contain 0·75 per cent. part of morphine per 100. In practice, however, only 0·5 to 0·6 is obtained by following the directions of the B.P. Assuming that the process of assay adopted gives results about 0·1 part per 100 volumes more than the B.P. process these figures would become—theoretical, 0·85 ; practically obtained, 0·6 to 0·7 per cent.

Of the 11 samples only three fell within these limits :—

Tincture of Opium.

Morphine.	Extract.	Specific Gravity.	Remarks.
0 649	3·18	0·9564	Spirit weak.
0·664	3·55	0·9229	
0·736	3·46	0·9320	

Five samples gave about the theoretical percentage, showing either that stronger opium or that a different method of extraction from that prescribed by the Pharmacopœia was used.

Morphine.	Extract.	Specific Gravity	Remarks.
0·844	4·2	0·9390	
0·851	3·87	0·9350	
0·855	4·37	0·9370	
0·872	3·82	0·9600	Spirit Weak.
0·872	4·54	0 9414	

Three samples were considerably over the maximum possible strength which could be obtained by using standardised opium :—

Morphine.	Extract.	Specific gravity.	Remarks.
0·906	4·84	0·9420	
0·933	4·26	0·9470	Spirit rather weak.
1·120	5·3	0·9424	

This is the only tincture examined in which anything like approximate correspondence between the amount of solids and alkaloid was observable, and here only to the extent that those with the most alkaloid contain generally a larger amount of extract.

The PRESIDENT, in moving a vote of thanks to Mr. Seyler, said they were indebted to him for the large amount of work he had done. This paper was one which would be read with interest, because the figures could be followed more closely than from the abstract which had been read.

PHOSPHATES AND PLATINUM.

BY W. G. STRATTON.

The author, some time ago, while igniting a mixture of ammonium phosphate and Rochelle salts on platinum wire before the blow-pipe, was surprised to see the platinum fuse and become quite friable. Shortly afterwards he mentioned the occurrence to a scientific friend, who informed him that he had had a somewhat similar experience, having heated charcoal, which contained a phosphate as an impurity, in a platinum crucible, with disastrous results to the precious metal.

As this action seems little known, it was thought advisable to draw attention to the matter.

Granger (*Compt. rend.*, 1896, 123, 1284-5) has shown that when platinum is heated in phosphorus vapour, in a current of carbonic anhydride, at a high temperature, action takes place, the product being a phosphide of platinum. The physical appearance of this body, as there described, closely accords with that of the author's experiment.

Assuming that the phosphate was reduced by the carbon of the tartrate with the liberation of phosphorus, all the conditions for the production of platinum phosphide would be present.

The author regrets that owing to the lack of time he has been unable to follow the subject further, and contributes this short note in the hope that it may be the means of saving expensive apparatus from unwitting destruction.

This paper was read by Mr. Ransom.

The PRESIDENT said this was one of those short notes that were always very interesting. It was a fact that phosphates and platinum could be fused readily, but bringing it before the Conference and placing it on record in this way perhaps directed more attention to it than a lecture on the subject would do.

LIQUOR BISMUTHI ET AMMONII CITRATIS.

BY W. G. STRATTON.

This research was undertaken, at the suggestion of the editor of the *Chemist and Druggist*, in order to determine whether a variation in the composition of commercial liq. bismuthi was the cause of the varying results said to have been sometimes obtained when that preparation was dispensed with an alkaline bicarbonate.

Eleven samples were examined. Nos. 1 to 7 were those mentioned in a communication to the *Chemist and Druggist* (vol. l., page 597). The pharmacist who supplied No. 3 having stated its source, application was made to the manufacturers, and from them No. 8 was obtained. Nos. 9 and 10 were obtained from a Midland pharmacist. No. 11 is liq. bismuthi Schacht.

The specific gravities were taken with a Sprengel's tube.

The bismuth was determined as follows :—A known volume of the liquor was acidulated with acetic acid, and the bismuth precipitated with sulphuretted hydrogen. The bismuthic sulphide thus formed was caught on a filter, washed, and digested in a solution of sodium sulphite. It was then collected on counterpoised filter papers, again washed, and dried in a water-oven at 98° C., weighings being made at intervals until the weight began to increase.

The ammonia was determined by adding excess of sodium hydrate to a known volume of the liquor contained in a distilling flask and distilling into a known volume of a standard solution of sulphuric acid. The excess of acid was titrated with standard solution of caustic potash and the quantity neutralised by the ammonia thus obtained.

The citric radical was determined as follows:—The bismuth was precipitated from a known volume of the liquor as sulphide by passing a current of sulphuretted hydrogen. The precipitate was filtered off and well washed, the washings being collected and added to the filtrate. The latter was boiled until free from sulphuretted hydrogen. Excess of standard solution of sodium hydrate was then added, and the liquid again boiled until free from ammonia. The excess of sodium hydrate was next determined, and being deducted from the quantity originally added, the amount which had combined with the citric radical was obtained.

From the data afforded by these processes the percentages of bismuth, ammonia and the citric radical were respectively calculated.

None of the samples were neutral to litmus, but the divergence from neutrality in each case was extremely small. Alcohol was noticed to be present in several instances.

The nitric radical occurred in six samples, the quantity present in Nos. 3, 8, and 10 being fairly large.

The following table gives the results obtained, the theoretical quantities of bismuth and the citric radical being placed at the head of their respective columns. In all cases the figures are the mean of two or more experiments :—

No.	Sp. Gr.	Per cent. Bi.	Per cent. NH_3.	Per cent. $C_6H_5O_7$.	Impurities.
Theoretical	1·07	4·375		3·956	
1	1·070	4·377	1·048	3 910	Nitrates
2	1·063	4·167	·927	3·427	
3	1·135	4·476	3·535	14·209*	Nitrates
4	1·070	4·748	·746	3·647	
5	1·073	4·585	·807	4·109	
6	1·073	4·548	·871	3·817	
7	1·072	4·285	·991	4·232	Nitrates
8	1·150	5·552	3·777	14·736*	,,
9	1·070	2·968	2·034	6·182	,,
10	1·122	5·164	3·200	11·426*	,,
11	1·029	1·944	·686	2·663	

* Owing to the presence of considerable traces of nitrates in these samples, the figures for the citric radical represent a somewhat larger amount than was actually present.

It will be seen from these figures that some makers improve on the B.P. preparation by adding an excess of citrate of ammonium. The influence of this salt in preventing the precipitation of bismuth carbonate being so well known, it seems almost unnecessary to say that samples Nos. 3, 8, 9, 10, and 11 would, if dispensed in combination with a bicarbonate, yield mixtures of very different appearance to those in the preparation of which the other samples were used.

My thanks are due to Mr. E. H. Farr, F.C.S., Uckfield, in whose laboratory my experiments were carried out.

This paper was read by Mr. Ransom.

The President said this was a very practical paper, and would be useful to them all in their everyday experience. The author's remarks would be of value in dealing with the preparation, especially as he had made a study of it, and had had the assistance of so eminent a pharmacist as Mr. Farr.

Disinfectant Soaps.

by S. Rideal, D.Sc. Lond., F.I.C.

Notwithstanding the recent increase of our knowledge of disinfectants, little attention seems to have been paid by soap manufacturers to this subject, so that even at the present time, soaps which were introduced many years ago still find favour with the public, although their efficacy as germicides is very small. This has arisen partly from the fact that it is seldom that disinfectant soaps are properly tested as to their germicidal action upon specific organisms under conditions which approximate to their use in practice; and partly owing to the fact that there are many disinfectants which have valuable properties, as such, but which are totally unfitted for use in conjunction with soaps.

The conditions which obtain when a disinfectant soap is used are very different from those of ordinary disinfecting. As a rule the time of contact is much shorter, and the volume of water or vehicle much less. As the time of contact is short, so it is necessary that the percentage of active ingredient should be high. As the volume of water used per unit weight of disinfectant soap is usually much less than is recommended when a liquid disinfectant is employed, this usually assures a higher percentage strength of the active ingredient if it is present in the soap in anything like reasonable proportions. On the other hand, it is important to note that unless the disinfectant employed is readily soluble in water, actual contact of the infected parts with the disinfectant cannot be attained in the limited time given to washing. In coal-tar soaps and those containing oils which are not very soluble in water, although the disinfectant is emulsified by the soap, the actual laving of every part of the infected area by the active ingredient for the necessary time to effect the death of the micro-organism is by no means certain. Organisms differ very markedly in their resistant power; many of them form spores which are especially difficult to kill, so that even when a soap contains an approved disinfectant the latter must be present in quantity above that required for the fatal dose for the most resisting spores.

Although at the present time there is no legislation on this matter, medical men and the public are becoming alive to the importance of thorough disinfection in all cases of infectious disease, and those soaps which can be relied upon as containing definite amounts of active disinfectants are already making headway against others which are of more uncertain composition. It is, therefore, of extreme importance to the soap manufacturer that he should not only carefully select his disinfectant and ascertain its purity and efficiency, but should also devote especial care in admixing this ingredient in the right proportion, the exact amount of the medicament being stated on the wrapper of each piece.

The stock or basis of a medicinal soap is by no means unimportant. F. Krafft and A. Stern (*Ber.*, xxvii., 1747), in confirmation of Chevreul's early work, have found that soap in a large quantity of hot water gives a precipitate of the sodium salts of palmitic and stearic acids, while sodium oleate, not being so readily decomposed, remains in solution along with free alkali. An olein basis would therefore seem preferable to the employment of a harder fat.

The alkali of commercial soap is, of course, soda, but potash or soft soap figures in the German Pharmacopœia as "sapo kalinus" or "sapo viridis." It is generally made with linseed oil, has a pale brownish-green colour, and is reckoned to be specially beneficial in some skin diseases. It would be useful to determine whether an admixture of a potash soap with the ordinary soda soap would produce a basis giving greater activity when used in such proportion as not to give too great softness to the product. E. W. Lucas has already shown (B.P. Conference 1894) that a mixture of 1 part potash to 5 of soda soap solidifies, and can be advantageously employed as a basis for liniments. The solubility of drugs in a potash soap does not appear to have been investigated.

Unna and others are of opinion that medicaments are more easily absorbed if the soap is "super-fatted," or contains an excess of the fatty menstruum, but however preferable for toilet purposes as more emollient to the skin, these soaps seem not to be so suitable as vehicles for many drugs as those containing a moderate excess of alkali. The presence of free oils or fats is distinctly inimical to antiseptic action. Koch was the first to point out that carbolic acid dissolved in olive oil or carbolised oil possessed no antiseptic properties. Lenti (*Union Pharmaceutique*, xxxv., 58) concluded from his observations that fatty substances were unsuitable vehicles for disinfectants, as they impeded the germicidal action of mercuric chloride, phenol, and several other bodies. Dr. Breslaner has lately repeated these experiments with various disinfectants, including mercuric chloride, boric acid, nitrate of silver, etc., in union with oil, vaseline, lanoline, etc., and found that while lanoline gave the best results, the presence of the free oil or fat, strongly militated against the germicide, the various bacilli surviving in oil far longer than in aqueous solutions. Jicario noticed, in 1891, that fixed oils frequently contained germs. From these and other observations it has been recognised that oils and fats used in ointments and soaps must be sterilised by heat; usually this is done in course of manufacture.

It must be remembered that soaps themselves have considerable antiseptic power. Some recent experiments of Max Jolles (*Teits. f. Hygiene*, 1895, 130) have shown that in the case of typhoid bacilli the disinfecting action is more marked at 4° to 8° C. than at

ordinary or higher temperatures, therefore that with cold water they would be more active than with hot. When rags infected with germs were treated with a soap solution the effect was very marked, even a 1 per cent. solution being injurious to the germs in fifteen minutes, and a 6 per cent. solution resulting in their entire destruction. A 30 per cent. solution was fatal in one hour, and in 1 per cent. no germs remained capable of development after two hours' immersion. *B. coli communis* was less easily destroyed at low temperatures; a 2 per cent. solution was fatal in six hours.

There is no doubt that prolonged contact with soap renders surfaces practically sterile, but under ordinary circumstances ordinary soap ceases to be effective. Beyer ('Firstchrift der Medicin,' No. 1, 1897) has shown that in the case of hospital clothing with various surgical stains, soaking the garments in solutions of various soaps for one or two days failed in every instance to kill cholera, typhoid, and pyogenic organisms. He attained success with lime-water in from 24 to 48 hours, but woollen goods were spoiled. In this case if the soap had been supplemented by a good antiseptic more favourable results might have been attained.

With reference to medicinal agents used in soaps, acids and free halogens are obviously incompatible, the former being neutralised by the alkali or precipitating the fatty acid, the latter combining at once with the fat. A hypochlorite of K or Na is incompatible to a certain extent, but the disinfectant action is much less than that of free chlorine. The oxygen compounds of bromine and iodine do not seem to have been studied in this respect. A vast number of organic bromo and iodo compounds have been introduced. Some of them seem to be useful, but most are irritating; the majority have very unpleasant odours.

Fluorides and silico-fluorides were found by Wm. Thompson to be strongly antiseptic and non-poisonous, and were patented under the name of "Salufer." We have not heard of their being used in conjunction with soap, although Thompson states that a solution of sodium silico-fluoride is not irritating, and "is stronger than 1 per 1000 solution of $HgCl_2$," and obviously compatible with soap.

Sulphur.—Sulphur and alkaline sulphides blend well with soap, and have long been known as useful in skin diseases. Sulphur even in the form of milk of sulphur is very slow in its action, on account of its insolubility. The alkaline sulphides are caustic, having been used from Roman times as dipilatives; and recently ichthyol and sphagnol have been suggested as convenient means for incorporating sulphur in soaps, most of these gradually evolving H_2S, and therefore yielding an unpleasant odour, and are not popular, although this gas is a prominent feature of their antiseptic action.

Boric Acid in soaps could be converted into sodium borate, and would have little or no value.

Metallic Salts.—These can only be introduced into soap in very small quantities, as all except the salts of Na and K are precipitated in an insoluble form, and in washing disappear from the water in the curd, which can have little effect or value.

Various Oleates or solutions of metallic oxides in oleic acid, more or less well defined as compounds, have been introduced into the Pharmacopœias. They mix well with unguents, and are said to be more readily absorbed, and less irritating than older remedies. Hence it has been proposed to incorporate them with soaps. But since the efficiency of soap depends upon its solubility in water, the curdy precipitate, as mentioned above, is probably inert, since also the oleates of metals are insoluble in water, the question arose as to how far an oxide or an oleate could be made soluble for use in ordinary washing. As an example, I dissolved some zinc oleate, B.P., in a minimum quantity of soda, to the hot clear solution I added 10 grammes of yellow soap and incorporated. When cold, the soap separated from the mother liquor, which was strongly alkaline and contained practically all the zinc. This process not working, zinc hydrate was prepared and boiled with soda to form a zincate solution as neutral as possible. Yellow soap was then dissolved in the filtered solution, boiled down, and allowed to set. It formed a soap of good washing qualities, not unduly alkaline; on using with water in the ordinary way the zinc was found to be in solution, showing that there was no separation of insoluble zinc oleate. It would therefore seem that metallic oxides dissolved in soda or potash might give better results than the ready-made oleates. Manganese soap, prepared by double decomposition of manganous sulphate and soap, or by heating manganous carbonate with oleic acid, is said to be a strongly siccative application.

Arsenical soaps have come under prominent notice of late, owing to recent prosecutions, which showed that the amount of arsenic present was almost infinitesimal and quite insufficient for antiseptic or disinfectant properties, although the small quantity in constant use might have some effect on the skin.

The powerfully antiseptic action of mercury salts suggested their employment in medicated soaps. It was difficult, however, to prevent the production of the insoluble mercuric oleate, which has little or no germicidal action, and also prevents the formation of a good lather, while any surfaces on which a mercurial preparation is used are liable to become blackened by H_2S, and organic matter is apt to reduce and throw the mercury out of action. One form of mercurial soap contains mercuric chloride, ammonio-mercuric chloride, together with β-naphthol, eucalyptol, and methyl salicylate. The salts are incorporated with a neutral soap in a dry state in the process of milling, and are therefore, possibly, present unchanged. It is claimed that they are active at the moment of decomposition, as in washing, though afterwards converted into oleate.

The double iodide of K and Hg has even stronger germicidal powers than $HgCl_2$. In certain proportions it is easily incorporated in the soap stock, and I have found that when dissolved in warm water there is no separation of any insoluble mercury compound. The strength recommended is 1 to 3 of HgI_2, and 1 to 3 of KI in 100 of soap. It is said to be effective in a proportion of 1 part of HgI_2 to 4000 of water. A soap of this kind which is in the market I have found by analysis of some samples to have the following composition in three grades sold:—

Nominal strength.	KI.	HgI_2.	Double iodide of mercury and potassium.
3 per cent.	2·25	2·39	2·92
2 ,, ...	0·94	0·63	0·77
½ ,, ...	0·45	0·26	0·31

More potassium iodide is therefore present than is sufficient to form the double salt. Potassio-mercuric iodide has the advantage of being compatible with strong alkalies, as is shown in the preparation of Nessler test. Moreover, it does not precipitate albumin, and is not easily reduced. According to Dr. Sims Woodhead, cheaper "carbolate of mercury" soap is not so powerfully disinfectant, and is considerably slower in its action. Obviously mercurial soap should not be used popularly or indiscriminately. We can conclude that with regard to metallic soaps, as it is known that a metal in the form of oleate is readily absorbed by the skin, if an internal effect is wished for an oleate soap will succeed; but if a local antiseptic or disinfectant action be required, oleates or other insoluble salts are practically useless, and means must be taken to obtain a mixture like the mercuric iodide soap, or the zinc soap mentioned above, which yields the metal in a soluble form to water. The latter use of soap is obviously the natural one, the former more properly belonging to an ointment or liniment.

Within the last few years I have investigated bacteriologically the relative antiseptic properties of a number of commercial and medicated soaps. In one series comparison was made with a curd soap containing 32·5 per cent. of water and 60·8 per cent. of fatty anhydrides, using for the experiments a 2 per cent. solution. Inoculation with active bouillon cultures gave results which may be summarised in the tables, and indicating growth and sterility.

I.—Bacillus Coli Communis in Vigorous Growth.

Time.	Curd Soap.	A scented curd soap.	Carbolic, 10 p. c.	New disinfectants. A and B.	HgI_2, 3 p. c.	Formalin, 0·4 p. c.
5 min.	..	..	..	.. ..	—	+
15 ,, ...	..	..	..	.. ..	—	+
25 ,, ...	..	..	..	.. ..	—	+
30 ,, ...	+	+	+	+ +	—	—
1 hour	+	+	+	+ +	—	—
1½ ,, ...	+	+	+	+ +	..	..
2½ hours	+	+	—	+ +	..	..
3½ ,, ...	+	+	—	+ (Much attenuated)	..	..
4 ,, ...	—	—	—	— —	—	..

II.—Staphylococcus Pyogenes Aureus.

Time.	Curd soap.	Scented curd.	Carbolic 10 p.c.	New disinfectants. A and B.	HgI_2 3 p.c.	Formalin 0·4 p.c.
10 min.	+	+	—	+ +	—	+
20 ,, ...	+	+	—	+ (attenuated)	—	+
30 ,, ...	+	—	—	— —	—	—
Between 1 and 4 hrs.....	—	—	—	— —	—	—

The soaps were tried as sold. The relative amounts of disinfectants present in the solutions of the same strength (2 per cent.) would be—

Carbolic ..... 0·2 per cent., or 7 in 500 of phenol.
A ..... 0·06 ,, ,, 7 in 1666 ,,
B ..... 0·03 ,, ,, 7 in 3332 ,,
HgI_2..... 0·06 ,, ,, 7 in 1666 of HgI_2.
Formalin..... 0·008 ,, ,, 7 in 12,500 of formaldehyde.

It will be seen that in these experimeuts the formaldehyde was used in unduly small quantity, but the results are good.

Carbolic and Cresylic Soaps.—An ordinarily stated commercial strength of these soaps is 10 per cent., but it is frequently much less. The odour of all forms is very much pronounced, and often constitutes an objection. Several varieties are advertised as of "delicate odour," and "not unpleasant in any boudoir," etc. But, although the homologues of cresol have a higher disinfectant power than phenol, they will still, if in effective proportions, manifest their distinctive odour, so that a soap of the tar order, however disguised with eucalyptus, gaultheria, or other scents, which in themselves, by the way, have little disinfectant value, cannot be free from a more or less tarry odour. A large number of "toilet soaps" are advertised in conjunction with the names of various disinfectants, and they contain such an infinitesimal quantity of the various reagents as to be quite useless in a germicidal sense; they are in fact objectionable as conveying a feeling of a fallacious immunity.

Essential Oil.—The disinfectant power of the essential oils has been much overrated, and to be at all effective they require to be used in such quantities as are liable to cause serious irritation to the skin, many of them having a blistering action as powerful as turpentine or mustard. When desired as perfumes, the amount added should be minute, an over-strength having caused many soaps, otherwise well manufactured, to lose favour. When such ingredients are added to the crutching pan, it is always desirable to neutralise the free alkali at this stage by the ammonium salt process, or to postpone the addition of the oils until after the operation of fitting. Such has been the reaction against perfumes, that prominent brands are advertised as "unscented" and others as "delicately scented."

Volatile disinfectants, such as phenol, camphor, thymol, etc., suffer considerable loss if introduced in crutching in the ordinary manner, or if added during remalting, so that the quantity present becomes uncertain: it seems, in fact, desirable that all such medicinal soaps should be milled or plotted, as the machines are very convenient for regulating the amount of disinfectant added.

The cakes should evidently be packed in tinfoil (except in the case of mercury soaps, when oiled paper or thin gutta-percha should be used), and should be kept in a cool place. It has been proposed to coat the surface of the tablet with a film of gelatin or wax. In a series of experiments made in 1896 at 37° C. using 2 per cent. solutions and broth cultures of two representative organisms with the usual precautions, I found that oil of cloves when present in a soap had little antiseptic action.

Time required to kill the organism.

Organism.	Curd soap.	Carbolic soap, 3 lbs. per cwt.	Clove oil soap, 3 lbs. per cwt.	Clove oil soap, 7·5 lbs. per cwt.	Biniodide soap, 0·5 per cent.	Biniodide soap, 1·0 per cent.
B. coli communis ..	Between 2 and 4 hrs.	Between 2 and 4 hrs.	Alive after 6 hrs.	Between 2 and 4 hrs.	Less than 15 minutes.	Less than 15 minutes.
S. pyogenes aureus .	Organism alive after 6 hours.				Between 15 and 20 min	Under 15 minutes.

The carbolic and the two clove oil soaps have therefore an antiseptic action equal to, but not exceeding, ordinary curd soap. In the case of *S. pyogenes aureus* the limit of time required to produce disinfection was not reached, but as both the strength and the time much exceeded those which obtain in practice, it was not considered necessary to prolong the experiments. The time had also much exceeded that required by the biniodide.

A comparison of the amount of antiseptic present in the case of the carbolic and mercurial soaps would point to the *à priori* probability of the above results, since the 2 per cent. solution of carbolic soap contained 0·052 per cent. phenol, and the 2 per cent. solution of mercurial soap contained 0·01 and 0·02 per cent. of mercuric iodide respectively; solutions of 1 in 10,000 and 7 in 5000 of mercuric iodide are known to possess decided antiseptic properties, but a solution of 1 in 2000 of carbolic acid is practically useless.

Another series of experiments at present in progress have shown the following preliminary results with B. coli communis and 2 per cent. solutions:—

Curd soap.—Sterile between 1 and 3 hours.

Zinc soap (made as described in the paper).—Alive after 3 hours.

Carbolic soap.—Sterile between ¼ and 1 hour.

Coal-tar soap.—Ditto.

Sanitas soap.—Alive after 3 hours.

Terebene soap.—Ditto.

The variation in these results is influenced by the amount of water present, thus, taking a dry curd soap such as was used in the above experiments in proportion corresponding to soaps containing 33 per cent. and 66 per cent. of water, the following results were obtained.

	3 per cent. dry soap.	3 per cent. of soap containing 33 per cent. water.	3 per cent. of soap containing 66 per cent. of water.
Time required to kill B. coli communis	Attenuated after 1 hr.	Less than 3 hrs.	3 hrs.

This paper was read by Mr. Naylor.

The President said Dr. Rideal had taken considerable pains in the investigation of this matter. He was sure when they saw the tabulated results, together with the paper, they would feel satisfied they were of deep interest and merited all the pains Dr. Rideal had taken in obtaining them. One could not help feeling that very frequently the public was cheated into believing that they were getting a disinfectant soap, when, in fact, they were not doing so.

Mr. Umney remarked that the incorporating of mercuric iodide with soap had formed the subject of a patent.

Our Present Knowledge of the Mydriatic Group.

BY GORDON SHARP, M.D., EDIN.

It must be acknowledged that our knowledge of atropine, hyoscyamine, scopolamine, hyoscine, and other bodies, having for their most apparent pharmacological property the dilatation of the pupil, is imperfect. From time to time we have additions to the list of mydriatics, and each one is supposed to possess some signal advantage over its predecessors, but time and trial often proves that the new base differs little, if at all, from our best known mydriatic—atropine. A definite formula is published of each of these atropine-like agents, only to be amended within the next few months, and perhaps further corrected at some future period. The tendency appears to be to an extension of the list, rather than to an increase of our knowledge of the existing members of the class. Such a state of things is far from satisfactory to the chemist, and certainly highly unsatisfactory to the pharmacologist, who nowadays depends so much on his co-worker, If we are to make advances in practical therapeutics, the chemist and the pharmacologist must work hand in hand, for to-day everyone must believe in the relationship between chemical constitution and physiological action. If, then, the chemist's work be inaccurate, the pharmacologist's results cannot be trustworthy. The workers in the particular field I now deal with are few in number, because the task is difficult, and it is with the object of gaining increased interest that I have written this paper. Two

years ago I sent to the meeting of the British Medical Association in London a paper entitled "The Atropine Group." In this paper I criticised the members of the group, giving details of some work I had done on the pharmacology and therapeutics. Here is not the proper place to enter into discussions on therapeutical points, but I may be permitted to say I employed hyoscine, atropine, daturine, duboisine, and scopolamine, as ordinarily supplied to us, and I was unable to distinguish between them either pharmacologically or therapeutically.

With this introduction I pass on to shortly review various members of the group, and if my story savours somewhat of complaint and imperfection, I feel sure the members of the Conference will pardon these when they remember I write from the standpoint of the general practitioner of medicine.

Duboisine.

In 1878 Bancroft, of Brisbane, discovered that an Australian plant possessed mydriatic properties. The drug was investigated in this country by Holmes, Gerrard, Ringer, Tweedy, and Murrell, and the belief prevailed that although the active agent in many ways resembled atropine, it yet was distinguished by important chemical and pharmacological differences. But in 1880 A. Ladenburg, as the result of research, found duboisine and hyoscyamine identical, and this he confirmed in the following year. Passing over several years, we find the literature of the subject scanty, but in 1896 Lauterer published the result of his researches on mydriatic plants, and amongst them we find references to *Duboisia myoporoides*. The leaves and twigs of the young plant are said to contain scopolamine and those of the old plant hyoscyamine. Thus it almost appears beyond dispute there is no such alkaloid as duboisine, and yet we find it figured in text-books and drug lists. This is unfortunate, for so long as manufacturers offer doctors will buy and use. I am afraid doctors are in the power of the pharmacist to a greater extent than they care to admit.

The samples of duboisine (so-called) which I have obtained are not quite white, but have a brownish tint, and are thus most likely not pure. This may account for the varying results obtained by therapeutists. An impure alkaloid may contain an admixture of piturine, the presence of which would modify the action.

Daturine.

I next consider daturine. It is still supplied as if it were a distinct alkaloid. So long ago as 1850 Pereira hazarded the opinion that in most of its properties it agreed with hyoscyamine, but Planta was the first to assert the identity of daturine and atropine. In 1877 or 1878 Poehl instituted a series of investigations, upon which he based the opinion that they were not quite identical from a chemical point of view. This was followed in 1880 by Ladenburg's work, the result of which led him to look upon daturine, duboisine, and hyoscyamine as identical, and he further drew the conclusions that there were only two individual mydriatic bases, namely, atropine and hyoscyamine. Whilst conducting these researches Ladenburg made the discovery that he could convert hyoscyamine into atropine. Working during the same period, E. Schmidt found daturine and atropine to be in every respect identical, but as I have just now stated, Ladenburg found duboisine, daturine, and hyoscyamine identical. If this be so then hyoscyamine and atropine are identical. Now a difficulty is introduced, for in 1881 Ladenburg had somewhat shifted his ground and stated his belief in three individual mydriatic bases instead of two, the three being atropine, hyoscyamine, and hyoscine. He reasserts his opinion that duboisine and hyoscyamine are identical, but now regards daturine not as identical to these, but as composed of a mixture of atropine and hyoscyamine. In 1882 Pesci, an Italian observer, entered the field of discussion and gave his opinion that daturine was not identical with hyoscyamine as Ladenburg had said, nor was it identical with atropine as E. Schmidt had asserted. This was adding confusion to confusion. Things remained in this unsatisfactory condition till 1885, when E. Schmidt not only made investigations of his own, but ably reviewed the whole question. He said he had met with crystalline bases under the two names atropine and daturine, and on examination had found them identical. Crude daturine consists of nearly all atropine, but not quite, and so here is the cause of discrepancies of statement. In the same paper he, like Ladenburg, regarded duboisine as not a distinct base, and he came to the same conclusion arrived at by Ladenburg in 1882, that we have only two mydriatic bases, namely, atropine and hyoscyamine—leaving for the present hyoscine out of the question.

Taking all things together, then, I think we are justified in asking that the term daturine be removed from text-books and commercial lists.

I have purposely avoided the use of the terms "heavy daturine," "light daturine," "light atropine," because they are confusing.

Hyoscyamine.

Coming to hyoscyamine we find our difficulties on the increase. Is there such a base or is it only another name for atropine? Or is atropine only a conversion product of hyoscyamine? Is there only one fundamental mydriatic base? The following arguments lend some support to the affirmative side of this last question :—

(1) The pharmacological action of atropine and hyoscyamine is often indistinguishable.

(2) Salts named by one chemist as atropine and employed as such, and giving the ordinary chemical and pharmacological actions of atropine, have, on examination by another chemist, been said to be in reality hyoscyamine.

(3) Daturine is identical with atropine not with hyoscyamine, and yet Ladenburg found the gold salt of hyoscyamine and daturine identical, and E. Schmidt found the gold salt of daturine and atropine identical. But the gold salts of hyoscyamine and atropine are supposed to differ in their properties.

(4) It is not the source of the base, but rather the manner of manufacture which determines whether the product is hyoscyamine or atropine.

If hyoscyamine and atropine are not identical they are closely related and so close is the relationship, that it is often beyond the ability of the chemist and the pharmacologist to detect the differences.

We need more workers in the field.

Hyoscine.

Perhaps pure hyoscine is a conversion product of atropine or hyoscyamine, but many of the specimens found in commerce are largely made up of atropine, so far as we can judge of them by their therapeutic action. To quote the various views held, abandoned and reasserted concerning hyoscine would be a long task. One chemist tells us hyoscine is obtained from the mother liquor in the preparation of duboisine and hyoscyamine. Another chemist tells us duboisine is nearly pure hyoscine in face of the statement that duboisine and hyoscyamine are identical. One important point I must not omit. Hyoscine can be prepared from daturine. Now, daturine and atropine are asserted to be identical. May there not then be two stages in the conversion of hyoscyamine?

(1) The hyoscyamine converted into atropine.

(2) The atropine into hyoscine.

This is only a supposition, but it may explain why so many specimens of hyoscine so-called supplied to medical men give the atropine-like action. This is no lame statement, for in my hands hyoscine has acted like atropine ; that is the alkaloids must have consisted for most part of atropine.

The actual formula is a question of dispute among authorities, Ladenburg giving it as $C_{17}H_{23}NO_3$. O. Hesse as $C_{17}H_{21}NO_4$.

Further reference will be made to hyoscine when I come to speak of scopolamine.

Scopolamine.

In tracing the history of scopolamine one notes the same obscurities, contradictions, and complexities as we have formerly encountered. There has followed a slow return to simplicity. In this as in everything else human, complexity and little knowledge, simplicity and more knowledge go hand in hand. In 1888 or 1889 the prevailing view was to regard the alkaloids of Japanese belladonna and the Austrian mydriatic plant as a mixture of hyoscyamine, atropine, and hyoscine. In 1892 the chief base of the Austrian plant was named scopolamine, and if I mistake not, E. Schmidt has to answer for this. Now began the battle ; O. Hesse said Schmidt's base was nothing more or less than hyoscine.

At this stage of the chemical history the pharmacologist seized upon scopolamine, and after more or less experiment, the new base was declared to be superior to atropine, in not causing dryness of the throat, congestion of the head, or acceleration of the heart's action. Extended experiment has not confirmed this view. In the first list of experiments the dosage was small and the number of trials few. In working on a larger number of cases and increased dose, we are forced to the conclusion that scopolamine acts much in the same manner as atropine. The unwary practitioner who, thinking to avoid the uncomfortable effects of

atropine, is doomed to disappointment. This short digression on the pharmacology and therapeutics of the new base may be pardoned, in that it may help to make clear what I have next to say.

Later investigation leads O. Hesse to modify his views, and he comes to regard scopolamine as not merely hyoscine as he at one time supposed, but as a mixture of hyoscine and a base which he calls atroscine. About the same time E. Schmidt holds the opinion that there is a base scopolamine, and he further makes the startling assertion that the commercial samples of hyoscine are not hyoscine at all, but in reality this new base scopolamine. It is passing strange if we have been hitherto using hyoscine in the firm conviction that it is hyoscine, and obtaining hyoscine action with it, and yet Schmidt tells us it is not hyoscine at all, but scopolamine. Later investigation confirms Schmidt in his formerly expressed opinion, but he makes a very important remark. He tells us the properties of this base, scopolamine, differ greatly according to the methods of preparation, and this may serve to explain why observers obtain varying results with the salts supplied to them. Hesse after further work is equally confident of the accuracy of his assertions, and says the so-called scopolamine consists largely of hyoscine. Moreover, he suggests the name scopolamine should be discontinued. In this I feel inclined to agree with him.

After all this so-called scopolamine may be nothing more or less than an impure atropine or hyoscyamine (compare Lauterer under the heading Duboisine). Considered purely from the pharmacological and therapeutical standpoints, scopolamine has in my hands given the typical atropine action.

To gather up the ends of our statement and to make something after the form of a summary, we find as follows :—

(1) The names daturine and duboisine should be given up.

(2) The relationship of atropine and hyoscyamine can hardly be said to be clearly understood. If this point were cleared up, much would be gained and the way paved for further investigation of the other members of the group.

(3) Of hyoscine one can say little. It is like atropine in its action.

(4) Scopolamine cannot lay claim to be a new base.

The artificial alkaloids to which the name tropeines has been given do not concern us. Lastly, I should like to say that where a decided statement is made it is as the result of my own observations, pharmacological and therapeutical. This I think necessary to mention, so that I alone am to blame for any inaccuracy of observation. The historical and other notes are of course common property. The whole I bring before the members of the Conference with the sincere desire that interest may be increased on the important question I have endeavoured to discuss.

This paper was read by Mr. Naylor.

The President said this paper was really a very valuable one, and was well worthy of perusal, containing, as it did, a large amount of historical data.

Presentation from the "Bell and Hills' Fund."

The President then presented to Mr. Currie as the President of the Local Association the books from the "Bell and Hills' Fund," and also a present of books from Mr. Thomas Hanbury in memory of his brother, Mr. Daniel Hanbury.

Mr. Currie said it afforded him the greatest pleasure to accept the books on behalf of the Local Association; they would be a valuable acquisition to the Library, and would be very much appreciated.

Election of Formulary Committee.

Mr. Umney moved that the Formulary Committee be re-elected. In moving the resolution, he said he supposed until the Pharmacopœia were published there would be no report from this Committee.

Mr. Coull seconded the resolution, which was carried.

The President said as soon as the Pharmacopœia was published they would get to work, and as had been suggested, try to improve on it in the formulary which would be published.

Place of Meeting for 1898.

Mr. McKnight said he had been deputed with Mr. Gibson, to invite the Conference to Belfast next year. When last year Mr. Payne and himself gave the invitation to the Conference to come to Belfast in 1898, they were ruled out of order, but he thought it would be agreed that they were in order this year. They could not offer many inducements to them to come to Ulster beyond a hearty Irish welcome. He need not remind Scotchmen what they would see in Ulster, because Ulster and Scotland were so much bound together by family ties that they were practically one; in fact, Ulster men were as much Scotch as the Scotch themselves. With regard to Belfast, they would see a city that was the seat of two important industries, the ship trade and the linen trade. They could show them their mills and factories where the artisan and the mechanic had made the name of Belfast what it was. Whilst they could not boast of such lovely scenery as was to be found in the neighbourhood of Glasgow, they could show some scenery which he thought would be appreciated. In conclusion he could promise them a very hearty welcome on Irish soil. Ulster men were always ready to receive any member of any British association, and they would be pleased to help in the objects of the Conference.

Mr. Gibson said it was scarcely necessary for him to do anything more than endorse what Mr. McKnight had said. That gentleman spoke on behalf of the pharmaceutical chemists, and he (Mr. Gibson) appeared as the delegate of the Chemists and Druggists' Society of Ireland to bid the Conference welcome. Seeing the efforts which their Glasgow friends had put forth to make the visit of the Conference to that city pleasant and profitable, they felt that a very difficult task lay before them in Belfast; but, as Mr. McKnight had said, there was a little Scotch blood in their veins, and when united with that a little Irish recklessness, they could only attempt to do their best, and that he could promise they would do. Of course in order to visit Belfast they would have to cross the treacherous waters of the Irish Sea, but when they got over that he could assure them that everything would be done to make the visit both profitable and pleasant. It was only natural that having that year visited the commercial capital of Scotland they should come and see something of the commercial capital of Ireland. Among the places of interest to be seen near Belfast he might mention the far-famed Giants' Causeway. He concluded by saying that if the Conference accepted the invitation they would receive a very hearty Irish welcome.

Mr. Wells said, as the President of the Pharmaceutical Society of Ireland, it might be fitting that he should join in the very hearty invitation that had been given. When the Conference met in Dublin nineteen years ago it was at the invitation of the pharmacists of the whole of Ireland, but on the present occasion their Ulster friends were determined that they would have the whole honour and glory of the reception. He did not want to find fault with that, because he hoped it would not be long before he or some of his brethren came over here and invited them to visit Dublin again. One of the speakers had referred to the bond between Belfast and Scotland, and he might claim to have some connection with Belfast. In Dr. Attfield's book attention was drawn to the strong affinity that atoms had for one another. He went to Belfast and met one of those atoms, which were indigenous to the place, with the result that he came back a compound; therefore, as his better-half belonged to Belfast, he thought he might claim to take part in the invitation from that city. On coming up the Clyde they saw the skeleton of what would when finished be the largest passenger steamer afloat, and in the matter of shipbuilding he might tell their Glasgow friends that if they did not look out they would be beaten by Belfast, but after the welcome they had received there he would not say much on that subject.

Mr. Atkins said after the extremely hearty and graceful invitation which they had received from Messrs. McKnight and Gibson, endorsed by Mr. Wells, they could not do other than accept it. They were quite sure that Belfast would do its duty and rise to the occasion. They knew by report, at least he did, what a magnificent city it was, and they knew of its wonderful industries. As to the scenery, from what he had read he believed it far surpassed the description given of it by the modest representatives of the north. They would only ask them one thing, and that was to be sure when they got there that they did not want any ulsters. There was only one difficulty about a Pharmaceutical Conference, and that was that their friends commanded everything with regard to it, except the weather. He would propose that the invitation be accepted.

Mr. T. Tyrer seconded the proposition. He knew something of Belfast, and would say that those gentlemen who had come over and so warmly and heartily given the invitation had very much under-rated the beauties of the place. In his experience he had

never been anywhere where he had been better treated, though he was well treated everywhere.

The President, in putting the proposition, said he was quite sure they would have the same warm-hearted reception that they received in Dublin on the occasion of their last visit to Ireland.

The resolution was put and carried with acclamation.

Election of Officers.

The following officers were unanimously elected for the ensuing year:—

President:—Charles Symes, Liverpool.
Vice-Presidents:—Walter Hills, London; J. Laidlaw Ewing, Edinburgh; J. C. C. Payne, Belfast; W. F. Wells, Dublin.
Treasurer:—John Moss, London.
Hon. General Secretaries:—W. A. H. Naylor, London; F. Ransom, Hitchin.
Hon. Local Secretary:—R. W. McKnight.
Assistant Secretary:—J. C. Nightingale.
Other Members of the Executive Committee:—F. C. J. Bird, London; H. Collier, ondon; E. H. Farr, Uckfield; James Guiler, Belfast; Professor Greenish, London; J. C. Umney, London; J. Anderson Russell, Glasgow; Edmund White, London; R. Wright, Buxton.
Auditor:—D. W. Elliott, Belfast.
Editor of the 'Year-Book':—Louis Siebold.

Meeting of the Conference in 1899.

Mr. Savage (Brighton) wished to remind the members of the Conference that there was such a place as Brighton, and asked them to hold themselves free to visit Brighton in 1899. In making this request he spoke on behalf of Hove as well as of Brighton.

The President said it was not possible for the Conference to accept an invitation so far ahead, but still he recognised that the formal invitation would come next year. It was many years since they had visited the south, and he had no doubt that the invitation when made would be gladly accepted.

Votes of Thanks.

Mr. Wells then proposed: "That the hearty thanks of the meeting be accorded to the Corporation of Glasgow for granting the use of the Art Galleries for the reception by the President of the Pharmaceutical Conference." They had all enjoyed the reception, and derived great pleasure from going through those beautiful rooms.

Mr. Bird had very much pleasure in seconding the resolution. All those who were fortunate enough to be present on Monday evening would retain the most pleasant recollection of the enjoyable music that was provided for them, of the valuable works of art which they inspected, the true Scottish hospitality which they enjoyed, and the courtesy extended to them by the pharmacists of Glasgow.

The resolution was passed unanimously.

Dr. Attfield moved "That the heartiest thanks of the non-resident members of the Conference be given to the local committee, and particularly to Mr. McAdam, the chairman; Mr. Currie, the vice-chairman; Mr. John Walker, the treasurer; and Mr. Russell, the secretary; for their very successful efforts in making and carrying out the local arrangements of this meeting." No one could appreciate better than he could the work that was done by the local committee, for he had had to deal with such committees for the first eighteen years of the Conference, and when the Conference met in London he was himself on the local committee. There were others in the room who had been on such committees, and they would appreciate the efforts that had been put forth to make this meeting a success, for that it was a success would be admitted by every lady and gentleman present. As for the ladies they would realise, knowing what their position was at home, that those generally who had the least credit did most of the work in maintaining an institution; therefore, those who acted as officers and those who read papers and so became known and received credit should be the very first to remind everyone present that the chief labours of arranging for the Conference lay with those who worked quietly sometimes for many months beforehand in order that they might have a few delightful days. Whether they looked to the arrangements for the scientific work of the Conference mainly in the room, or whether they looked to the social arrangements which had been made for their pleasure, they would all agree that these gentleman who had been doing this work should realise just for a moment that their labours were appreciated.

Mr. Martin said Dr. Attfield had so eloquently voiced their gratitude to the local committee that his own task in seconding the vote of thanks to the local committee was a very light one. He had had some experience as a member of a local committee, and knew something of the work that body had to do, and he would say that the debt of gratitude which they owed to its members could not be easily expressed in words. When the members of the Conference came from all parts they found everything made smooth for them; the best scenery of the district was laid open to them, and they were guided to it without loss of time. There was the minimum of trouble inflicted on each member of the Conference and the maximum of enjoyment. There was only one thing that the local committee in Glasgow had not been able to do, and that was to control the weather.

The resolution having been carried,

Mr. McAdam, in returning thanks, said if the Conference were satisfied with the arrangements that had been made the local committee were amply rewarded.

Mr. Currie said when he visited Liverpool last year he asserted that they would come to visit the second city of the empire. He did not retract one bit from that, and he thought he was supported in the statement by the record attendance. He was only a humble member of the committee, the whole body of which had worked like one man. There must always be one or two moving spirits in a committee such as this, but if those moving spirits were not supported by the rank and file the result would be very poor work indeed.

Mr. Russell said he had no doubt that the success of the meeting and the fact that he, as Secretary, had felt the work to be so light, had been due to the fact that they had managed to get it sub-divided, and the different sub-committees had worked well into each other's hands. Whatever work they had had to do they had been more than repaid for by the kindness with which their efforts had been appreciated. They might rest assured that it would not be another twenty-one years before the Conference were again invited to Glasgow.

Mr. Walker (Treasurer) endorsed all that his colleagues had said. They had been told at the Liverpool meeting that they would find it difficult to beat that meeting; they had not set themselves to beat the Liverpool meeting, but to do at least as well.

Mr. Walter Hills then proposed: "That the Conference accords to the President a very hearty vote of thanks for the ability and courtesy which he had shown in the conduct of the meeting." His task in moving this resolution was a very easy one, because he knew it would be received with the greatest cordiality and enthusiasm. He was quite sure that they would all agree that this had been a very successful meeting. There were many factors which tended to make such a meeting successful—they might have a splendid city such as Glasgow, or an abundant supply of pure water both for internal and external application, they might also have a very energetic local committee to offer them a welcome and to make arrangements for their comfort, they might have an untiring executive and honorary secretaries, but after all much depended on the character of their President, and his conduct in the chair, with which he took it all were well satisfied. He had been a colleague of Dr. Symes on the Council of the Society for many years, and he had learnt to appreciate his work. Dr. Symes was regarded as a typical pharmacist, interested in everything which had to do with the advancement of their calling.

Mr. Druce said they might have two opinions, at least those who visited Glasgow for the first time, as to the character of the Scotch weather, but there could be no two opinions as to the way in which the President had carried through the Conference. He was quite sure they would all endorse what Mr. Hills had said.

The resolution was put and carried with acclamation.

The President said the task which he had had to perform had been simple and easy compared with his present one if he expressed his feelings adequately in speech, but at that late hour he would not detain them by attempting to respond. The duties which devolved on the President were not so heavy as they thought. The President for the first year of his office found himself short of a good deal of information connected with the working of the Association, even though he might have attended the meetings frequently; but his work was very much lightened by the immense amount of help which he had received from the honorary secretaries. The men who did the work of the Conference, otherwise than the local committee, were practically the honorary secretaries, and their very best thanks were due to those gentlemen for their labours, and the courteous manner in which they assisted the President and the Executive Committee in their work.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

Ginger Wine Essence.—Yes, there is a little "capsicine" in the essence, but not much. [*Reply to* S. H.—105/11.]

Manganate of Soda in Bulk.—You will obtain this from W. J. Crook, Worcester House, Eastcheap, E.C. The probable quotation will be from £28 to £30 per ton. [*Reply to* M. E. S.—105/10.]

Precipitate in Spirit of Nitre.—You must have put the nitre into a dirty bottle. The trace of precipitate you send is a vegetable gum, probably gum acacia. There is no inorganic matter in the precipitate. [*Reply to* E. W. P.—105/8.]

Composition of Powder.—The powder you send is nothing but powdered borax. Surely you must have been misinformed by your client who told you it was for bleaching? It is more likely to be used for preserving purposes. [*Reply to* C. J. A. H.—104/42.]

B.Sc. Pass Examination.—Use Bernthsen's 'Organic Chemistry,' Thorpe's 'Inorganic Chemistry,' Muter's 'Analytical Chemistry,' and Green's 'Botany' as text-books, with frequent reference to other standard works. Do not limit your reading exclusively to one book in any subject, especially if you wish to take "honours." [*Reply to* En Avant.—105/6.]

Action of Ammonia on Calomel.—There is a good deal of diversity of opinion as to the composition of the black precipitate produced by the action of aqueous ammonia on calomel. The more generally accepted view is that it is dimercuro-ammonium chloride, $(NH_2Hg_2)Cl$, or amido-mercurous chloride, (NH_2Hg_2Cl), or tetramercuro-diammonium chloride, $(N_2H_4Hg_4Cl_2)$. According to Barfoed, it is a mixture of NH_2HgCl and Hg. Mercuro-ammonium chloride, $(NH_3Hg)Cl$, is obtained by saturating precipitated HgCl with NH_3 gas. Barfoed states that this is a mixture of $Hg,(NH_2HgCl)$ and NH_4Cl. [*Reply to* Glycyrrhiza.—104/26.]

Quantitative Determination of Indican.—The process of Jaffé (*Zeitsch. f. Analyt. Chem.*, x., 126) is tedious, but gives good results. 1000 C.c. of the urine are made alkaline with Ca2HO, and the phosphates precipitated with $CaCl_2$. The mixture is then filtered, the precipitate washed, and the resulting filtrate concentrated to a syrup. This residue is treated with 500 C.c. 95 per cent. alcohol, the alcoholic extract allowed to stand for twenty-four hours to deposit, then filtered, and the alcohol driven off. The residue is dissolved in water, and precipitated with a very dilute solution of Fe_2Cl_6 avoiding excess. The filtrate from the iron precipitate is treated with ammonia heated to boiling, the Fe_26HO, filtered out, and the filtrate evaporated to 250 C.c. Then 10 C.c. are taken to determine how much calcium hypochlorite solution will be required to precipitate the indican in the remainder of the fluid. The measured amount is gradually diluted with known quantities of water until 10 C.c. of the dilution, mixed with an equal volume of hydrochloric acid, gives a just perceptible blue colour with one drop of saturated calcium hypochlorite solution. It has been found that the number of volumes of water added to a known volume of urine before the above limit is reached is double the number of drops of saturated calcic hypochlorite required to precipitate the indican in 10 C.c. of the solution. Thus, if the experiment required 80 C.c. of water to dilute to this limit, each 10 C.c. of urinary fluid will require 4 drops of hypochlorite. This determined, 200 C.c. of the urinary fluid, corresponding to a known amount of original urine, is mixed with an equal volume of hydrochloric acid, and the calculated number of drops of hypochlorite added. The mixture is allowed to stand at least twelve hours, the precipitate is then collected, dried at 105° to 110° C., and weighed. Jaffé found from 4·5 Mgm. of indican in 1500 C.c. of normal urine. In Addison's disease Rosenstern found from 53 to 80 Mgm. of indican per litre. [*Reply to* E. H. G.—104/25.]

Beeswax and Ether for Silvering Pills.—It is quite needless to coat pills with beeswax and ether before silvering. A far better result is obtained by merely moistening them with a trace of weak mucilage of acacia, or mucilage and syrup, then silvering and burnishing. Although silvering pills is going out of fashion, it is far preferable to most of the pearl coating that is now so prevalent, as the silver coat is almost immediately disintegrated in the stomach. [*Reply to* J. Y.—106/3.]

Electrolitic Removal of Hair.—Yes, this is certainly the most efficacious method of removing superfluous hair. A fine needle connected with a battery is plunged into the root-sheath of each hair, which is then devitalised by actual cautery, and does not grow again. The process is naturally somewhat tedious, and being delicate, requires to be conducted by an expert. The caustic depilatory pastes are all more or less objectionable, as they necessarily act upon the skin. Moreover, after a time the hair grows again after their application. [*Reply to* Pater.—106/4.]

Depositing of Syrup. Hypophosph. Co. B.P.C.—You will not prevent this entirely by "methods of manipulation," but you may considerably retard it by using small bottles to store the syrup in as soon as it is made, filling each up to the neck, and keeping in a cool dark cellar. It is stated that the addition of as much neutral ammonium citrate as the weight of all the hypophosphites employed will prevent the deposit. You might try this, for the citrate is medicinally inert for all practical purposes. You are wrong about the equation you refer to, as the symbol is correctly printed NO_3. Perhaps the ink failed in printing your copy, and so rendered the multiple indistinct. [*Reply to* H. R.—105/4.]

Glycerin for Softening Hide.—The glycerin in the specimen of hide sent us some months back was extracted with water. On evaporating this the purified syrupy sweet residue did not reduce Fehling's solution either before or after inversion, and was therefore not sucrose or glucose (the latter is often used for fraudulently weighting leather). On heating it gave off the characteristic odour of acrolein; it liberated boric acid from borax, as shown both by the flame test and by the diminished alkalinity test. It is not surprising that you have failed to soften the hide by merely soaking it in the glycerin. Probably it will require heating in it under pressure to force the glycerin into the integuments. A few hours of such treatment will answer better than years of simple maceration. [*Reply to* Verax.—105/3.]

Hop Ale.—If you mean the fermented beverage, you may make a very good drink as follows: Hops, 1 oz.; sugar, 6 ozs.; cream of tartar, 3 ozs.; one lemon, sliced; burnt sugar, sufficient to tint; boiling water, 1½ gallon. Pour the boiling water on to the hops, which should be of good quality, add the sugar, cream of tartar, and the sliced lemon, and cover over. When the temperature has fallen to 100° F., add a few pieces of compressed yeast, let stand for twenty-four hours, then strain and bottle off. If you want an unfermented beverage, you may make a syrup with soluble essence of hops, 1 oz.; soluble essence of lemon, 2 ozs.; burnt sugar, *q.s.* Syrup to 1 gallon, the bottles to be syruped and aërated in the usual way. If you use the fermentation process and require the product for sale, do not exceed the amount of sugar above given or you will get into trouble with the Inland Revenue. If you intend to use it for home consumption, however, you may quadruple the amount of sugar with advantage, and allow another twenty-four hours for fermentation. The product, however, will then be too alcoholic to sell legally as a non-alcoholic beverage. [*Reply to* F. B.—104/29.]

CORRECTION.

In the list of First Examination Centres on page 109 of the *Pharmaceutical Journal* for August 7, the heading over the second column in the first table should be "passed" instead of "failed," and *vice versâ* with regard to the third column. The report was printed as received from the Registrar.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Atkinson, Attfield, Austen, Bates, Bentley, Bremner, Bryant, Burroughs, Butler, Cantwell, Cole, Cripps, Donnan, Dott, Dunlop, Farr, Fowler, Gadd, Glyn-Jones, Hamerton, Herman, Hewlett, Hill, Howard, Kirkby, Liverseege, McGowan, Naylor, Nicholson, Pegg, Perrédès, Robinson, Seyler, Scientific Press (Ltd.), Sharp, Spinks, Stratton, Symes, Thomas, Umney, Wain, Walpole, Wellcome, Widenmann, Young.

CACTUS GRANDIFLORUS, LINN.

BY E. M. HOLMES, F.L.S.

The first notice of this plant (which is more correctly termed *Cereus grandiflorus*) as a remedy in functional heart disease, appears to have been published by Dr. Rubini as long ago as 1868.* But it does not appear to have attracted much attention until about 1880. In that year and during the subsequent four years, several papers on *Cactus grandiflorus* appeared in the *Therapeutical Gazette*. In this country its medicinal value was pointed out by Dr. A. Orlando Jones† in 1890, and his statements were confirmed by Dr. P. Watson Williams, in the *Practitioner* (1891, vol. 47, p. 266). A chemical examination of the plant was made by Bonnet and Bay-Tessier in the same year (*Pharm. Post*, 1891, p. 1008, *Apoth. Zeit.*, 1891, p. 455), who detected in it an alkaloid, to which they gave the name of cactine. Dr. P. Watson Williams states that of several species employed medicinally, *C. grandiflorus* is the richest in active principle, and that the flower contains more than other parts of the plant, the amount of cactine obtained from it according to T. W. Sultan,‡ being over 2 per cent.

In 1894 Dr. Gordon Sharp contributed a paper to the *Practitioner*, 1894, pp. 161–178, on the literature, composition, pharmacology, and therapeutics of *Cactus grandiflorus*, giving an excellent but brief summary of its uses, pointing out, however, that Wood and Bache affirm, in the United States Dispensatory, that they obtained no benefit from its use. Dr. Sharp also states that the natural order to which Cactus belongs is not important from a medicinal point of view, none of the members containing either glucosides or alkaloids of known physiological value. Dr. Sharp and M. Hoseason found only resins, and, although working with something like half-a-dozen different specimens of *Cactus grandiflorus*, failed after repeated efforts to find in them either glucoside or alkaloid.

But the fact that Heffter§ obtained physiologically active alkaloids from cactaceous plants in the same year (1891), viz., anhaline from *Anhalonium fissuratum*, Engelm., and pellotine and two other alkaloids from *Anhalonium williamsii*, Lew., and that Lewin and Merck* obtained anhalonine from *A. lewini*, show that it must by no means be taken for granted that neither glucoside nor alkaloids are contained in the plants of the order Cactaceæ.

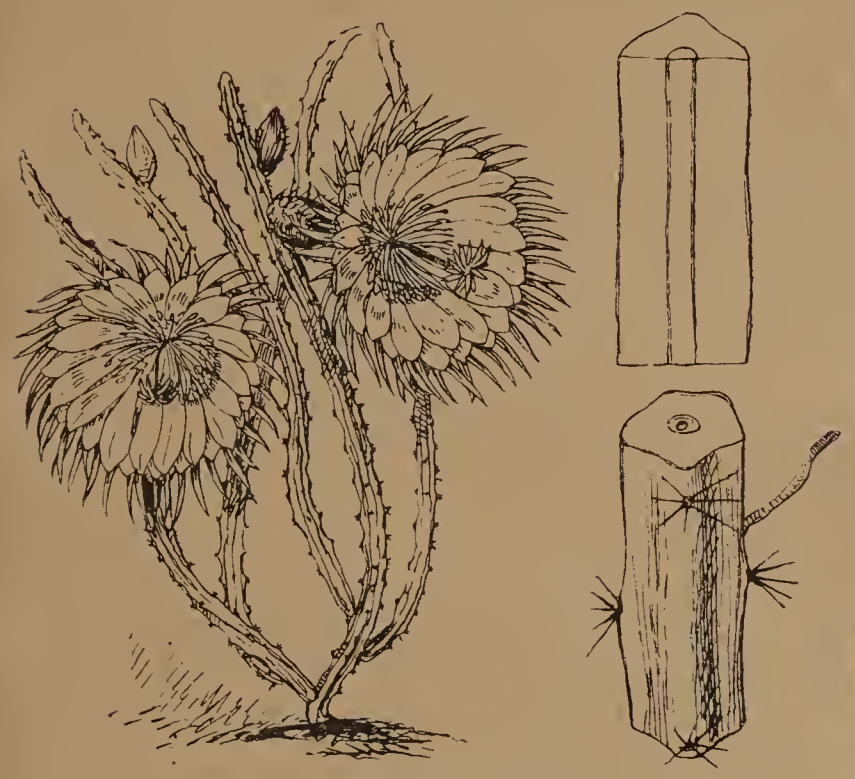
Unfortunately Dr. Sharp does not describe the appearance of the drug he used, nor explain the meaning of the words "different specimens," so that there is no evidence to show that he was working on the genuine plant.† A very large number of chemical investigations of plants and plant products have been rendered worse than useless, indeed actually misleading, by neglect in specifying the macroscopic and microscopic characters of the drugs employed, or in not ascertaining from a competent botanist or pharmacognosist that the plants or plant products are what they are assumed to be.

So far the weight of evidence points to *Cactus grandiflorus* possessing active properties and containing an alkaloid. But there is also evidence to show that there is not uniformity in the action of the preparations sold under this name. This is due, as will be shown presently, to a spurious drug, which occurs largely in commerce. A few months since an inquiry was addressed to me asking for an explanation of the fact that the tincture obtained from two different commercial sources gave in one case very satisfactory results, and in the other produced no effect whatever. I therefore obtained a series of specimens of the drug as it occurs in commerce, and found that it presented the following varieties :—

1. The dried stem of a Cereus, usually five angled and about the thickness of the finger.

2. Fresh stems of a Cereus, apparently the same species preserved in spirit.

3. The triquetrous stem of a *Phyllocactus*.



A. Plant of *Cereus grandiflorus* much reduced, and longitudinal and transverse sections of the dried stem, natural size.

B. Flower of *Cereus grandiflorus*, half natural size.

* *New York Med. Record*, 1868, p. 209.
† *British Medical Journal*, 1890, i., 70.
‡ *New York Med. Journ.*, June 13, 1891.
§ *Ber. der Deutsch. Chem. Gesells.*, 1896, pp. 2975–2979.

* *Ber. von E. Merck*, January, 1895.

† Since the above was written, Dr. Sharp has courteously forwarded me a specimen of the drug used in his experiments, which he purchased on the assurance that it was the genuine *Cereus grandiflorus*. It is evidently the flower of *Opuntia decumana*.—E. M. H.

4. The flowers of *Opuntia decumana*, Haw.

Besides these, I ascertained that there was imported (but not sold as imported) a preparation of *Cereus grandiflorus*, consisting of the crushed stems and flowers covered with strong spirit of wine and packed in barrels, this preparation being diluted when required for use with a definite proportion of spirit in order to form the tincture. The *Cereus grandiflorus* blossoms in August, and the flower, which is night blooming, only lasts a single night. As the flower is stated to contain twice as much alkaloid as the stem, this preparation of flowers and leaves is made only once a year, in the month during which the flower is produced.

The description of the genuine drug may be here given :—

Cereus Grandiflorus, Mill. (misnamed *Cactus grandiflorus*, Linn.).—Stems (Fig. A) in pieces of varying length about 1½ to 2 centimetres in diameter, cylindrical, with five to seven angles, furnished along the angles at intervals of about 2 centimetres with small tufts of 6-8 very short spines about 2 Mm. long, and at irregular intervals of 5-15 centimetres or more, with a branched rootlet. Intern-

C. Flower of *Opuntia decumana*, natural size.

D. Longitudinal section showing position of ovary.

ally, the transverse section presents a central woody ring about 3 Mm. in diameter, the remainder of the stem presenting a spongy parenchyma with numerous large crystals or "sphæraphides," immersed in it.

The following description of the flowers is taken from the *Bot. Mag.*, vol. 62, No. 3381 :—"The bud at first is globose, acute, then clavate, sessile, covered with imbricated scales bearing long setæ. When fully expanded the flower is a span across, the tube of the calyx is long, green, the limb cup-shaped; the former is composed of the imbricated scales above mentioned; the latter is formed of numerous long, spreading, tawny orange upper calyx segments, forming a sort of ray, and of an inner series of petals, which are oblong, broader upwards, nearly erect, and of a pure white colour. Stamens numerous, long, at length inclined to one side. Filaments, white; anthers, linear, oblong, yellow; style, as long as the stamens; stigma, of many rays."

There are other species of night-flowering Cereus, including *C. variabilis* (S. America), of which the stem has only three to four angles, and *C. nycticalus* (Mexico), which has stems with four to six angles and only four spines in a cluster. *C. grandiflorus* is a native of Jamaica and the Caribbean Islands, climbing over rocks or on decayed trees.

Opuntia Decumana, Haw.—The Opuntia flowers after some trouble were traced to Marseilles, where they were sent from Algiers and Tunis. Through the kindness of Messrs. Potter and Clarke I was enabled to obtain a living specimen of the plant in flower, which proved to be *Opuntia decumana*, Haw., a native of S. America, but cultivated in Africa, India, etc. So far as I have been able to ascertain,

E. Showing transition from sepals to petals.

there is no good figure of the flower extant. I have, therefore, had a drawing made by Mr. J. Fitch from the living plant. The flower buds, which are clavate and cylindrical, crown the upper edge of the stem segments to the number of six or more (Figs. C, D).

The outer and thicker sepals (Fig. E) pass gradually into the petals, which are of a pale sulphur colour and thinner in substance. The anthers are innate (F) and the stigma has about six lobes, the upper surfaces of which are represented in Fig. G. The seeds are small (Fig. H) and numerous. When in flower, the calyx tube is firmly adherent to the upper part of the fleshy calyx tube, but when the flower is over the calyx tubes separate in the form of an obovate or shortly funnel-shaped piece, leaving a cup-

F. Stamen. G. Top of stigma. H. Ovule.

shaped depression with a central scar at the top of the ovary. In this condition they are removed and dried and form the drug of commerce.

The two preparations which are chiefly used in commerce at the present time appear to be (1) a tincture made from the crushed fresh stem and flowers of *Cereus grandiflorus*, and (2) a tincture made from the dried Opuntia flowers. It seemed desirable, therefore, to ascertain if the Opuntia contains an alkaloid as the Cereus is said to do.

My friend Mr. E. H. Farr at my request has kindly made a preliminary examination of the flowers of the Opuntia, and has failed to find either alkaloid or glucoside; on the other hand he found decided evidence of the presence of an alkaloid and of a substance soluble in water in some living stems of *Cereus grandiflorus*, which were kindly forwarded to me by Messrs. Parke, Davis and Co.

It may be here pointed out that the Cactus family is divided into two sections by botanists, viz., Echinocacteæ and Opuntieæ. The *Cereus grandiflorus* and the various species of *Anhalonium* (*Mamillaria*), and *Phyllocactus* belong to the first section, which are distinguished by the calyx tube being produced beyond the ovary, whereas in the Opuntieæ it is not so.

In view of the possible scarcity of *Cereus grandiflorus*, the examination of other species of Cereus, *e.g.*, *C. peruvianus*, Mill. (which Mr. J. H. Hart tells me is plentiful in Trinidad) might be worth undertaking.

Since the above was written Mr. E. H. Farr has kindly communicated the result of his preliminary examination of the *Cereus*

grandiflorus supplied by me, and also of the Opuntia ("Cactus flowers") of commerce. I have, with his permission, placed these results on record here, as it is impossible to carry on the investigation further until a considerable quantity of the Cereus is obtainable.

"The *Cereus grandiflorus* contains some waxy and fatty bodies, several acid, slightly acrid, glucosidal resinous bodies, which are fairly soluble in water, and also an alkaloid, which is present in very small quantities only. There is a lot of mucilaginous matter present in the stems, and probably a sugar directly reducing Fehling's solution, but I have not been able as yet to prove this to be a sugar. Although the amount of alkaloid present is very small, I think the reactions enable me to say definitely that it contains an alkaloid. It does not give much precipitate with Mayer's solution, but more with iodine and iodide of potassium and a slight one with ammonia. I cannot at present give its distinguishing characters and tests, but it must be exceedingly powerful if the effects of the drug are due to it. Being a heart tonic, is it not possible that the effects are due to one of the glucosidal bodies present?

"The Opuntia flowers seem to contain neither alkaloid nor glucoside, though on working on a quantity I did get an indistinct reaction for alkaloids and also a very slight reduction with Fehling's solution. As my quantities represented about 10 per cent. of the flowers, I may safely say there is none present. There is a powerful yellow-colouring matter present in the Opuntia flowers. On adding a drop of ammonia solution to a strong solution of the resin matter in ether or in alcohol a lemon-yellow or almost chrome-yellow precipitate is thrown down. Ether will remove it from an aqueous solution, but water faintly alkaline with ammonia immediately recovers it from the ether."

Possibly this reaction might be used to ascertain whether commercial tincture has been prepared with the flowers of *Opuntia decumana* or *Cereus grandiflorus*. I have not found this yellow colouring matter in *Cereus grandiflorus*, but the Anhalonium flowers or Muscale buttons contain a similar, if not an identical, yellow-colouring matter.

This yellow-colouring matter seems to be characteristic of the Opuntia flowers, since Dr. Sharp tells me that the genuine tincture, with which he has now been supplied by Messrs. Parke, Davis and Co. and Mr. W. Wyatt, of Lancaster, is of a greenish colour, without the yellow tint that is characteristic of the tincture of the flowers of *Opuntia decumana*. Mr. Farr also adds, "They also contain several acid resins soluble in saline solutions (agreeing in this with the *Cactus grandiflorus* examined by Dr. Gordon Sharp), but the most characteristic one is but very slightly soluble in aqueous solutions, and gives with ammonia a deep yellow colour. This one, with at least two of the other resins, reduces Fehling's solution on long boiling and to a fair extent."

Total Acidity of Urine.—Oliviero emphasises the necessity for determining the total acidity of the urine in an analysis. Ten C.c. of the same is operated upon by direct titration, using phenolphthalein as an indicator. The number of C.c. used, multiplied by 0·327, will give the total acidity in terms of phosphoric acid. The total acidity of normal urine in these terms is 1·20 gramme per litre. If the acidity is expressed in terms of oxalic acid, the normal figure will be 2·50 grammes per litre, if as sulphuric acid 1·70 gramme per litre.—*Petit Mon. de Pharm.*, xlvii., Supp. 2458, after *Répert.*

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

TORONTO, 1897.

ADDRESS BY

SIR JOHN EVANS, K.C.B., D.C.L., LL.D., Sc.D., Treas.R.S., V.P.S.A., For Sec.G.S., *Correspondant de l'Institut de France, etc.*,

PRESIDENT.

Once more has the Dominion of Canada invited the British Association for the Advancement of Science to hold one of the annual meetings of its members within the Canadian territory, and for a second time has the Association had the honour and pleasure of accepting the proffered hospitality.

In doing so, the Association has felt that if by any possibility the scientific welfare of a locality is promoted by its being the scene of such a meeting, the claims should be fully recognised of those who, though not dwelling in the British Isles, are still inhabitants of that Greater Britain whose prosperity is so intimately connected with the fortunes of the Mother Country.

Here, especially, as loyal subjects of one beloved Sovereign, the sixtieth year of whose beneficent reign has just been celebrated with equal rejoicings in all parts of her Empire; as speaking the same tongue, and as in most instances connected by the ties of one common parentage, we are bound together in all that can promote our common interests.

There is, in all probability, nothing that will tend more to advance those interests than the diffusion of science in all parts of the British Empire, and it is towards this end that the aspirations of the British Association are ever directed, even if in many instances the aim may not be attained.

We are, as already mentioned, indebted to Canada for previous hospitality, but we must also remember that, since the time when we last assembled on this side of the Atlantic, the Dominion has provided the Association with a President, Sir William Dawson, whose name is alike well known in Britain and America, and whose reputation is indeed world-wide. We rejoice that we have still among us the pioneer of American geology, who among other discoveries first made us acquainted with the "Air-Breathers of the Coal," the terrestrial or more properly arboreal Saurians of the New Brunswick and Nova Scotia coal-measures.

On our last visit to Canada, in 1884, our place of assembly was Montreal, a city which is justly proud of her McGill University; to-day we meet within the buildings of another of the Universities of this vast Dominion—and in a city, the absolute fitness of which for such a purpose must have been foreseen by the native Indian tribes when they gave to a small aggregation of huts upon this spot the name of Toronto—"the place of meetings."

Our gathering this year presents a feature of entire novelty and extreme interest, inasmuch as the sister Association of the United States of America—still mourning the loss of her illustrious President, Professor Cope—and some other learned societies, have made special arrangements to allow of their members coming here to join us. I need hardly say how welcome their presence is, nor how gladly we look forward to their taking part in our discussions, and aiding us by interchange of thought. To such a meeting the term "international" seems almost misapplied. It may rather be described as a family gathering, in which our relatives more or less distant in blood, but still intimately connected with us by language, literature, and habits of thought, have spontaneously arranged to take part.

The domain of science is no doubt one in which the various nations of the civilised world meet upon equal terms, and for which no other passport is required than some evidence of having striven towards the advancement of natural knowledge. Here, on the frontier between the two great English-speaking nations of the world, who is there that does not inwardly feel that anything which conduces to an intimacy between the representatives of two countries, both of them actively engaged in the pursuit of science, may also, through such an intimacy, react on the affairs of

daily life, and aid in preserving those cordial relations that have now for so many years existed between the great American Republic and the British Islands, with which her early foundations are indissolubly connected? The present year has witnessed an interchange of courtesies which has excited the warmest feelings of approbation on both sides of the Atlantic. I mean the return to its proper custodians of one of the most interesting of the relics of the Pilgrim Fathers, the Log of the "Mayflower." May this return, trifling in itself, be of happy augury as testifying to the feelings of mutual regard and esteem which animate the hearts both of the donors and of the recipients!

At our meeting in Montreal the President was an investigator who had already attained to a foremost place in the domains of physics and mathematics, Lord Rayleigh. In his address he dealt mainly with topics, such as light, heat, sound, and electricity, on which he is one of our principal authorities. His name and that of his fellow-worker, Professor Ramsay, are now and will in all future ages be associated with the discovery of the new element, argon. Of the ingenious methods by which that discovery was made, and the existence of argon established, this is not the place to speak. One can only hope that the element will not always continue to justify its name by its inertness.

The claims of such a leader in physical science as Lord Rayleigh to occupy the Presidential chair are self-evident, but possibly those of his successor on this side of the Atlantic are not so immediately apparent. I cannot for a moment pretend to place myself on the same purely scientific level as my distinguished friend and for many years colleague, Lord Rayleigh, and my claims, such as they are, seem to me to rest on entirely different grounds.

Whatever little I may have indirectly been able to do in assisting to promote the advancement of science, my principal efforts have now for many years been directed towards attempting to forge those links in the history of the world, and especially of humanity, that connect the past with the present, and towards tracing that course of evolution which plays as important a part in the physical and moral development of man as it does in that of the animal and vegetable creation.

It appears to me, therefore, that my election to this important post may, in the main, be regarded as a recognition by this Association of the value of archæology as a science.

Leaving all personal considerations out of the question, I gladly hail this recognition, which is, indeed, in full accordance with the attitude already for many years adopted by the Association towards anthropology, one of the most important branches of true archæology.

It is no doubt hard to define the exact limits which are to be assigned to archæology as a science, and archæology as a branch of history and belles lettres. A distinction is frequently drawn between science on the one hand, and knowledge or learning on the other; but translate the terms into Latin, and the distinction at once disappears. In illustration of this I need only cite Bacon's great work on the "Advancement of Learning," which was, with his own aid, translated into Latin under the title "De Augmentis Scientiarum."

It must, however, be acknowledged that a distinction does exist between archæology proper, and what, for want of a better word, may be termed antiquarianism. It may be interesting to know the internal arrangements of a Dominican convent in the middle ages; to distinguish between the different mouldings characteristic of the principal styles of Gothic architecture; to determine whether an English coin bearing the name of Henry was struck under Henry II., Richard, John, or Henry III., or to decide whether some given edifice was erected in Roman, Saxon, or Norman times. But the power to do this, though involving no small degree of detailed knowledge and some acquaintance with scientific methods, can hardly entitle its possessors to be enrolled among the votaries of science.

A familiarity with all the details of Greek and Roman mythology and culture must be regarded as a literary rather than a scientific qualification; and yet when among the records of classical times we come upon traces of manners and customs which have survived for generations, and which seem to throw some rays of light upon the dim past, when history and writing were unknown, we are, I think, approaching the boundaries of scientific archæology.

Every reader of Virgil knows that the Greeks were not merely orators, but that with a pair of compasses they could describe the movements of the heavens and fix the rising of the stars; but when, by modern astronomy, we can determine the heliacal rising of some well-known star, with which the worship in some given ancient temple is known to have been connected, and can fix its position on the horizon at some particular spot, say, three thousand years ago, and then find that the axis of the temple is directed exactly towards that spot, we have some trustworthy scientific evidence that the temple in question must have been erected at a date approximately 1100 years B.C. If on or close to the same site we find that more than one temple was erected, each having a different orientation, these variations, following as they may fairly be presumed to do, the changing position of the rising of the dominant star, will also afford a guide as to the chronological order of the different foundations. The researches of Mr. Penrose seem to show that in certain Greek temples, of which the date of foundation is known from history, the actual orientation corresponds with that theoretically deduced from astronomical data.

Sir J. Norman Lockyer has shown that what holds good for Greek temples applies to many of far earlier date in Egypt, though up to the present time hardly a sufficient number of accurate observations have been made to justify us in foreseeing all the instructive results that may be expected to arise from astronomy coming to the aid of archæology.

The intimate connection of archæology with other sciences is in no case so evident as with respect to geology, for when considering subjects such as those I shall presently discuss, it is almost impossible to say where the one science ends and the other begins.

By the application of geological methods many archæological questions relating even to subjects on the borders of the historical period have been satisfactorily solved. A careful examination of the limits of the area over which its smaller coins are found has led to the position of many an ancient Greek city being accurately ascertained; while in England it has only been by treating the coins of the ancient Britons, belonging to a period before the Roman occupation, as if they were actual fossils, that the territories under the dominion of the various kings and princes who struck them have been approximately determined. In arranging the chronological sequence of these coins, the evolution of their types—a process almost as remarkable, and certainly as well-defined, as any to be found in Nature—has served as an efficient guide. I may venture to add that the results obtained from the study of the morphology of this series of coins were published ten years before the appearance of Darwin's great work on the 'Origin of Species.'

When we come to the consideration of the relics of the Early Iron and Bronze Ages, the aid of chemistry has of necessity to be invoked. By its means we are able to determine whether the iron of a tool or weapon is of meteoritic or volcanic origin, or has been reduced from iron-ore, in which case considerable knowledge of metallurgy would be involved on the part of those who made it. With bronze antiquities the nature and extent of the alloys combined with the copper may throw light not only on their chronological position, but on the sources whence the copper, tin, and other metals of which they consist were originally derived. I am not aware of there being sufficient differences in the analyses of the native copper from different localities in the region in which we are assembled, for Canadian archæologists to fix the sources from which the metal was obtained which was used in the manufacture of the ancient tools and weapons of copper that are occasionally discovered in this part of the globe.

Like chemistry, mineralogy and petrology may be called to the assistance of archæology in determining the nature and source of the rocks of which ancient stone implements are made; and, thanks to researches of the followers of those sciences, the old view that all such implements formed of jade and found in Europe must of necessity have been fashioned from material imported from Asia can no longer be maintained. In one respect the archæologist differs in opinion from the mineralogist—namely, as to the propriety of chipping off fragments from perfect and highly finished specimens for the purpose of submitting them to microscopic examination.

I have hitherto been speaking of the aid that other sciences can afford to archæology when dealing with questions that come almost, if not quite, within the fringe of history, and belong to times when the surface of our earth presented much the same configuration as regards the distribution of land and water, and hill and valley, as it does at present, and when, in all probability, the climate was much the same as it now is. When, however, we come to discuss that remote age in which we find the earliest traces that are at present known of man's appearance upon earth,

the aid of geology and palæontology becomes absolutely imperative.

The changes in the surface configuration and in the extent of the land, especially in a country like Britain, as well as the modifications of the fauna and flora since those days, have been such that the archæologist pure and simple is incompetent to deal with them, and he must either himself undertake the study of these other sciences or call experts in them to his assistance. The evidence that man had already appeared upon the earth is afforded by stone implements wrought by his hands, and it falls strictly within the province of the archæologist to judge whether given specimens were so wrought or not; it rests with the geologist to determine their stratigraphical or chronological position, while the palæontologist can pronounce upon the age and character of the associated fauna and flora.

If left to himself the archæologist seems too prone to build up theories founded upon form alone, irrespective of geological conditions. The geologist, unaccustomed to archæological details, may readily fail to see the difference between the results of the operations of Nature and those of art, and may be liable to trace the effects of man's handiwork in the chipping, bruising, and wearing which in all ages result from natural forces; but the united labours of the two, checked by those of the palæontologist, cannot do otherwise than lead towards sound conclusions.

It will perhaps be expected of me that I should on the present occasion bring under review the state of our present knowledge with regard to the antiquity of man; and probably no fitter place could be found for the discussion of such a topic than the adopted home of my venerated friend, the late Sir Daniel Wilson, who first introduced the word "prehistoric" into the English language.

Some among us may be able to call to mind the excitement, not only among men of science but among the general public, when, in 1859, the discoveries of M. Boucher de Perthes and Dr. Rigollot in the gravels of the valley of the Somme, at Abbeville and Amiens, were confirmed by the investigations of the late Sir Joseph Prestwich, myself, and others, and the co-existence of man with the extinct animals of the Quaternary fauna, such as the mammoth and woolly-haired rhinoceros, was first virtually established. It was at the same time pointed out that these relics belonged to a far earlier date than the ordinary stone weapons found upon the surface, which usually showed signs of grinding or polishing, and that in fact there were two stone ages in Britain. To these the terms Neolithic and Palæolithic were subsequently applied by Sir John Lubbock.

The excitement was not less, when, at the meeting of this Association at Aberdeen, in the autumn of that year, Sir Charles Lyell, in the presence of the Prince Consort, called attention to the discoveries in the valley of the Somme, the site of which he had himself visited, and to the vast lapse of time indicated by the position of the implements in drift-deposits a hundred feet above the existing river.

The conclusions forced upon those who examined the facts on the spot did not receive immediate acceptance by all who were interested in geology and archæology, and fierce were the controversies on the subject that were carried on both in the newspapers and before various learned societies.

It is at the same time instructive and amusing to look back on the discussions of those days. While one class of objectors accounted for the configuration of the flint implements from the gravels by some unknown chemical agency, by the violent and continued gyratory action of water, by fracture resulting from pressure, by rapid cooling when hot or by rapid heating when cold, or even regarded them as aberrant forms of fossil fishes, there were others who, when compelled to acknowledge that the implements were the work of men's hands, attempted to impugn and set aside the evidence as to the circumstances under which they had been discovered. In doing this they adopted the view that the worked flints had either been introduced into the containing beds at a comparatively recent date, or if they actually formed constituent parts of the gravel then that this was a mere modern alluvium resulting from floods at no very remote period.

In the course of a few years the main stream of scientific thought left this controversy behind, though a tendency to cut down the lapse of time necessary for all the changes that have taken place in the configuration of the surface of the earth and in the character of its occupants since the time of the Palæolithic gravels, still survives in the inmost recesses of the hearts of not a few observers.

In his address to this Association at the Bath meeting of 1864, Sir Charles Lyell struck so true a note that I am tempted to reproduce the paragraph to which I refer:—

"When speculations on the long series of events which occurred in the glacial and post-glacial periods are indulged in, the imagination is apt to take alarm at the immensity of the time required to interpret the monuments of these ages, all referable to the era of existing species. In order to abridge the number of centuries which would otherwise be indispensable, a disposition is shown by many to magnify the rate of change in pre-historic times by investing the causes which have modified the animate and inanimate world with extraordinary and excessive energy. It is related of a great Irish orator of our day that when he was about to contribute somewhat parsimoniously towards a public charity, he was persuaded by a friend to make a more liberal donation. In doing so he apologised for his first apparent want of generosity by saying that his early life had been a constant struggle with scanty means, and that 'they who are born to affluence cannot easily imagine how long a time it takes to get the chill of poverty out of one's bones.' In like manner we of the living generation, when called upon to make grants of thousands of centuries in order to explain the events of what is called the modern period, shrink naturally at first from making what seems so lavish an expenditure of past time. Throughout our early education we have been accustomed to such strict economy in all that relates to the chronology of the earth and its inhabitants in remote ages, so fettered have we been by old traditional beliefs, that even when our reason is convinced, and we are persuaded that we ought to make more liberal grants of time to the geologist, we feel how hard it is to get the chill of poverty out of our bones."

Many, however, have at the present day got over this feeling, and of late years the general tendency of those engaged upon the question of the antiquity of the human race has been in the direction of seeking for evidence by which the existence of man upon the earth could be carried back to a date earlier than that of the Quaternary gravels.

There is little doubt that such evidence will eventually be forthcoming, but, judging from all probability, it is not in Northern Europe that the cradle of the human race will eventually be discovered, but in some part of the world more favoured by a tropical climate, where abundant means of subsistence could be procured, and where the necessity for warm clothing did not exist.

Before entering into speculations on this subject, or attempting to lay down the limits within which we may safely accept recent discoveries as firmly established, it will be well to glance at some of the cases in which implements are stated to have been found under circumstances which raise a presumption of the existence of man in pre-Glacial, Pliocene, or even Miocene times.

Flint implements of ordinary Palæolithic type have, for instance, been recorded as found in the eastern counties of England, in beds beneath the chalky boulder clay; but on careful examination the geological evidence has not to my mind proved satisfactory, nor has it, I believe, been generally accepted. Moreover, the archæological difficulty that man, at two such remote epochs as the pre-Glacial and the post-Glacial, even if the term Glacial be limited to the chalky boulder clay, should have manufactured implements so identical in character that they cannot be distinguished apart, seems to have been entirely ignored.

Within the last few months we have had the report of worked flints having been discovered in the late Pliocene forest bed of Norfolk, but in that instance the signs of human workmanship upon the flints are by no means apparent to all observers.

But such an antiquity as that of the forest bed is as nothing when compared with that which would be implied by the discoveries of the work of men's hands in the Pliocene and Miocene beds of England, France, Italy, and Portugal, which have been accepted by some geologists. There is one feature in these cases which has hardly received due attention, and that is the isolated character of reputed discoveries. Had man, for instance, been present in Britain during the Crag period, it would be strange indeed if the sole traces of his existence that he left were a perforated tooth of a large shark, the sawn rib of a manatee, and a beaming full face, carved on the shell of a pectunculus!

In an address to the anthropological section at the Leeds meeting of this Association in 1890 I dealt somewhat fully with these supposed discoveries of the remains of human art in beds of Tertiary date, and I need not here go further into the question. Suffice it to say that I see no reason why the verdict of "not proven," at which I then arrived, should be reversed.

In the case of a more recent discovery in Upper Burma in beds

at first pronounced to be Upper Miocene, but subsequently "definitely ascertained to be Pliocene," some of the flints are of purely natural and not artificial origin, so that two questions arise: First, Were the fossil remains associated with the worked flints or with those of natural forms? And second, Were they actually found in the bed to which they have been assigned, or did they merely lie together on the surface?

Even the *Pithecanthropus erectus* of Dr. Eugène Dubois from Java meets with some incredulous objectors from both the physiological and the geological sides. From the point of view of the latter the difficulty lies in determining the exact age of what are apparently alluvial beds in the bottom of a river valley.

When we return to Palæolithic man, it is satisfactory to feel that we are treading on comparatively secure ground, and that the discoveries of the last forty years in Britain alone enable us to a great extent to reconstitute his history. We may not know the exact geological period when first he settled in the British area, but we have good evidence that he occupied it at a time when the configuration of the surface was entirely different from what it is at present: when the river valleys had not been cut down to anything like their existing depth, when the fauna of the country was of a totally different character from that of the present day, when the extension of the southern part of the island seaward was in places such that the land was continuous with that of the continent, and when in all probability a far more rainy climate prevailed. We have proofs of the occupation of the country by man during the long lapse of time that was necessary for the excavation of the river valleys. We have found the old floors on which his habitations were fixed, we have been able to trace him at work on the manufacture of flint instruments, and by building up the one upon the other the flakes struck off by the primæval workman in those remote times we have been able to reconstruct the blocks of flint which served as his material.

That the duration of the Palæolithic period must have extended over an almost incredible length of time is sufficiently proved by the fact that valleys, some miles in width, and of a depth of from 100 to 150 feet, have been eroded since the deposit of the earliest implement-bearing beds. Nor is the apparent duration of this period diminished by the consideration that the floods which hollowed out the valleys were not in all probability of such frequent occurrence as to teach Palæolithic man by experience the danger of settling too near to the streams, for had he kept to the higher slopes of the valley there would have been but little chance of his implements having so constantly formed constituent parts of the gravels deposited by the floods.

The examination of British cave-deposits affords corroborative evidence of this extended duration of the Palæolithic period. In Kent's Cavern at Torquay, for instance, we find in the lowest deposit, the breccia below the red cave-earth, implements of flint and chert corresponding in all respects with those of the high level and most ancient river gravels. In the cave-earth these are scarcer, though implements occur which also have their analogues in the river deposits; but, what is more remarkable, harpoons of reindeer's horn and needles of bone are present, identical in form and character with those of the caverns of the Reindeer period in the south of France, and suggestive of some bond of union or identity of descent between the early troglodytes, whose habitations were geographically so widely separated the one from the other.

In a cavern at Creswell Crags, on the confines of Derbyshire and Nottinghamshire, a bone has moreover been found engraved with a representation of parts of a horse in precisely the same style as the engraved bones of the French caves.

It is uncertain whether any of the River-drift specimens belong to so late a date as these artistic cavern-remains; but the greatly superior antiquity of even these to any Neolithic relics is testified by the thick layer of stalagmite, which had been deposited in Kent's Cavern before its occupation by men of the Neolithic and Bronze periods.

Towards the close of the period covered by the human occupation of the French caves, there seems to have been a dwindling in the number of the larger animals constituting the Quaternary fauna, whereas their remains are present in abundance in the lower and therefore more recent of the valley gravels. This circumstance may afford an argument in favour of regarding the period represented by the later French caves as a continuation of that during which the old river gravels were deposited, and yet the great change in the fauna that has taken place since the latest of the cave deposits included in the Palæolithic period is indicative of an immense lapse of time.

How much greater must have been the time required for the more conspicuous change between the old Quaternary fauna of the river gravels and that characteristic of the Neolithic period!

As has been pointed out by Professor Boyd Dawkins, only thirty-one out of the forty-eight well-ascertained species living in the post-Glacial or River-drift period survived into pre-historic or Neolithic times. We have not, indeed, any means at command for estimating the number of centuries which such an important change indicates; but when we remember that the date of the commencement of the Neolithic or surface stone period is still shrouded in the mist of a dim antiquity, and that prior to that commencement the River-drift period had long come to an end; and when we further take into account the almost inconceivable ages that even under the most favourable conditions the excavation of wide and deep valleys by river action implies, the remoteness of the date at which the Palæolithic period had its beginning almost transcends our powers of imagination.

We find distinct traces of river action from 100 to 200 feet above the level of existing streams and rivers, and sometimes at a great distance from them; we observe old fresh-water deposits on the slopes of valleys several miles in width; we find that long and lofty escarpments of rock have receded unknown distances since their summits were first occupied by Palæolithic man; we see that the whole side of a wide river valley has been carried away by an invasion of the sea, which attacked and removed a barrier of chalk cliffs from 400 to 600 feet in height; we find that what was formerly an inland river has been widened out into an arm of the sea, now the highway of our fleets, and that gravels which were originally deposited in the bed of some ancient river now cap isolated and lofty hills.

And yet, remote as the date of the first known occupation of Britain by man may be, it belongs to what, geologically speaking, must be regarded as a quite recent period, for we are now in a position to fix with some degree of accuracy its place on the geological scale. Thanks to investigations ably carried out at Hoxne in Suffolk, and at Hitchin in Hertfordshire, by Mr. Clement Reid, under the auspices of this Association and of the Royal Society, we know that the implement-bearing beds at those places undoubtedly belong to a time subsequent to the deposit of the great chalky boulder clay of the eastern counties of England. It is of course, self-evident that this vast deposit, in whatever manner it may have been formed, could not, for centuries after its deposition was complete, have presented a surface inhabitable by man. Moreover, at a distance but little farther north, beds exist which also, though at a somewhat later date, were apparently formed under Glacial conditions. At Hoxne the interval between the deposit of the boulder clay and of the implement-bearing beds is distinctly proved to have witnessed at least two noteworthy changes in climate. The beds immediately reposing on the clay are characterised by the presence of alder in abundance, of hazel and yew, as well as by that of numerous flowering plants indicative of a temperate climate, very different from that under which the boulder clay itself was formed. Above these beds characterised by temperate plants comes a thick and more recent series of strata, in which leaves of the dwarf Arctic willow and birch abound, and which were in all probability deposited under conditions like those of the cold regions of Siberia and North America.

At a higher level and of more recent date than these—from which they are entirely distinct—are the beds containing Palæolithic implements, formed in all probability under conditions not essentially different from those of the present day. However this may be, we have now conclusive evidence that the Palæolithic implements are, in the eastern counties of England, of a date long posterior to that of the great chalky boulder clay.

It may be said, and said truly, that the implements at Hoxne cannot be shown to belong to the beginning rather than to some later stage of the Palæolithic period. The changes, however, that have taken place at Hoxne in the surface configuration of the country prove that the beds containing the implements cannot belong to the close of that period.

It must, moreover, be remembered that in what are probably the earliest of the Palæolithic deposits of the eastern counties, those at the highest level, near Brandon in Norfolk, where the gravels contain the largest proportion of pebbles derived from Glacial beds, some of the implements themselves have been manufactured from materials not native to the spot, but brought from a distance, and derived in all probability either from the boulder clay or from some of the beds associated with it.

We must, however, take a wider view of the whole question, for it must not for a moment be supposed that there are the slighest grounds for believing that the civilisation, such as it was, of the Palæolithic period originated in the British Isles. We find in other countries implements so identical in form and character with British specimens that they might have been manufactured by the same hands. These occur over large areas in France under similar conditions to those that prevail in England. The same forms have been discovered in the ancient river gravels of Italy, Spain, and Portugal. Some few have been recorded from the north of Africa, and analogous types occur in considerable numbers in the south of that continent. On the banks of the Nile, many hundreds of feet above its present level, implements of the European types have been discovered; while in Somaliland, in an ancient river valley at a great elevation above the sea, Mr. Seton-Karr has collected a large number of implements formed of flint and quartzite, which, judging from their form and character, might have been dug out of the drift deposits of the Somme or the Seine, the Thames or the ancient Solent.

In the valley of the Euphrates implements of the same kind have also been found, and again farther east in the lateritic deposits of Southern India they have been obtained in considerable numbers. It is not a little remarkable, and is at the same time highly suggestive, that a form of implement almost peculiar to Madras reappears among implements from the very ancient gravels of the Manzanares at Madrid. In the case of the African discoveries we have as yet no definite palæontological evidence by which to fix their antiquity, but in the Narbadá Valley of Western India Palæolithic implements of quartzite seem to be associated with a local fauna of Pleistocene age, comprising, like that of Europe, the elephant, hippopotamus, ox, and other mammals of species now extinct. A correlation of the two faunas with a view of ascertaining their chronological relations is beset with many difficulties, but there seems reason for accepting this Indian Pleistocene fauna as in some degree more ancient than the European.

Is this not a case in which the imagination may be fairly invoked in aid of science? May we not from these data attempt in some degree to build up and reconstruct the early history of the human family? There, in Eastern Asia, in a tropical climate, with the means of subsistence readily at hand, may we not picture to ourselves our earliest ancestors gradually developing from a lowly origin, acquiring a taste for hunting, if not indeed being driven to protect themselves from the beasts around them, and evolving the more complicated forms of tools or weapons from the simpler flakes which had previously served them as knives? May we not imagine that, when once the stage of civilisation denoted by these Palæolithic implements had been reached, the game for the hunter became scarcer, and that his life in consequence assumed a more nomad character? Then, and possibly not till then, may a series of migrations to "fresh woods and pastures new" not unnaturally have ensued, and these following the usual course of "westward towards the setting sun" might eventually lead to a Palæolithic population finding its way to the extreme borders of Western Europe, where we find such numerous traces of its presence.

How long a term of years may be involved in such a migration it is impossible to say, but that such a migration took place the phenomena seem to justify us in believing. It can hardly be supposed that the process that I have shadowed forth was reversed, and that man, having originated in North-Western Europe, in a cold climate where clothing was necessary and food scarce, subsequently migrated eastward to India and southward to the Cape of Good Hope! As yet, our records of discoveries in India and Eastern Asia are but scanty; but it is there that the traces of the cradle of the human race are, in my opinion, to be sought, and possibly future discoveries may place upon a more solid foundation the visionary structure that I have ventured to erect.

It may be thought that my hypothesis does not do justice to what Sir Thomas Browne has so happily termed "that great antiquity, America." I am, however, not here immediately concerned with the important Neolithic remains of all kinds with which this great continent abounds. I am now confining myself to the question of Palæolithic man and his origin, and in considering it I am not unmindful of the Trenton implements, though I must content myself by saying that the "turtle-back" form is essentially different from the majority of those on the wide dissemination of which I have been speculating, and, moreover, as many here present are aware, the circumstances of the finding of these American implements are still under careful discussion.

Leaving them out of the question for the present, it may be thought worth while to carry our speculations rather further, and to consider the relations in time between the Palæolithic and the Neolithic periods. We have seen that the stage in human civilisation denoted by the use of the ordinary forms of Palæolithic implements must have extended over a vast period of time if we have to allow for the migration of the primæval hunters from their original home, wherever it may have been in Asia or Africa, to the west of Europe, including Britain. We have seen that, during this migration, the forms of the weapons and tools made from silicious stones had become, as it were, stereotyped, and further, that, during the subsequent extended period implied by the erosion of the valleys, the modifications in the form of the implements and the changes in the fauna associated with the men who used them were but slight.

At the close of the period during which the valleys were being eroded comes that represented by the latest occupation of the caves by Palæolithic man, when both in Britain and in the south of France the reindeer was abundant; but among the stone weapons and implements of that long troglodytic phase of man's history not a single example with the edge sharpened by grinding has as yet been found. All that can safely be said is that the larger implements as well as the larger mammals had become scarcer, that greater power in chipping flint had been attained, that the arts of the engraver and the sculptor had considerably developed, and that the use of the bow had probably been discovered.

Directly we encounter the relics of the Neolithic period, often, in the case of the caves lately mentioned, separated from the earlier remains by a thick layer of underlying stalagmite, we find flint hatchets polished at the edge and on the surface, cutting at the broad and not at the narrow end, and other forms of implements associated with a fauna in all essential respects identical with that of the present day.

Were the makers of these polished weapons the direct descendants of Palæolithic ancestors whose occupation of the country was continuous from the days of the old river gravels? or had these long since died out, so that after Western Europe had for ages remained uninhabited, it was re-peopled in Neolithic times by the immigration of some new race of men? Was there, in fact, a "great gulf fixed" between the two occupations? or was there in Europe a gradual transition from the one stage of culture to the other?

It has been said that "what song the Syrens sang, or what name Achilles assumed when he hid himself among women, though puzzling questions, are not beyond all conjecture"; and though the questions now proposed may come under the same category, and must await the discovery of many more essential facts before they receive definite and satisfactory answers, we may, I think, throw some light upon them if we venture to take a few steps upon the seductive if insecure paths of conjecture. So far as I know we have as yet no trustworthy evidence of any transition from the one age to the other, and the gulf between them remains practically unabridged. We can, indeed, hardly name the part of the world in which to seek for the cradle of Neolithic civilisation, though we know that traces of what appear to have been a stone-using people have been discovered in Egypt, and that what must be among the latest of the relics of their industry have been assigned to a date some 3500 to 4000 years before our era. The men of that time had attained to the highest degree of skill in working flint that has ever been reached. Their beautifully made knives and spear-heads seem indicative of a culminating point reached after long ages of experience; but whence these artists in flint came or who they were is at present absolutely unknown, and their handiworks afford no clue to help us in tracing their origin.

Taking a wider survey, we may say that, generally speaking, not only the fauna, but the surface configuration of the country were, in Western Europe at all events, much the same at the commencement of the Neolithic period as they are at the present day. We have, too, no geological indications to aid us in forming any chronological scale.

The occupation of some of the caves in the south of France seems to have been carried on after the erosion of the neighbouring river valleys had ceased, and so far as our knowledge goes these caves offer evidence of being the latest in time of those occupied by man during the Palæolithic period. It seems barely possible that, though in the north of Europe there are no distinct signs of such late occupation, yet that, in the south, man may have lived on, though in diminished numbers; and that in some of the caves,

such for instance, as those in the neighbourhood of Mentone, there may be traces of his existence during the transitional period that connects the Palæolithic and Neolithic ages. If this were really the case, we might expect to find some traces of a dissemination of Neolithic culture from a North Italian centre, but I much doubt whether any such traces actually exist.

If it had been in that part of the world that the transition took place, how are we to account for the abundance of polished stone hatchets found in Central India? Did Neolithic man return eastward by the same route as that by which in remote ages his Palæolithic predecessor had migrated westward? Would it not be in defiance of all probability to answer such a question in the affirmative? We have, it must be confessed, nothing of a substantial character to guide us in these speculations; but, pending the advent of evidence to the contrary, we may, I think, provisionally adopt the view that owing to failure of food, climatal changes, or other causes, the occupation of Western Europe by Palæolithic man absolutely ceased, and that it was not until after an interval of long duration that Europe was re-peopled by a race of men immigrating from some other part of the globe where the human race had survived, and in course of ages had developed a higher stage of culture than that of Palæolithic man.

I have been carried away by the liberty allowed for conjecture into the regions of pure imagination, and must now return to the realms of fact, and one fact on which I desire for a short time to insist is that of the existence at the present day, in close juxtaposition with our own civilisation, of races of men who, at all events but a few generations ago, lived under much the same conditions as did our own Neolithic predecessors in Europe.

The manners and customs of these primitive tribes and peoples are changing day by day, their languages are becoming obsolete, their myths and traditions are dying out, their ancient processes of manufacture are falling into oblivion, and their numbers are rapidly diminishing, so that it seems inevitable that ere long many of these interesting populations will become absolutely extinct. The admirable Bureau of Ethnology instituted by our neighbours in the United States of America has done much towards preserving a knowledge of the various native races in this vast continent; and here in Canada the annual Archæological Reports presented to the Minister of Education are rendering good service in the same cause.

Moreover the Committee of this Association appointed to investigate the physical characters, languages, and industrial and social conditions of the North-Western tribes of the Dominion of Canada is about to present its twelfth and final report, which in conjunction with those already presented will do much towards preserving a knowledge of the habits and languages of those tribes. It is sad to think that Mr. Horatio Hale, whose comprehensive grasp of the bearings of ethnological questions, and whose unremitting labours have so materially conduced to the success of the Committee, should be no longer among us. Although this report is said to be final, it is to be hoped that the Committee may be able to indicate lines upon which future work in the direction of ethnological and archæological research may be profitably carried on in this part of Her Majesty's dominions.

It is, however, lamentable to notice how little is being or has been officially done towards preserving a full record of the habits, beliefs, arts, myths, languages, and physical characteristics of the countless other tribes and nations more or less uncivilised which are comprised within the limits of the British Empire. At the meeting of this Association held last year at Liverpool it was resolved by the General Committee "that it is of urgent importance to press upon the Government the necessity of establishing a Bureau of Ethnology for Greater Britain, which by collecting information with regard to the native races within and on the borders of the Empire will prove of immense value to science and to the Government itself." It has been suggested that such a bureau might with the greatest advantage and with the least outlay and permanent expense be connected either with the British Museum or with the Imperial Institute, and the project has already been submitted for the consideration of the trustees of the former establishment.

The existence of an almost unrivalled ethnological collection in the Museum, and the presence there of officers already well versed in ethnological research, seem to afford an argument in favour of the proposed bureau being connected with it. On the other hand, the Imperial Institute was founded with an especial view to its being a centre around which every interest connected with the dependencies of the Empire might gather for information and support. The establishment within the last twelve months of a Scientific Department within the Institute, with well-appointed laboratories and a highly-trained staff, shows how ready are those concerned in its management to undertake any duties that may conduce to the welfare of the outlying parts of the British Empire; a fact of which I believe that Canada is fully aware. The Institute is therefore likely to develop, so far as its scientific department is concerned, into a bureau of advice in all matters scientific and technical, and certainly a bureau of ethnology such as that suggested would not be out of place within its walls.

Wherever such an institution is to be established, the question of its existence must of necessity rest with her Majesty's Government and Treasury, inasmuch as without funds, however moderate, the undertaking cannot be carried on. I trust that in considering the question it will always be borne in mind that in the relations between civilised and uncivilised nations and races it is of the first importance that the prejudices, and especially the religious or semi-religious and caste prejudices, of the latter should be thoroughly well known to the former. If but a single "little war" could be avoided in consequence of the knowledge acquired and stored up by the Bureau of Ethnology preventing such a misunderstanding as might culminate in warfare, the cost of such an institution would quickly be saved.

I fear that it will be thought that I have dwelt too long on primæval man and his modern representatives, and that I should have taken this opportunity to discuss some more general subject, such as the advances made in the various departments of science since last this Association met in Canada. Such a subject would no doubt have afforded an infinity of interesting topics on which to dilate. Spectrum analysis, the origin and nature of celestial bodies, photography, the connection between heat, light, and electricity, the practical applications of the latter, terrestrial magnetism, the liquefaction and solidification of gases, the behaviour of elements and compounds under the influence of extreme cold, the nature and uses of the Röntgen rays, the advances in bacteriology and in prophylactic medicine, might all have been passed under review, and to many of my audience would have seemed to possess greater claims to attention than the subject that I have chosen.

It must, however, be borne in mind that most, if not indeed all, of these topics will be discussed by more competent authorities in the various sections of the Association by means of the presidential addresses or otherwise. Nor must it be forgotten that I occupy this position as a representative of archæology, and am therefore justified in bringing before you a subject in which every member of every race of mankind ought to be interested—the antiquity of the human family and the scenes of its infancy.

Others will direct our thoughts in other directions, but the farther we proceed the more clearly shall we realise the connection and inter-dependence of all departments of science. Year after year, as meetings of this Association take place, we may also foresee that "many shall run to and fro and knowledge shall be increased." Year after year advances will be made in science, and in reading that Book of Nature that lies ever open before our eyes; successive stones will be brought for building up that Temple of Knowledge of which our fathers and we have laboured to lay the foundations. May we not well exclaim with old Robert Recorde?—

"Oh woorthy temple of Goddes magnificence: Oh throne of glorye and seate of the lorde: thy substance most pure what tonge can describe? thy signes are so wonderous, surmountinge mannes witte, the effects of thy motions so diuers in kinde: so harde for to searche, and worse for to fynde—Thy woorkes are all wonderous, thy cunning unknowen: yet seedes of all knowledge in that booke are sowen—And yet in that boke who rightly can reade, to all secrete knowledge it will him straighte leade."*

Toxicological Detection of Mercuric Cyanide.—Busche's method is as follows: 100 grammes of the substance is well mixed and exhausted three times with its equal volume of pure alcohol. The alcoholic fluid is filtered, distilled at the lowest temperature, the residue again filtered, concentrated, decolorised with animal charcoal; aluminum powder is then added to a few drops of the fluid. A strong reaction results after a few moments, precipitating mercury and forming prussic acid. The latter can be recognised by its odour, and a piece of paper moistened with weak sodium solution and fastened to the upper part of the test tube for some time is turned azure blue on being touched with a dilute solution of ferrous sulphate, followed with a little muriatic acid.—*Pharm. Centralh.*, xxxviii., 135.

* Preface to Robert Recorde's 'Castle of Knowledge,' 1556.

SOME IMPRESSIONS OF THE GLASGOW MEETING.

THE most successful item in the entertainment programme of the Conference was the coasting cruise on the steamer "Glen Sannox" on Thursday, August 12. Better weather could not have been arranged, the commissariat arrangements were perfect, and nearly five hundred persons—many of an acutely critical disposition — had no fault to find with any of the provisions made for their comfort during the whole of a hot August day. Luncheon and dinner were equally well served and much credit is due to everyone who took part in arranging the trip.

Leaving St. Enoch's Station for Greenock at 9 a.m., the "Glen Sannox" was boarded at Princes' Pier, and sailed down the Firth of Clyde. Passing Gourock, a favourite watering-place and anchorage for yachts, and the terminus of the Caledonian Railway; from this point the scenery became very beautiful. The steamer crossed the Firth and passed Kirn, Dunoon, and Innellan, then rounding Toward Point and Lighthouse it entered the strait between Argyllshire and the Island of Bute, and after passing Craigmore reached Rothesay Bay. Rothesay, which claims to be the Queen of Scottish watering and wintering places, is an ancient place, and derives its name from the Gaelic words "Reogh Snidh," which means the King's Seat. Passing Colintraive, the steamer passed through the Kyles (or narrows) of Bute proper, and here the scenery increased in interest and beauty. The winding course of the strait is very deceptive, as the hills seem to close in on all sides. But in a little while Loch Ridden was entered, near the mouth of which was seen a small island, "Eillan Leirrig," marked by a solitary tree, which is worthy of notice as being the scene of the failure of the Earl of Argyll's ill-fated rising in 1685, so graphically described by Macaulay. The "Maids of Bute," two maidens who for some reason were transformed into stone, appeared on the left, whilst almost opposite were the "Lads of Cowal," who were similarly treated for daring to express their sorrow at the fate of the maids.

Shortly after, the steamer reached Tighnabruaich, a charming holiday retreat, and passing Kames, made for Ardlamont Point, and soon the Island of Arran, with its lofty peaks, burst on the view. Steaming in a southerly direction and round Garroch Head, the southern extremity of Bute, a good view was obtained of the channel, with Ailsa Craig in the distance, a rocky islet rising sheer out of the sea to a height of 1114 feet above sea-level. Passing next between the islands of Cumbrae, Fairlie, Largs, and Netherhall, the residence of Lord Kelvin, were passed. Clearing the north end of Cumbrae, Bute again came into view on the left, and on the right appeared Skelmorlie and Wemyss Bay.

Reaching Loch Long, which extends 17½ miles N.N.E., and has a varying width of from 2 miles to 2¾ furlongs, Loch Goil was seen branching off to the left, Carrick Castle, an ancient seat of the Dunmore family, being also visible; while at the foot of the steep promontory was a small island, the scene of Campbell's famous ballad, "Lord Ullin's Daughter." Passing Portincaple, up on the hill was seen the West Highland Railway, and as the vessel proceeded the scenery gathered in character, with Ben Arthur, or "Cobbler," above, and Ben Voirlich and other mountain masses bounding the landscape. At Arrachar the party went ashore to be photographed, and on rejoining the steamer, dinner was served. Just before leaving Loch Long, Cove was passed on the left, and looking towards the south were seen Gourock, Inverkip, and the Renfrewshire and Ayrshire coasts.

Passing Kilcreggan on the left, and making for Rosneath Point, the Gareloch was entered, and a view obtained of Rosneath Castle, a seat of the Duke of Argyll. This loch extends seven miles in a north-westerly direction. Soon the vessel was through "The Narrows," passing Row, Clynder, Barreman, and Shandon, where close to the shore is Shandon Hydropathic, originally built as a summer residence by the late Robert Napier, the eminent shipbuilder. Rahane and Mambeg appeared on the left, and the terminal pier of Garelochhead in front. The steamer was stopped at this point to enable a party—including the President of the Conference, the President and Secretary of the Pharmaceutical Society, and other distinguished pharmacists—to go ashore and visit Mr. Daniel Frazer, who was a member of the Pharmaceutical Council about twenty years ago and also a member of the first Executive of the North British Branch. He is now ninety-five years of age, but his eye is undimmed and his intellect clear, and he appeared very pleased to welcome some of his old friends and acquaintances. Resuming the voyage, the sail back was exceedingly pleasant. At the mouth of the loch was seen Helensburgh, and steaming on, the entrance to the Clyde proper was soon crossed, and Princes' Pier was reached

about 7.15 p.m., when the special train was at once boarded for Paisley and Glasgow.

The Conference Guide Book, which has furnished the material for the foregoing description of the cruise, was found exceedingly useful by everyone, and thanks are due for the foresight manifested in providing such an invaluable help to visitors who were strangers in Glasgow. The local conference committee deserve every praise for the excellent guide book, which was furnished to all those attending the Conference, and must have proved of great assistance in guiding the visitors in their peregrinations about the city, explaining what there was to see and the best way of seeing it. The numerous illustrations adding greatly to the value of the book. It was satisfactory to find also that the descriptive article on Glasgow, which recently appeared in these pages, had interested many readers, natives of the Scottish soil no less than mere Sassenachs.

The Conversazione following President Symes' reception was attractive, of course, but it is an open question whether the evening would not have been more profitably spent at the headquarters. The numerous works of art exhibited could not be seen to advantage under the conditions prevailing, and many who were present appeared excessively weary at the close of the function. Moreover, the time was all too short to enjoy the feast that the galleries offer to the lovers of art. Glasgow may be well proud of its collection of over six hundred works, some of which are of great value. New galleries are to be built to accommodate this splendid collection, the present building having long been far too small and inadequate to do justice to such a magnificent collection.

Glasgow's Art Treasures are very attractive, and those who were able to tear themselves away from the pleasant surroundings of the reception and conversazione to wander through the Corporation Art Galleries must have been equally surprised and delighted to find on view so many gems of art. The city can boast of one of the finest, if not the best, collection of original and rare paintings to be found outside the National Gallery. The Glasgow Galleries of Art owe their origin to Mr. Archibald McLellan, formerly a town councillor and magistrate of the city. Much of his time and wealth he devoted to the formation of a collection of works of art, which became the nucleus, and still forms the most considerable proportion of the contents of the galleries. This collection is illustrative of the characteristics and progress of the various schools of painting in Italy, Germany, Spain, the Low countries, and France since the revival of art in the fifteenth century. Since the McLellan gift valuable additions have been made by the Euing pictures, the Graham Gilbert collection, and many minor gifts, including the Reid gift of ten pictures, four by Sam Bough, Joseph Henderson's "The Flowing Tide," and a valuable portrait by Raeburn.

Amongst the more Valuable Specimens may be mentioned two of the Bellini School—Venetian "Virgin and Child Enthroned"—"The Madonna and Child," "The Holy Family," by Bonifazio (pupil of Palmo Vecchio), whose pictures are to be found in the more important galleries of Italy and other countries. "The Adultress Brought Before Christ," by Giorgione, representing the Italian-Venetian School. The French School is represented, amongst others, by Grenze: "A Child's Head," "The Sulky Boy." Hals, as a representative of the Dutch School of the sixteenth century, who, for marvellous breadth, freedom, swiftness, and accuracy of handling, humorous gaiety of observation, forceful and vivacious delineation of character, has no superior, is represented by his famous "Head of a Boy." Five original works of Hobbema and many others of the Dutch school are to be found on the walls. Two originals of Raphael, eight originals of Rembrandt, two originals of Rubens, and one unfinished "Portraits of a Lady" by him, besides many other famous painters, as well as many very valuable copies of most representative artists of the various schools. English and Scottish schools are fully represented by Reynolds, six original; Chalmers, one original; Turner, two original; Gainsborough, one original; De Wint and many equally famous. The four beautiful original water colours of David Cox must be mentioned.

The Citizens of Glasgow are justly proud of their fine city, and point with enthusiastic pride to its many attractions; nor do they consider it any trouble to put their visitors in the way of gaining all possible knowledge, so that they can the better appreciate its many beauties. As an instance of the obliging dispositions of Glasgow people, one of the Conference officials relates how when he inquired the nearest way to the Municipal Buildings, a gentleman at once offered to show the way, then undertook all the trouble of obtaining permission to view the place, accompanied the visitor all over the buildings, explaining all things as they came along, after which he took him over the cathedral and imparted a lot of valuable information on various topics connected with the principal features of the city, spending in all about a hour and a half; then went on his way again as if he had only performed some ordinary act of courtesy to a passing stranger. Yet this gentleman is a busy man and owner of a very large commercial enterprise, but the love and pride for his native town prompted him to act as the traveller's friend. In their public buildings the Glaswegians take the keenest interest; this is evidenced by the enormous amount of money which has been spent in the architectural adornment of the various edifices. The styles of architecture are in many cases carried out with a faithfulness for details that goes to prove the city can boast of architects of exceptional ability in their profession.

The Smoking Concert, which was held in the Ball-room of the Grand Hotel, was a great success and in every way a most enjoyable affair. It came as a refreshing relaxation after the heavy work of the Conference. Thanks to the local committee, captained by the indefatigable Mr. Currie, the programme was exceptionally good, the various songs and recitations all being much above the average both in rendering and quality. The following items were rendered:—Mr. Currie, song; Mr. Lamb, Scotch recitation; Mr. Gideon Duncan, song; Mr. A. Orr, song; Mr. Payne, song; Mr. Gilchrist, song; Mr. Ritchie Thom, song; Mr. W. F. Wells, song; Mr. John Bain, song; Mr. Templeton, song; Mr. Ferguson, song; Mrs. Robertson, song, "Jessie's Dream": Misses Duncan, Ferguson, and Gilchrist, trio; Mr. Rowley, comic song; Mr. Howard, banjo solo. Special praise is due to Mrs. Robertson for her excellent rendering of "Jessie's Dream," which she sang with great care and feeling.

Professor Remington was one of the special features of the Conference, and he was equally prominent at business and social meetings. At the Smoking Concert he gave, instead of a song, a brief and humorous account of a pharmaceutical meeting at which he was present in the wild and woody west of the United States. Like most of his countrymen, Professor Remington is a humorist, and

his well-told account of the gathering and the amusing incidents that occurred kept the audience in a constant state of laughter. His account of the man who won the old man's race by sticking out his long goatee or beard just at the finish was immense, as was the judge's decision of "won by a hair."

Mr. Mahlon N. Kline, another American gentleman, representing the wholesale drug trade, vouchsafed to tell a little story, which he did in excellent style, demonstrating the practical application of benzine in matters of fire insurance, in a manner which afforded much food for after reflection, and opened up avenues of vast wealth to all those who under suitable insurance conditions know when and where to apply the match. Altogether the evening was one to be long remembered by all those who had the good fortune to be present. Mr. Walter Hills made an excellent chairman, and never allowed the interest in the entertainment to lapse for even a moment. His well-chosen, and at times humorous, remarks added much to the enjoyment of the evening.

The Hearty Reception accorded to Mr. Walter Hills, the President of the Pharmaceutical Society, when he stood up at the request of the President (Dr. Symes) to bear testimony to Mr. Champion's good work as President of the newly-formed Board of Pharmacy of Natal, must have afforded him ample evidence of the appreciation with which the members of the Conference have for him, and the able manner in which he carries out the duties of his important position. Mr. Hills as a speaker is listened to with every respect and attention, for he puts matters in a practical and intelligent manner that carries conviction to the minds of his hearers.

Mr. Wells, the President of the Irish Society, was also well received, and made a happy speech in support of the invitation to visit Belfast next year. Mr. Beggs, the Irish Treasurer, was prominent with his hand camera, and should be held responsible for much hilarity. In fact, the Irish representatives generally satisfied everyone by their genial manner that the Belfast meeting will not be the least lively and pleasant on record. Glasgow and the West of Scotland hold the record for the time being, but Belfast, aided by the rest of Ireland, means to break it.

The Large Number of Ladies who graced the meeting with their presence was one of the distinguishing features of the Conference, and whose entertainment was so ably catered for by the local committees. The following names appeared on the visitors' book :—Mesdames Champion (Natal), Warwick (Malta), Atkinson, Everson, Foggan, Shaw, Nesbit, Robinson, Shephard, Hudson, Pearson, Naiswith, Sharp, Proctor, J. W. Russell, Lloyd Williams, Warner, Bilson, A. Anderson, J. C. Umney, Coull, R. L. Henry, Kerr, Dyson, Kelly, G. Lunan, Ransom, Symes, Alexander, Stanford, Pettinger ; Misses E. Bourdas, Laird, Nesbit, Maud Vallance, Johnston, Ford, Champion, Savage, Russell, Hunter (Misses), Miller, McMurray, Johnston, McAdam (Misses), Idris, McMillan. The Local Ladies' Committee — Mesdames R. McAdam, W. L. Currie, J. Walker, J. A. Russell, J. McMillan, W. T. Law, G. Robertson, Frazer, Foster, Moir, Lambie, and Misses Watson—assisted by Misses McAdam, Walker, Laing, McKellar, Moir, Watson, Kitchin, Foster, spared no trouble to make the visitors' brief stay in Glasgow as enjoyable as possible. Various excursions for the ladies were arranged to afford them entertainment, while the more serious work of the Conference was being attended to by the gentlemen. Amongst the excursions arranged and carried out may be mentioned visits to the Municipal Buildings, George Square, Cathedral, Corporation Art Galleries, Kelvin Grove Museum, the University, Queen Margaret's College, Victoria Park, River Clyde and harbour, Wylee and Lockhead's warehouse, Buchanan Street.

The Special Excursions for Ladies were well patronised, the temptation to enjoy the company of the fair sex in those excursions being gladly yielded to by many of the men who were present, and quite a number joined in the Wednesday morning drive through West End Park Road, when a splendid view of the University and Western Infirmary was obtained. The experience of crossing the Clyde at the Finneston Steam Ferry without leaving the seats in the brakes was a novel sensation. Unfortunately the elements were not propitious at this portion of the journey, but once on the other shore they drove away under clearing skies through Paisley, far as Ibrox, turning into Dunbrick Road, West Pollok Shields, then skirting Queen's Park, returned home by Victoria Road, over Jamaica Bridge to luncheon.

The Ladies' Drawing-room and Dance, under the guidance of Mesdames McAdam and Symes, assisted by the Ladies' Committee, was a great success, and everyone appeared to be in the seventh heaven of delight. Misses McAdam and Misses Kitchin and McMillan favoured with a Scotch reel, which was done in such excellent style that nothing short of a repetition would content the onlookers. Misses McAdams sang some excellent songs, while Messrs. Orr and Laing entertained with some choice readings. Miss Freme gave a recitation in fine style and received unlimited applause. Dancing was indulged in till the clock struck twelve, then each and all joined heart and voice in singing "Auld Lang Syne," finishing with the National Anthem.

Those who Remained in Glasgow after the Conference spent a quiet but pleasant evening after returning from the excursion, and on Friday forenoon a company, numbering about forty, visited the Corporation Sewage Works at Dalmarnock, where they were shown over the place and had the process fully explained by the manager. In the afternoon the University was visited, when many of the chief features in the building and peculiarities in its contents were pointed out. In the Library and Hunterian Museum were seen many books, models, and specimens of considerable intrinsic and historical value. On the whole, these visits proved much more interesting than had been anticipated.

The Conference Photographs taken at Arrochar are very successful as pictures, Mr. J. Anderson Russell informs us, two of the proofs being described as "exceptionally good." Copies may be ordered of Messrs. Bell and Co., Sauchiehall Street, Glasgow, at four shillings each. On account of the very large number of faces in a very limited space, it is hopeless to attempt to do justice to the picture by means of a process block, otherwise it might have been reproduced in the Journal.

Scotchmen are said to possess an intuitive knowledge of character and to seldom alter their opinions when once formed. A good illustration of the latter occurred in the case of a hotel waiter, who related that when he first came to Glasgow fifteen years ago the natives called him an impostor and told him he had better go back to London. When asked if they still held the same opinion, he replied, with the expression of a crocodile suffering from indigestion, "Yes, still the same."

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Liquor Sodii Arseniatis.—The anhydrous salt is directed to be employed because of the variable amount of water in the crystallised salt. Crystallised from cold solutions, sodium arseniate contains twelve molecules of water of crystallisation; from hot solutions a salt having the composition $Na_2HAsO_4,7H_2O$ is obtained. The former salt effloresces under ordinary conditions, and passes gradually in the latter—

100 grains of $Na_2HAsO_4,12H_2O$ contain 46·3 grains anhydrous Na_2HAsO_4.

100 grains of $Na_2HAsO_4,7H_2O$ contain 59·6 grains anhydrous Na_2HAsO_4.

There is, therefore, considerable room for variation in the actual amount of arseniate present in the liquor, if it be made from the crystals; this is avoided by using the anhydrous salt.

Liquor Sodii Ethylatis.—Metallic sodium displaces the hydrogen from the hydroxyl group of the alcohol—

$$C_2H_5OH + Na = C_2H_5ONa + H.$$

When the solution is evaporated it leaves a white residue of sodium ethylate. This, when treated with water, forms sodium hydroxide (caustic soda) and alcohol—

$$C_2H_5ONa + HOH = C_2H_5OH + NaOH.$$

This reaction explains why absolute alcohol is employed in making the "liquor," and not rectified spirit. Since the latter contains 16 per cent. of water, no sodium ethylate would be formed until the water had reacted with the sodium to form sodium hydroxide. Such a preparation would be merely an alcoholic solution of caustic soda. Note the difference in the behaviour of the hydroxylic hydrogen of alcohols and acids. Ethyl alcohol, CH_3, $CH_2(OH)$, and acetic acid $CH_3CO{\cdot}(OH)$ for example, both contain a hydroxyl group, but the hydrogen in the hydroxyl of the alcohol is only replaced with some difficulty by metals, while in the case of acids it is replaced easily by metals forming stable salts. This difference in behaviour is caused by the association of the "acid" hydroxyl with the electro-negative group carbonyl (CO). Compare also phenol, $C_6H_5(OH)$, which exhibits weak acid properties (*i.e.*, which contains replaceable hydrogen) with picric acid, tri-nitro-phenol $C_6H_2(NO_2^{\circ})_3(OH)$. The entrance of the three electro-negative (NO_2) groups in tri-nitro-phenol causes this body to behave like a strong acid on account of the influence they exert upon the behaviour of the neighbouring hydroxyl group.

Lithii Citras.—Dried at 100° C., a salt containing one molecule of water is obtained. This is given off at 115°·5 C., the salt becoming anhydrous. The anhydrous citrate heated to low redness with access of air leaves a residue of carbonate. The student should verify for himself by calculation the figures given in the latter part of the official "characters and tests."

Lotio Hydrargyri Flava.—This contains yellow mercuric oxide—

$$HgCl_2 + Ca2HO = HgO + H_2O + CaCl_2.$$

The formula for mercuric hydrate would be $Hg(OH)_2$, but this body has never been isolated. In any reaction where one might expect to obtain it, as in the present case, the oxide is always formed, water being eliminated.

Liquor Zinci Chloride.—If any iron be present in the granulated zinc, ferrous chloride will be found in the solution. By the addition of hydrates or carbonates, iron in the ferrous condition is only incompletely precipitated. When a complete separation of iron from a solution is desired, it is always converted into the ferric state, usually by means of nitric acid; but in the present case, since only a small quantity is present, chlorine water is more conveniently used. Instead of adding now the usual reagent—ammonia—for precipitating ferric hydrate, zinc carbonate is added. Ammonia would leave in solution a corresponding amount of ammonium chloride, thus rendering the solution impure, while zinc carbonate by double decomposition yields more zinc chloride. The iron is precipitated as ferric hydrate, because ferric carbonate is unstable, and decomposes in presence of water, forming ferric hydrate, carbon dioxide being evolved. Regarding the official zinci carbonas as normal carbonate (it is really a hydrato-carbonate) to simplify matters, we can write the following equations to represent the successive reactions:—

(i.) $2\,FeCl_2 + Cl_2 = Fe_2Cl_6.$
(ii.) $Fe_2Cl_6 + 3ZnCO_3 = 3ZnCl_2 + Fe_2 3CO_3.$
(iii.) $Fe_2 3CO_3 + 6HOH = Fe_2 6HO + 3H_2CO_3.$
(iv.) $3H_2CO_3 = 3H_2O + 3CO_2.$

Lead is similarly precipitated as hydrated oxide.

Lithii Carbonas.—Weighing the amount of sulphate produced from a given quantity of carbonate is an indirect test of purity,

For Li_2CO_3 : Li_2SO_4 : : 10 : 14·86
m.wt. 74 m.wt. 110

The presence of any adulterant would produce a considerable difference in the weight of the residue after treatment with sulphuric acid. Take calcium carbonate, for instance,

M.Wt.$CaCO_3$: M.Wt.$CaSO_4$: : 10 : 13·6.

That is to say, 10 grains calcium carbonate would produce only 13·6 grains calcium sulphate; therefore, if a sample of lithium carbonate be adulterated with calcium carbonate, a residue of sulphates weighing between 13·6 and 14·86 grains will be obtained, according to the amount of adulterant present.

Lotio Hydrargyri Nigra.—This is generally stated to contain mercur*ous* oxide, Hg_2O, but there is some doubt as to its existence, some authorities stating that the black precipitate contains mercury and mercur*ic* oxide, into which the mercur*ous* oxide decomposes.

Magnesii Sulphas.—The precipitate obtained in solutions of magnesium salts by addition of ammonia, ammonium chloride, and sodium phosphate is ammonio-magnesium phosphate, $MgNH_4PO_4$. This is a very important compound because it is the form in which magnesium is precipitated in both quantitative and qualitative analysis. In qualitative analysis the precipitate is obtained after the separation of barium, strontium, and calcium as carbonates by addition of ammonium carbonate. Now, although magnesium carbonate is insoluble in water it is not precipitated with the other carbonates because of the presence of ammonium salts in the solution, with which magnesium forms double salts, which are not precipitated by ammonium carbonate. But to make certain of having sufficient to prevent even a partial precipitation of magnesium, one always previously adds a considerable quantity of ammonium chloride solution. The addition of ammonium hydrate is also advantageous because it increases the delicacy of the test, the ammonio-magnesium phosphate being slightly soluble in water but practically insoluble in weak ammonia. The production of this precipitate is only diagnostic of magnesium in the absence of barium, strontium, and calcium, since these three metals also form similar insoluble compounds, which are, however, not crystalline like the ammonio-magnesium phosphate. The precipitate obtained by the addition of sodium carbonate to a solution of magnesium sulphate is, of course, the official carbonate. (Note, by the way, that this is not a normal carbonate, but this latter is sometimes met with as a crystalline deposit in old or carelessly stored samples of "fluid magnesia.") This, when washed and heated to redness, leaves a residue of oxide. Neglecting the intermediate stage of carbonate, which does not affect the issue, it is obvious that one molecule of $MgSO_4$, $7H_2O$ M.Wt. 246 will yield one molecule of MgO M.Wt. 40 and

246 : 40 : : 100 : 16·26,

which verifies the Pharmacopœia requirement that 100 grains of Epsom salt shall yield 16·26 grains of magnesia.

Morphinæ Hydrochloras.—The official process may be rendered easier of comprehension by the following abbreviation:—1. The opium is exhausted by repeated maceration with water which dissolves the meconate of morphine, gummy and colouring matters, as well as small quantities of other alkaloids. 2. The aqueous fluid is concentrated and chloride of calcium added to separate the meconic acid as insoluble calcium meconate, hydrochlorate of morphine being also formed by double decomposition. 3. The whole is evaporated to a nearly solid condition, the bulk of the morphine hydrochlorate crystallises, while most of the colouring matter is squeezed out as a dark fluid. 4. The pressed cake composed chiefly of calcium meconate and morphine hydrochlorate is treated with boiling water to dissolve the latter. 5. The filtrate containing the morphine hydrochlorate is decolorised with animal charcoal. 6. The morphine is precipitated from the decolorised solution by addition of ammonia. 7. The precipitate of morphine is washed and converted into hydrochlorate, which crystallises from the cold solution. Codeine remains in the ammoniacal filtrate, since it is soluble in excess of ammonia. Morphine is insoluble in excess of ammonia, but soluble in excess of potash or lime, while codeine is insoluble in excess of fixed alkali.

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THE CONGRESS AT BRUSSELS.

The Eighth International Pharmaceutical Congress, held at Brussels, has been almost as great a success in its way as the Conference at Glasgow, more than six hundred Belgian and foreign pharmacists taking part in the proceedings, whilst the governments and pharmaceutical bodies of several countries were officially represented at the meeting. Commencing on Saturday last, the Congress at once got to work and, as will be gathered from the report at page 179, what would be regarded in this country as a *dies non*, was productive of a fair amount of serious work. After work came play, and in the evening a reception was held at the Hotel de Ville by the Burgomaster and other civic authorities. This function was especially interesting on account of the opportunity afforded for inspecting the choice collection of antiquities and other objects of interest in the building. Those present on this occasion included many members of the Congress of Hygiene, which has recently been held at Brussels and had just closed.

On Sunday a visit was paid to the factory of MM. Vandenbroeck et Cie, a short distance from Brussels. This is a typical Belgian factory, well-arranged and situated in the open country, and is devoted to the manufacture of surgical dressings. In the evening there was a grand fête at the Exhibition, followed by a unique entertainment known as a "Raout," which being interpreted means a kind of stand-up supper at a buffet. Unfortunately, some of the delegates were unsuccessful in finding their way to any of these functions, apparently on account of the absence of provision for assisting members of Congress and other visitors who knew no other than the Anglo-Saxon tongue. Another peculiarity of the Congress was that the relative importance of properly appointed delegates and of self-assertive visitors of no account in their own land did not seem to be sufficiently appreciated in all cases. But the hospitality of the Belgian hosts was magnificent and quite overshadowed any slight deficiency in organisation. The greatest readiness was shown to do anything for the convenience and gratification of the visitors, who all agree in acknowledging the gracious and cordial manner in which they were received and treated.

Work was resumed on Monday, and several interesting topics came up for consideration on that and the following days. The discussion on specialties has thrown no new light on the subject, nor has any advance been made in the matter. It was admitted that nothing but concerted action on the part of pharmacists can produce any good effect, but no one was prepared to show how that desideratum can be secured. One of the most interesting papers was that by M. De Ridder, of Antwerp, who advocated the establishment of a central laboratory where all medicaments could be examined and their quality, etc., reported upon. M. Schamelhout, of Brussels, objected to some of the tests in the Belgian Pharmacopœia as being too exacting and having no other effect than that of increasing the cost of medicines. His suggestion, that descriptions of reactions and tests relating to the strength or quality of chemical or other preparations should be so explicitly stated as to leave no room for dispute, is to the point. In Belgium and other countries where inspectors of pharmacies exist, those officials would thus be relieved from doubt and uncertainty as to the course to be taken in deciding whether such articles come within the requirements of the Pharmacopœia, and also whether galenical preparations have undergone deterioration by keeping and thus become unfit for use.

The subject of standardisation, introduced by M. Duyck, naturally gave rise to much discussion, as did also M. van Hulst's paper on a model programme for pharmaceutical studies. Pharmaceutical legislation, women in pharmacy, boards of reference, and a universal pharmacopœia were amongst the remaining subjects touched upon, and an important document was presented by Professor Remington in the form of a report on the proposed compilation of an international pharmacopœia of potent remedies. This report is the outcome of the deliberations of the Committee appointed at Chicago, and states that progress has been made in the matter to which it refers. The business meetings were alternated throughout with entertainments of various kinds, and these social functions of the Congress were exceptionally successful, the weather being very favourable on the whole. The prevailing feeling at the close of the meeting is that, if good has been done in no other way, satisfactory results must follow the international exchange of courtesies and close personal intercourse between those who have previously been known to each other by name and reputation only.

THE BRITISH ASSOCIATION.

The British, Canadian, and American men of science now assembled at Toronto met to inaugurate the business of the British Association for the Advancement of Science on Wednesday last. The Governor-General and Lady Aberdeen were present at the brilliant gathering, and the former bade the members of the Association welcome, on behalf of the Dominion, whilst the Mayor of Toronto did the same in the name of the citizens. Among the speakers on this occasion were Lord Lister, the retiring President of the Association; Sir John Evans, the President-elect; and Lord Kelvin. The presidential address, which we publish in full at page 167, followed the installation of Sir John Evans in the chair, and it will be found of engrossing interest. Archæology was the main topic, and the suggestion was offered that a bureau of ethnology should be founded by the British Government. The idea is that information with regard to native races might thus be collected which would prove of immense value to science and to the Government, even to the extent of possibly preventing little wars. Such a result of the accumulation of knowledge concerning native races would undoubtedly more than justify the carrying into effect of Sir John Evans' suggestion, and it is to be hoped that the idea may not be lost sight of.

ANNOTATIONS.

PHARMACY IN JERSEY is now protected, thanks to Dr. Walter Duret Aubin, deputy of St. Helier, who has successfully guided a Bill through the States, which will have the effect of a law for the next three years. A permanent law in Jersey requires the sanction of Her Majesty the Queen in Council, but a *Règlement* such as has recently been agreed to avoids the necessity of that formality, though the regulation must be renewed every three years. This method of procedure appears to possess certain advantages, for a temporary law can be more easily modified or altogether abrogated than a permanent one. In all probability, the effect produced by the Jersey Pharmacy Act during the next three years will be such that a satisfactory permanent law can be drafted and passed later.

THE OBJECT OF THE NEW ACT is twofold—to protect the public in regard to the sale of poisons, and to secure properly-qualified pharmacists in the enjoyment of privileges to which they ought to possess an exclusive right in consideration of the special training they require to undergo. Henceforth, no one may exercise the profession of pharmacy in the Island unless he has obtained the permission of the Royal Court, and that court can only grant such permission to those who are qualified under the British and Irish Pharmacy Acts, or graduates of one of the schools of pharmacy of the University of France. Chemists and druggists already established and practising their profession in Jersey are entitled to receive the permission of the Royal Court without presenting diplomas, but assistants and apprentices must obtain the requisite qualification prior to obtaining permission to practise on their own account. An amendment which proposed to exempt them from this necessity was rejected by a considerable majority, one deputy observing that if assistants and apprentices could not pass the examinations they did not deserve the privilege which it was sought to confer on them. Foreign applicants may, according to this Act be required to present a "duly legalised certificate of good conduct and morals," prior to receiving permission to practise, and the legal representatives of deceased Jersey pharmacists may continue the business, provided all medicaments and drugs are "prepared, sold and retailed" by an assistant duly qualified and authorised by the Royal Court to exercise the provision of pharmacy in the Island.

A REGISTER IS TO BE KEPT, and no unregistered person will be permitted to practise pharmacy or "to prepare, sell or retail poisons." The schedule of poisons corresponds to that in the British Act, except that carbolic acid is included. Poisons mentioned in the first part of the schedule may not be sold to persons under sixteen years of age, or to anyone not known to the seller, unless introduced to him by someone else whom he knows. A special book is to be kept for recording sales of poisons, but it is provided that the various clauses of the Act referring to poisons shall not apply to poison or poisons forming part of the ingredients of a medicine prepared by a doctor or surgeon duly authorised to practise medicine or surgery in the Island, or by a member of the Royal College of Veterinary Surgeons. Neither do they apply to poison or poisons forming part of the ingredients of a medicine prepared by a chemist or druggist who has obtained permission to exercise the profession of chemist or druggist in the Island in virtue of the new regulations; provided always that this medicine, when prepared by a chemist or druggist, bears the name of the vendor and that the ingredients of which it is composed be entered, with the purchaser's name, in a special book kept by the vendor, and termed the "Prescription Book."

THE CARBOLIC POISONING CASE referred to a fortnight ago (p. 112) has attracted the attention of the editor of the *Chester Courant*, and it is satisfactory to find that he fully appreciates the position of chemists in this matter. It is observed that the fault certainly does not rest with the chemists, who actually exceed their legal responsibilities in placing labels on bottles containing carbolic acid, and give this gratuitous caution simply out of a regard for the public safety, but "the fault lies with the Legislature [Privy Council.—ED. *P. J.*], which persistently refuses to recognise carbolic acid as a poison." Moreover, it is remarked that it is no compliment to the quality of whisky supplied to poor people that they should for a moment be liable to confound it with carbolic acid, though this inherent difference apparently is an insufficient safeguard, and the hope is expressed that some action will be taken to prevent the lamentable waste of life daily going on from this cause.

REACTIONS, REAGENTS, METHODS, AND FORMULÆ known by the names of their authors, are now so numerous that a compilation of them is almost a necessity to pharmacists, analysts, medical men and others. Whether or not it is desirable that reagents, etc., should be known by the names of their authors is a moot point, but the custom prevails so widely that due allowance must be made for it. This has been manifest for some time past, but since commencing the publication of the list now appearing from week to week in the *Pharmaceutical Journal*, further evidence has accumulated, all of which tends in the same direction. Many correspondents have written to suggest that the list should be republished in book form when finished, and this it is proposed to do if opportunity offers. Meanwhile, readers are requested to notify any errors they may have noted in the list, and to suggest such additions as may tend to make the compilation more complete and useful. Those who have already written to the Editor on the subject are warmly thanked for their evident interest in the matter.

A RECORD IN MEDICINE TAKING is quoted by a correspondent of the *British Medical Journal* from an old magazine dating from May, 1817. He thinks it may interest and amuse readers, as showing the comparative degeneracy of present-day medicine swallowers as compared with their grandfathers. It appears that at the Lincoln Assizes an apothecary of Bottesford sought to recover from the defendant, a bachelor of opulence, residing near Lincoln, £787 18*s.* for medicine and attendance during twenty-five years. By the statement of the plaintiff's counsel it appeared that the defendant was of a hypochondriacal turn, and had taken pills for a great number of years. He used to have from 600 to 1000 pills sent to him at a time, and in one year he took 51,000, being at the rate of 150 a day. There were also thousands of bottles of mixture. From the ravenous propensity of the patient for physic it was deemed necessary to call in two physicians, who, inquiring of the defendant what was the course of medicine and nourishment he pursued through the day, answered as follows:—"At half-past two o'clock I take two spoonfuls and a half of jalap, and then a quantity of electuary; then I sleep till seven, and repeat the dose of jalap and electuary; at nine o'clock I take fourteen pills of No. 9 and eleven pills of No. 10 to whet my appetite for breakfast; at breakfast I eat a basin of milk; at eleven I have an acid and alkali mixture; afterwards I have a bolus; and at nine at night I have an anodyne mixture and go to sleep." After some progress had been made in the evidence a compromise took place, the plaintiff accepting a verdict for £450.

VIIIth INTERNATIONAL PHARMACEUTICAL CONGRESS.

THE Eighth International Pharmaceutical Congress, organised by the Association Générale Pharmaceutique de Belgique, was formally opened on Saturday, August 14, in the Conference Hall of the University, Brussels, under conditions which promised a great success, over 600 pharmacists from Belgium and other countries having registered themselves as members. The governments and pharmaceutical societies of several countries were represented officially by delegates. Shortly before 11 o'clock, the chair was taken at the inaugural meeting by M. De Bruyn, the Minister of Agriculture and Hygiene, who was accompanied by several other Government officials and the members of the Organising Committee.

At the opening of the Congress M. Ranwez gave a *résumé* of the history of the General Pharmaceutical Association of Belgium, and mentioned the circumstance that it is now celebrating the fiftieth anniversary of its foundation. He expressed a hearty appreciation of the assistance rendered by the Minister of State in supporting the efforts made to organise the Congress, and in taking part in its inauguration. In regard to the Association, he recalled the laborious work it has carried out in promoting the interests of pharmacy, and referred to the successful issue of the various struggles in which it has been engaged for that purpose. In reply, M. De Bruyn expressed a hope that the work of the Congress would be useful to the profession as well as to the public, and that it would be a worthy celebration of the jubilee of the Association. He said that the Government would give careful attention to the conclusions and wishes of the Congress, in order to be able to introduce desirable amendments of the laws for regulating the pharmaceutical and medical professions.

M. Petit, the delegate from France, and Mr. Meyer, of New Orleans, one of the delegates from the United States of America, next thanked the Belgians for their invitations, and expressed their hopes for the success of the Congress. M. Ranwez, Professor at the University of Louvain, was then elected President of the Congress, and M. Duyck, General Secretary. The delegates of the countries represented at the Congress were elected Vice-Presidents, and the Committee of Organisation was empowered to conduct the general meeting of the Congress.

MONDAY, AUGUST 16.

At the first general meeting in the afternoon, M. Ranwez relinquished the chair in favour of M. Wefers Bettink, delegate from Holland, and then proceeded to open a discussion of the question whether it is not desirable to have a compulsory standard for the active principles in drugs and in galenicals.

The Proportion of Active Principles in Drugs, etc.

Dr. Ranwez recalled the conclusions arrived at during the National Congress of Pharmacy in Brussels in 1895 and during that of Applied Chemistry at Paris in 1896, and after discussing the difficulties for and against the standardisation of medicinal preparations, recommended that the present Congress should express the wish "that the competent authorities should require a uniform percentage of active or important principles in medicinal preparations."

M. Colin, of Genappe, said there was a general tendency in favour of the opinion that drugs should be of uniform strength so as to remove the objection to most of the galenical preparations, and do away with infusions, decoctions, and other extemporaneous preparations not having a known composition. But if scientific precision were carried out by adopting the dosimetric and pharmacodynamic system, then the pharmacist would probably become simply a dispenser of ready-made pills or granules. Many therapeutists consider the plant itself better than the alkaloid or the glucoside it contains, and of quite a different medicinal action. Many extractive bodies are not yet sufficiently known to admit of adopting the plan M. Ranwez is anxious to introduce. Another objection is that galenical preparations vary very much according to the way the plants have been collected, dried, or kept, and according to the more or less careful manner in which the preparations are made. But if the chemist is careful as to the conditions under which he should collect or prepare in order to obtain good preparations, the standard of the product would be, as a rule, of medium strength, and will not have such low or high percentage of active principles as to be open to the objections raised by M. Ranwez. If the quantity of emetine contained in extract of ipecacuanha were the only point to be considered, it would be very easy for the chemist to put the required percentage of emetine in some inert extract, and by so doing he would be quite safe as regards the law, though the factitious extract would not contain the whole of the agents of the plant.

M. Petit said that it was impossible to resist the tendency to employ definite active principles, and that chemical drugs were coming more and more into use. The use of standardised solutions instead of pills or granules was, he thought, better suited for exact dispensing of potent chemical drugs. As to the preparation of galenicals from crude drugs, he cited the case of coca leaves, which may be of excellent quality, though if an extract be made and evaporated by heat, as is done in the case of many preparations, there would be no cocaine in the product. In some countries, for example in England, the strychnine in nux vomica has been standardised, and the morphine in opium, on the assumption that when a preparation of nux vomica or opium is given medicinally, the chief object is to have a rational dose of strychnine and morphine which are respectively considered to be the potent agents of those drugs. As to the collection of drugs every one knows that preparations made with ergot of good quality, but coming from different countries, would differ considerably in the quantity of ergotinine they contained, according to the source from which the ergot came. Some kinds of aconite do not contain any aconitine, while others contain comparatively large amounts.

M. Colin said that he would support the proposition of M. Ranwez if it could be proved that in plants collected and preserved in a proper manner there is such large difference in their medicinal strength.

M. Crinon, from France, said standardisation should be limited to plants having pronounced physiological action, or chemical constituents that are well known.

M. Ranwez said that in some cases, such as tincture of arnica, the quantity of extractive might prove useful for the inspectors of pharmacy, some tinctures contained 2·5 per cent. while in some others there is as much as 5 per cent.

M. Duyck (Brussels) would like to have an international agreement as to the limits to be adopted in the standardisation of potent drugs in the pharmacopœias of all countries.

M. Wefers Bettink, from Holland, observed that in the Dutch Pharmacopœia there are several standardised preparations, and the method of standardising many extracts is prescribed.

Ultimately, the conclusions of the report of M. Ranwez were adopted by a large majority.

Mr. A. Tamanaro, Director of the Medical Institute of Mexico, showed some new drugs from his country. The Medical Institute has been proposed to examine the drugs from the forest of Mexique. The *Perezia adnata*, from which the pipitzahoic acid is extracted, is a purgative much used by the natives. *Sapote blanco* (*Casimiroa edulis*, La Blanc) is a Rutaceous soporific. Eighty centigrammes of the extract give a good sleep without costiveness or headache. It may be administered to children. *Schinus molle*, L. (Anacardiaceæ) gives an oil in large quantity, which is useful in gonorrhea. *Zoa pate, le* (*Montanoa tomentosa*, Llav. et Lex, and *M. floribunda*, D. C.), Compositæ, acts on the uterus like ergot. The leaves are the active part of the plant.

Report on New Medicaments.

Mr. Fayn pointed out that the introduction of new chemical and animal products of late years has been attended with many inconveniences, and has placed the reputation of pharmaciens in a somewhat awkward position. Many of the products are monopolies, and are issued under names that give no clue to their chemical constitution. At the time they are introduced to the medical profession there is not sufficient information published concerning them to enable the pharmacien to ascertain their strength or purity, whilst they actually vary both in strength and purity in commercial samples bearing the same label. He suggests

therefore, for the protection of the public and for the safeguarding of the reputation of the prescriber and dispenser—

1. That there should be especial depôts for new remedies established by pharmacists at certain centres.

2. That the specially distinctive reactions of each new remedy should be published on the label as well as in the brochure relating to the remedy.

3. That laboratories should be established by pharmaciens in certain centres for the analysis of new remedies.

4. That a permanent committee for the study of new medicinal products should be established, the members of which should be selected by different governments from the members of the academies of medicine or pharmacopœia committees.

5. That there should be an official verification of serums and various glandular juices, etc.

6. That the nomenclature of new medicaments should be revised.

7. That there should be an annual supplement to the Pharmacopœia published in every country.

These suggestions were offered to the Congress for universal application, and not merely for adoption in Belgium.

In the discussion on this report of M. Fayn, Mr. Meyer, of New Orleans, expressed the opinion that an inventor of a new product of known composition, and to which he gives a fancy name which he registers, ought not to prohibit the sale of that chemical under the chemical denomination.

M. Colin (Genappe) thought it was quite wrong of inventors to send samples to medical men and not to pharmacists. Very often the medical man, having received such samples, prescribed the drug, and the chemist did not know what the doctor meant in his prescription.

M. Petit said that, as to the new chemicals pushed in the trade under fancy names, very often when inventors secure registration of the name nobody knows of that fact until the chemical comes into general use and is well known to the public. Legal proceedings are then taken against the chemists who supply the same drug, but not coming from the inventor's laboratory. When, for instance, a chemical, such as antipyrin, becomes known by everyone and is in general use, every chemist ought to be able to supply that drug produced by any manufacturer, and not be compelled to obtain it from the first maker, or in any case it should be possible to prevent the renewal of the registration. He wished that when a denomination has become popular in regard to some chemical of known constitution that name should not constitute a trade mark or be regarded as private property.

M. Crinon suggested that serums and opotherapic products ought to be sold only by pharmacists, and that they should be made in special laboratories by authority of the Government.

TUESDAY, AUGUST 17.

At the general meeting on Tuesday the discussion on the report of M. Fayn on new remedies was resumed, and the proposition to appoint a commission for the purpose of ascertaining the nature of any new remedy introduced into use, was rejected as being undesirable.

The subject of regulating the practice of pharmacy in reference to the safety of the public was then brought forward by M. Gosset and discussed with much interest, chiefly in regard to the practice of pharmacy by medical men, and the conditions under which it should be permitted as a necessity under special local conditions, as in thinly populated districts or in particular emergencies. The question of allowing unqualified persons to be associated with others in the conduct of a pharmaceutical business, either by partnership or by heritage, etc., was also discussed, and the conclusions arrived at were, that every pharmacy should be conducted personally by the proprietor, that he should not associate with himself any unqualified partners, and that widows or the children of a deceased pharmacist should not be allowed to continue a business under management by a qualified deputy except for the purpose of securing within a limited period the most favourable opportunity for its transfer to a qualified person. The limitation of the number of pharmacies in proportion to the population was considered by the majority to be quite unnecessary for the interests of the public or of pharmacists, wherever there is adequate provision for the proper education and qualification of persons intending to enter the business. Under those conditions limitation was held by most of the speakers to be a retrograde proceeding in every respect, and the arguments put forward in favour of it by a few speakers seemed to meet with little acceptance, though urged with considerable vehemence. But on putting the question to the vote, the result was as follows:—Present, 73; yes, 32; no, 30; abstentions, 11. Limitation had more votes than no limitation, but do the abstentions count?

Discussion on Pharmaceutical Specialties.

In Section I. the discussion of the subject of specialties was resumed with considerable animation and much evidence of differences of opinion.

The first paper read was that on the relations between pharmacists and medical practitioners in connection with the revision of the Pharmacopœia by Professor Remington (Philadelphia), in which he especially advocated the endeavour to differentiate the practice of pharmacy and that of medicine as being the most effectual means of promoting the true interests of pharmacy and of those engaged in its practice. On the basis of progress made in that direction by securing the respect and co-operation of the best members of the medical profession, the practice of pharmacy would attain a position more compatible with the professional nature of the duties its followers have to perform, and they would be likely to find themselves acknowledged as welcome co-operators in the work of pharmacopœia revision.

Mr. Wren, Professor Tichborne, and Dr. McWalter made some remarks, and Mr. Wootton posed as the advocate of secret remedies, supporting his argument by reference to the tradition that the only remedy from which the late Lord Beaconsfield could obtain relief was a secret preparation. On that ground he contended that the Congress would, in his opinion, be allowing zeal to outrun discretion if it gave its sanction to a recommendation that medical men should abstain from prescribing secret remedies, and when the purport of his remarks became known to the meeting by translation into the French language, considerable amusement was evinced.

In replying to the several speakers, Professor Remington said he would confine himself to the expression of his opinion that whatever might be Mr. Wootton's faith in the virtues of secret remedies, it was important for the interests of pharmacy throughout the world to place on record an enunciation of the principle that if any progress was to be made it was above all indispensable to get away from secrecy in the preparation of medicines. To adduce the use of an asthma cure by the distinugished statesman who had been mentioned as a ground for the prescription of secret remedies by physicians was, he thought, entirely illogical, for it might with equal reason be inferred that Lord Beaconsfield's death was due to his having taken the medicine referred to by Mr. Wootton.

The section cordially accepted the recommendations that efforts should be made to obtain :—

1. Larger representation of pharmacists in pharmacopœia revision, including professorial teachers as well as pharmacists in practice.

2. That local pharmaceutical associations should co-operate with medical societies, with the object of suppressing quackery and the use of secret remedies.

These resolutions were carried with acclamation, there being only one dissentient.

Discussion on Standardisation.

A paper by M. Duyck dealt with the subject of standardisation, and as it had a good deal of connection with the one presented on Saturday by M. Ranwez, the discussion was to a great extent a repetition of what was said that day in regard to the standardising of pharmacopœial preparations.

M. Crinon, of Paris, said the formation of an international commission chosen from among the prominent members of the pharmaceutical body, and in connection, if possible, with the Committees of revision of the pharmacopœias of different countries, would be a good step forward to the uniformity of the pharmacopœias throughout the world. At each successive congress the commission would give a report of the work done in favour of the uniformity of the pharmacopœias.

Discussion on Pharmaceutical Education.

M. van Hulst, in presenting his report, developed some of the conclusions and urged the desirability of a compulsory curriculum specially adapted for chemists, as there would otherwise be several classes of chemists, and that this might do harm to the chemists who had not taken any special qualification.

M. Schouppe (Maestricht) said that in his country they had chemists who were doctors in pharmacy, and that they did not enjoy more consideration from the public and did not do any harm to the chemist without that extra qualification.

M. De Coumck, Professor of Chemistry at the University of

Liege, said it was better to give short programmes of studies, but he thought the extension of the teaching to many subjects has the effect of restraining the extension in profundity. The professors ought to be more severe at the examinations.

M. Govaerts, of Pont a Celles, considered it quite useless to make specialists in different branches of chemistry. A pharmacist who has followed the courses of general chemistry is capable of making analyses of any kind, and by applying his knowledge of the science, he can if he wishes take up any specialty in chemistry without the necessity of attending as a student special courses of lectures.

M. van Engelen, Professor of Chemistry at the Brussels University, finds that the special optional courses are useless; the pharmacists must all go through a uniform training, and possess the same degree of scientific proficiency.

Mr. Prunier (from France) said that in France the diploma of doctor in pharmacy does not serve as a qualification for the opening of a pharmacy, but is simply a mark of a higher scientific qualification. To practise pharmacy he must have the diploma of pharmacien.

WEDNESDAY AND THURSDAY.

The most interesting items in the later programmes included a comparison of pharmaceutical legislation in different countries, by M. Idiers; the advantages and disadvantages of admitting women to practise pharmacy, by M. Georges Dethan; several papers on a universal pharmacopœia, and a consideration of the appointment of a board of reference, by M. Huart. Most important of all was the presentation of the following report:—

Report of the Chicago Committee.

Pharmacopœia of Potent Remedies.

The Committee reports that progress has been made, and it is now in correspondence with representatives of various nations, relative to the appointment of members of the permanent commission in these countries. The illness of our distinguished *confrère*, Herr von Waldheim, of Vienna, has prevented the presentation of a full report at this time. The delays produced by the widely-separated locations of the correspondents in the various nations has added greatly to the difficulties, but the Committee expects to complete the work as soon as possible. The resolutions adopted by the Seventh International Congress, under which the permanent committee derives its authority, are as follow:—

Resolved—

"That the Seventh International Congress appoint a committee of three, of which the President (Professor Remington) shall be Chairman, the duty of which committee shall be to take the necessary steps for the appointment of an International Pharmacopœia Commission to compile, publish, and distribute an international pharmacopœia of potent remedies. The International Pharmacopœial Commission shall consist of one member from each country represented at this Congress (Chicago), and from other countries as the Committee of three may decide, the members of the Commission to be selected by the Pharmacopœia Committee of the various countries, or to be otherwise chosen if necessary. The Committee of three shall be a permanent Committee, and it shall be its duty to urge and expedite the work in every proper way, and in the event of the death or resignation of any member of this Committee of three, the vacancy shall be filled by the other members."

Resolved—

"That the Congress (Chicago) accepts with thanks the proffer, by the American Pharmaceutical Association, of the sum of one thousand dollars to help defray the expense of compiling, publishing, and distributing an international pharmacopœia of potent remedies.

"Respectfully submitted.

(Signed) "Joseph P. Remington, Philadelphia.
"Michael Carteighe, London.
"*August* 16, 1897." "Anton Von Waldheim, Vienna.

SOCIAL FEATURES OF THE CONGRESS.

On the whole, the Congress at Brussels has been carried out with *éclat* and under very favourable conditions, except the rainy evening, when the fête was held at the Exhibition on Sunday. There were among the visitors many who were present at the former Congress at Brussels, and some few who were present at the Congress in London, including Dethan and Petit of Paris, Sebardt of Stockholm, Delchevalerie of Brussels, Daenen of Brussels, and Verhasselt of Antwerp. All speak of the success with which the latter meeting was attended in a manner which shows that, if such reunions are not always the means of effecting reforms, they are useful in establishing between the pharmacists of different countries friendly relations that provide a possibility of acting in concert for the purpose of promoting the interests of their craft.

After the conclusion of the proceedings at the general meeting on Monday, a number of the visitors went to see the School of Pharmacy, a very well-constructed building, with spacious laboratories for chemical, microscopical, and biological work, capable of accommodating more than a hundred students. Professors: Depaire, Van Engelen, Herlant.

The next function, on Monday, was a meeting of the members at the rooms in the Bourse, set apart for the use of the various syndicats connected with different branches of business, and constituted for the purpose of promoting and protecting their business interests. There the visitors were received by the President, M. Derneville, and other officers of the Royal Society of Pharmacy of Brussels. An address was delivered welcoming the visitors to the Congress, and giving an account of the history of the Society and showing the benefit that has been derived from the harmony and solidarity prevailing among the pharmacists of Belgium. After a brief reply from M. Ranwez, the names of those who had the honour of being elected honorary members of the Royal Society of Brussels were read out, and M. Petit acknowledged the compliment on their behalf. Before parting, about half-an-hour was passed in partaking of a "vin d'honneur" and "friendly conversation.

Later in the evening there was a reception at the Ministry of Foreign Affairs by M. de Favereau, where a large number of the notabilities of Brussels were assembled to meet the visitors to the Congress, and they were entertained with the usual agreeable concomitants of the "raout," which appears to be the most approved form of social gathering.

Each of the following days was more or less occupied by excursions and entertainments, the excursion to Tervueren on Tuesday being especially pleasant, and the visit to the Congo Exhibition most interesting. The concluding meeting was held at 4 p.m. on Thursday, and was followed by a farewell banquet.

PARLIAMENTARY NOTES.

The Session just closed has yielded its usual crop of Dead Sea fruit so far as pharmacy is concerned. Mr. Chaplin, early in the Session, announced that the Government really did intend to bring in a Bill to deal with adulteration, and that such Bill would be a comprehensive one dealing with the whole question of adulteration. The redemption of the promise is the incomplete measure introduced on Bank Holiday to a fagged House panting for the recess. No one can doubt that the Government proposals are good so far as they go, but why is it deemed necessary to leave out the principal recommendations of the Select Committee on adulteration? As with Food and Drugs, so with Companies. The House of Lords Committee for the second year in succession considered the Board of Trade Bill for the amendment of the Companies Acts, heard a lot of more or less relevant evidence, and then dissolved. The same farce will no doubt be repeated next session, meanwhile bogus "limited" companies are free to have an unlimited high old time of it. Then, again, the Early Closing Bills, in which a large number of our readers are particularly interested, could not secure a second hearing, notwithstanding the devotion of their promoters. Moreover, the House, in wrangling over matters of party moment, has had no time to regulate street noises, or to compel the proper registration of firms, or to undertake the inspection of boilers. Truly a blank time!

During the whole of the Session Mr. Fortescue Flannery tried hard to secure an opportunity for urging the establishment of a Ministry of Public Health, but his motion was never even accorded a day for hearing. Consequently the Local Government Board remains as congested as ever, and the Inter-Departmental Committee appointed to devise a means of relief has not yet proved a conspicuous success.

Next Session should be a busy one for the Parliamentary Committee of the Council. In addition to a possible Pharmaceutical Society Consolidation Bill, there are one or two items still needing earnest attention. For example, Poor Law dispensers are still smarting under the order of the Local Government Board, which gave certain unqualified persons the right to hold dispensary appointments. Then, again, the carbolic acid question demands careful treatment, and Companies, Food and Drugs, the attitude of Scotch Sheriffs towards the Pharmacy Act, and similar items, will fill up any leisure time the Committee may find at its disposal.

The Chemists' Exhibition, 1897.

DURING the present week many provincial and London chemists have been attracted to the Covent Garden Theatre, London, where the third annual exhibition organised by the *British and Colonial Druggist* has been held. Excursion trains were run from all parts of the kingdom, and as a result hundreds of country chemists were enabled to visit the largest and most successful chemists' trade exhibition that has been held in this country. The greater part of the stands were arranged on the ground floor, but as the space was by no means large enough to contain all the exhibits, about thirty stands were to be found on the grand staircase and in the Grand Saloon, whilst the Royal Box was occupied by "Camwal"; the *British and Colonial Druggist* reception room being situated in the first tier Grand Saloon. Every convenience and arrangement was made by the numerous exhibitors to facilitate business and to ensure the comfort and pleasure of visitors. Energy, enterprise, and good taste were displayed in all directions, the stands and their contents presenting both a pleasing and interesting appearance. The principals and managers of most of the houses exhibiting were present, and in many cases the town and provincial travellers were also in attendance, so that business could be transacted with chemists residing in various parts of the country under the most favourable conditions, the travellers being able to introduce customers to their principals. At intervals during the afternoon and evening of each day, selections of music were rendered by a military band, the position of which was an indication of the care and forethought expended by the promoters of the Exhibition, the band occupying the gallery, so that while the music was in progress it did not interfere with business, as was the case at an exhibition recently held, when conversation was rendered almost impossible when the band was playing. The 1898 exhibition is arranged to be held in the Agricultural Hall, Islington. Amongst the exhibits were the following :—

Allen and Hanburys, Limited, of Plough Court and Bethnal Green, occupied the stand immediately to the left on entering the exhibition. This firm is making a specialty of packed goods bearing labels with chemist's own name and address. The samples displayed were all in excellent style and taste, such as one might expect from the reputation of this old-established house. They comprised Malt Extract, Fluid Malt Extract, Chemical Food, Cod-Liver Oil, Effervescent Preparations, Emulsions, Tablets, Capsules, and various other preparations all put up in handsomely coloured cartons. Messrs. Allen and Hanburys have recently devoted attention to the production of toilet and medical soaps of guaranteed purity and superfatted. The toilet soaps can be perfumed and coloured to suit individual tastes, and are supplied in various shapes in boxes with chemist's name and address. Special moulds are also supplied at small cost. In addition to these packed goods the firm exhibited their specialties which are so well known, comprising jujubes and pastilles, infants' foods, bynin, bynol, tabellæ, and also the antitoxins prepared by the British Institute of Preventive Medicine.

Apollinaris and Johannis Co., Ltd., of Stratford Place, W., in addition to the table waters from which the company's name is taken, exhibited the well-known Apenta Water, which has achieved a remarkable popularity in a very short time, due partly no doubt to the energy and admirable administrative capacity of the firm.

Burroughs, Wellcome, and Co., Snow Hill Buildings, E.C.—As usual the "Tabloid" products occupy a position of great importance. Some important additions have been made to the list, notably "Tabloid" Hypophosphites Compound, 1½ and 3 Grs., equivalent respectively to ½ and 1 drachm of the standard compound syrup of hypophosphites, containing 1/64 Gr. of strychnine and 3 Grs. of combined hypophosphites of calcium, potassium, manganese, iron, and quinine in each drachm, while each "tabloid" contains the proportion proper to a dose. "Tabloid" Chemical Food (phosphates compound), 2½ gr. and 5 gr. also, corresponds to ½ and 1 drachm of a standard compound syrup of the phosphates, and obviously possesses advantages identical with those secured by the compound hypophosphites "Tabloids." Each "Tabloid" is beautifully made and sugar-coated; for children and ladies, who especially object to the taste of the syrup, it should be extremely valuable. The "Soloid" Brand products form another series of preparations associated with the name of B. W. and Co. Most of those exhibited were intended for the extemporaneous preparation of antiseptic and other solutions. In connection with this brand of products some extremely interesting developments have taken place, notably the use of the "Soloid," not only for qualitative, but also for quantitative analysis. Two cases are exhibited, one a case for water analysis, the other for general analytical work, both of which contain full apparatus in portable form, many pieces of which are extremely ingenious.

Barclay and Sons, Limited, 95, Farringdon Street, E.C.—This well-known firm had a good display of photographic cameras and appliances of various kinds, including the 50*s.* hand camera, and the four-guinea half-plate "Favourite"; druggists' sundries, chemists' specialties, and perfumery.

Berkefeld Filter Company, Limited, 121, Oxford Street, W.—The goods offered by this firm are so well known that there is no need to mention them in detail here. One filter exhibited, however, is worthy of notice. It is a large nickel-plated counter filter, fitted with an ice reservoir, on an ornamental wrought-iron stand, and is destined for Johannesburg, where it will occupy the centre of a pharmacy.

Blondeau et Cie, Malden Crescent, N.W.—The numerous Vinolia perfumes, soaps, and toilet preparations manufactured by this noted firm were tastefully exhibited on a large stand occupying the central position of the exhibition. Most of the articles given the name of "Vinolia" are so well known to chemists as not to need reiteration here, but attention may be called to one or two articles which should "take." Amongst the Blondeau choice toilet soaps are small perfumed tablets, called the "Diamond Brand," put up in diamond-shaped boxes of a registered design. Then there is a shaving cream to use without water, violet powder in 6*d.* tins and card-board cases, also a 6*d.* line of dentifrices in collapsible tubes; hair wash, which imparts to the hair a bright appearance without greasiness; hand-painted shaving jars to sell at 1*s.* Some very pretty and well got-up Christmas goods were also shown, the new perfume cases made to hold one, two, or three bottles, being extremely smart, and should "go off" rapidly when the season arrives.

Brand and Co., Mayfair, W.—Brand and Co.'s Meat Juice and Specialties for Invalids were well represented at Stand 42, the exhibit comprising all the varieties of preparations in the shape of essences, extracts, lozenges, jellies, biscuits, peptones, sauces, entrées, potted meats, and other preserved provisions for which this firm is universally noted. The essences consist solely of juice of the finest meats extracted by a gentle heat without the addition of water or any other substance.

Bristow (T. F.) and Co., St. James's Walk, Clerkenwell, E.C.—This firm is to be congratulated on the good taste and ingeniousness exhibited in displaying its specialties, the blending of the various colours being exceedingly well done. There was a very fine display of floral 6*d.* perfumes, hand-painted silk cases of perfumes, also of toilet soaps and requisites.

"Camwal" (The Chemists' Aërated Mineral Waters Association, Ltd.), London, Manchester, Birmingham, Bristol, Harrogate, and Mitcham. London works and offices: Gifford Street, Caledonian Road, N.—According to custom, "Camwal" secured the most prominent position in the exhibition for the reception room, which occupied the Royal Box. The exhibition stand was on the ground floor, where was displayed to great advantage the various descriptions of Aërated Waters for ordinary use and Soda, Potash, Lithia Waters, manufactured according to the B.P., also Syrups, pure essences of fruit and numerous novelties connected with the syphon trade. The exhibit was well patronised by the chemists and medical men visiting the exhibition, and Mr. H. T. Butler, the energetic secretary of the Association, and his staff had their time fully occupied.

Thomas Christy and Co., 25, Lime Street, E.C.—This firm had two stands facing each other. The one which received perhaps the largest amount of attention was that at which Neo-Kola was dispensed. It is a preparation of fresh kola nuts in the form of a pale chocolate-coloured powder, flavoured with vanilla, and when a teaspoonful in a breakfast cup is mixed with boiling water it produces a palatable and stimulating beverage. Specimens of the kola nuts were exhibited in the various stages of the process through which they pass prior to being finished and packed. Neo-Kola is largely exported to France and South America. The larger stand was devoted to new and rare drugs, the original "Morstadt" Cachets, and the improved forms. A very pretty sign, composed of various coloured cachets, was mounted at the rear of the exhibit, and underneath were ranged about twenty different sizes of stock machines at prices to suit all customers. The latest thing in cachets are "Koseals," an improved form of "Morstadt," the shape of the rim having been altered on the inside by a raised surface, the object being to simplify the process of moistening. Another feature is that the Koseals may be closed in two ways, with closed or open rims as preferred. Among the special lines worthy of notice were "Coco Testa," a new brand of liquorice; Witch Hazel, a distilled extract guaranteed to keep perfectly an indefinite time; White Petroleum Oil, odourless and colourless; Perrosine (best yellow petroleum jelly); and Reprecipitated Sugar of Milk, specially prepared for homœopathic use; Menthol Cones and Menthol Inhalers; Adeps Lanæ (B.P.) "Christy," a preparation suited for all pharmaceutical purposes, particularly for the manufacture of creams, ointments, etc.

Cooper and Co., 80, Gloucester Road, South Kensington, S.W.—The "Finot" Cachets formed the greater part of this exhibit and were displayed in most attractive designs, the principal of which were a large star mounted on a velvet background and a basket of roses of various sizes and colours. Cachet apparatus from 5*s*. to 15*s*. were shown, and are intended for those chemists who have not a large demand for cachets. Cooper's preparation of Liq. Quininæ Salicylatis, which contains one grain of natural salicylate in each fluid drachm, was also shown, together with the noted Sinapine Tissue or Mustard Leaflets.

Corneille, David, and Co., 4, Fenchurch Avenue, E.C.—This exhibit was composed of Geraudel's pastilles, which are manufactured from Norwegian pine tar in a granulous or molecular state. Messrs. Corneille, David, and Co. are the sole agents for the United Kingdom and the Colonies.

Edme, Limited (The English Diastasic Malt Extract Company, Mistley; The Britannia Malt Extract Manufacturing Company, Bermondsey), New London Street, E.C.—Stand No. 69 contained samples of all the preparations made by this firm, amongst which were the Edme Fluid Extract of Malt, which was recently favourably reported on in these columns, and the same preparation incorporated with Cod-Liver Oil, with Hypophosphites, and with Sterilised Milk, and with various other combinations, all prepared according to the British Pharmacopœia.

Evans, Gadd and Company, Fore Street, Exeter.—This well-known firm had a very fine exhibit of their numerous preparations, prominence being given to "Ambrosia" a new substitute for cod-liver oil, which contains the valuable nutritive and digestive properties of the best malted barley combined with the richest Devonshire cream. The fact that the retailers' profit is protected should induce the trade to stock "Ambrosia." Then there were various galenical preparations, Extract of Malt (Exonia Brand), and chemists' specialties, including toilet articles and perfumery artistically put up in modern style.

Evans, Lescher and Webb, 60, Bartholomew Close, E.C., and **Evans, Sons, and Co.**, 56, Hanover Street, Liverpool.—This exhibit was unique inasmuch as it represented a complete pharmacy fitted up with all the latest improvements, the fittings and every prepared article being manufactured by the firm. In the centre of the "shop" were placed samples of crude drugs, such as an original South American package of Peruvian Bark, otherwise the old original Spanish Jesuit's Bark, done up in cowhide, specially cured for the purpose, and stitched together with thongs of the same material. A log of Mysore Sandal Wood about 3 feet in length, from which is distilled the Sandal Wood Oil for which the firm is celebrated, they being one of the largest distillers of this article in the world; a Musk tin covered by Chinese needlework, and many other articles of interest. The object of the exhibitors was to show specimens of their preparations in the crude and finished form, and a large assortment of toilet articles and other counter adjuncts. At the rear of the exhibit was displayed their trade mark, the combined arms of London, Liverpool, and the Canadian Beaver. The "Montserrat" lime fruit juice and its preparations were displayed at a separate stand.

Fleming's Oil and Chemical Company, Limited, 101, Leadenhall Street, E.C.—"Ammoniated Camphylene Cream" was the chief feature of this exhibit, a new disinfectant which can be had in either solid or liquid form, for the toilet, bath, and general purposes, being refreshing and invigorating, and also excellent for removing grease from clothes. Moth-preventing specialties were also given prominence.

Ford, Shapland and Co., Great Turnstile, High Holborn, W.C.—At this stand books, labels, pamphlets, handbills, envelopes, almanacks, and calendars were shown of all sorts and sizes and for all the purposes necessary in carrying on a chemist's business, also sticky and chemical fly-papers, sanitary paper, cardboard cases for proprietary articles, price-lists, and numerous other kinds of chemist's stationery.

Formalin Hygienic Co., Limited.—This company was represented by Messrs. Zimmermann, the chief feature being the "Alformant," for the gasification of dry formalin for air sterilisation and disinfection.

Hearon, Squire, and Francis, 38, Southwark Street, S.E.—This firm had an exceedingly interesting exhibit of rare specimens of drugs and chemicals, pharmaceutical preparations, etc. A prominent place was given to the solid and semi-solid extracts of malt, a characteristic feature of which is their light and bright colour. Mr. W. A. H. Naylor, chemist to the firm, made no secret of the fact that the extracts owe this distinguishing feature to their preparation from a specially selected malted barley. Non-excisable coca wine was also shown, the firm being amongst the oldest makers of this article. A very fine food for infants was exhibited together with medicated biscuits, each biscuit containing ten grains of purified vegetable charcoal and ten grains of subnitrate of bismuth; emulsion of petroleum, with hypophosphites of lime and soda, which is a specialty of the firm, and also emulsion of cod-liver oil. Then there were specimens of gelatin and silver-coated pills of all descriptions; toilet specialties, a special line being an essence of real violets, which at present is perhaps not to be obtained elsewhere. Amongst the novelties shown were several gourds containing the noted arrow poison curara, which were imported over thirty years ago, a unique specimen of vanilla plaited by natives, a Tonquin musk pod, showing a fair sized, cone-shaped piece of lead inserted to increase the weight, and a very pretty and, at the same time, rare collection of nutmegs and mace fruits, with leaves, which would do credit to any materia medica museum, a very fine specimen of red official cinchona bark in quills 3½ feet long was also exhibited, and many other interesting articles.

E. A. Holloway, Torquay.—Mr. Holloway had a comprehensive exhibit of his several preparations of Coca and Kola Wines, Elixirs and Lozenges, Meat and Malt Wine, Cinchona and Quinine Wines, Baden-Baden Effervescing Salts, Chiropodyne for Corns, and Glyco-Vazin Cream for Eczema.

Howard Lloyd, and Co., 86, High Street, Leicester.—A large variety of pharmaceutical preparations such as soluble pearl-coated pills, "Colloid" Capsules, effervescing mixtures, compressed tablets, "Compressed Flowers," "Headache" Cachets, fluid extracts, concentrated infusions, the new "Malto Petroleo," and many others were exhibited. Amongst the specialties could be noticed soluble pearl-coated Bird and Poultry Pills, put up in 6*d*. boxes, "Inklets," or compressed tablets of solid inks of various colours for export to hot climates, portable dressings, and numerous specimens of chemists' specialties put up in various styles.

Idris and Co., Limited, Pratt Street, Camden Town, N.W.—While not in quite as prominent a position as "Camwal," this exhibit was in nowise less attractive or less visited, the ante-room in the rear being largely patronised by both old and prospective customers. The fact that the Company has lately increased its share capital by £50,000 indicates that it has not lost any of its well-known business enterprise, and with the larger capital the managers will be able still more efficiently to cope with the orders which flow in upon them. The exhibit was composed of the well-known Idris Table Waters, Lime Juice, Fruit Cordials, Essences, etc., and also of various patterns and designs in showcards.

Ingram and Royle, Limited, 26, Upper Thames Street, E.C.—An exhibit of a very pleasing appearance was here formed with material which does not readily lend itself for display, being composed chiefly of bottles of the various well-known natural mineral waters and salts, for which Messrs. Ingram and Royle are the agents, but with the help of a number of pretty ferns and plants the difficulty of displaying to advantage their goods was overcome. Prominence was given to the Vichy waters, salts, and pastilles, the natural Carlsbad salts which, in addition to the liquid and crystal form, is now put up in powder specially for export trade, and to the "Hunyadi Janos" Natural Aperient Water.

John Jakson and Co., Mitcham Road, West Croydon, and 17, Philpot Lane, E.C.—An interesting feature of this exhibit was the cases in which growing specimens of the sundry herbs grown on the firm's farms were shown, and a pretty display was made of the various essential oils of peppermint, lavender, rosemary, and camomile. The specialty of the firm is genuine Mitcham lavender water, which has gained a foremost place in the market.

W. Jameson, 92, Newington Butts, S.E.—Jameson's Arsenical Complexion Soap, composing the whole of this exhibit, is well known and needs very little notice here. One point, however, may be mentioned, and is that the soap is guaranteed by the proprietor to contain arsenic, a warranty being given with each packet, which, in case of prosecution under the Sale of Food and Drugs Act, is claimed to be sufficient to divert proceedings from the retailer to the manufacturer.

Johnson and Sons, Limited, 23, Cross Street, Finsbury, E.C.—The exhibitors had a very fine collection of chemicals manufactured by them, amongst which prominence was given to nitrate of silver, chloride of gold, sulphocyanide of ammonium, and nickel sulphate.

W. Kemp and Son, Horncastle.—A well-arranged stand containing pharmaceutical preparations of all descriptions, powdered drugs, essential oils, medicated wines, etc., was that of Messrs. Kemp and Son. There were also shown the crude drugs used for the greater part of the preparations and powders exhibited, and a selection of drugs and roots of special interest and value of the firm's own regular import or shipment. Counter specialties, bearing the customer's name etc., were also in evidence, and are well worth attention. Among the more important articles may be mentioned Kemp's 50 per cent. Cream Emulsion of Cod-Liver Oil, which does not separate, ferment, or go wrong in any way, put up in seven different styles of bottles and cartons; pure white petroleum emulsion; cod-liver oil in bottles, and every description of chemists' medicinal, toilet, and household specialties. Lemon oil in one pound original coppers was shown, also non-alcoholic "Kol-Coca" Champagne, "Haylos" Wines, non-excisable, Liebig's Beef and Malt Wine with Quinine, all of the wines being put up in bottles with the chemist's own name and address on label. A very good line of liquorice juice, the "Duclano" Brand, was shown; it is made in Italy, and is claimed to be an absolutely genuine liquorice product.

H. and T. Kirby and Co., Ltd., 14, Newman Street, Oxford Street, W.—Glycecols formed the greater part of this exhibit, and as they lend themselves admirably for an effective display, the exhibitors took advantage of the fact, and several pretty designs were traced with them. In addition to these were coated, printed and specially small pills $\frac{1}{8}$ grain size; compressed tablets, Beef Oatmeal, soft Glycerin, fruit and Medicated Jujubes, and a novel line of Spanish and Neapolitan Jujubes which are bi-colour and tri-colour respectively.

B. Kühn, 36, St. Mary-at-Hill, E.C.—The various chinosol preparations, Anti-Diphtheritic Serum (Ruete-Enoch); Tannalbin-Knoll, an intestinal astringent; Ichthalbin, a combination of ichthyol and albumin; Diuretin-Knoll, Ferropyrin-Knoll, a powerful hæmostatic and styptic; Papain (Dr. Finkler and Co), an active vegetable digestive ferment, were all to be seen at Stand 143, and their properties were cheerfully explained to all inquirers by Mr. Kühn, who also called attention to colchi-sal capsules, a compound of chemically pure colchicine dissolved in natural methyl salicylate, and to various tubes and cylinders of ethyl chloride and anestil showing the latest improvements.

Liebig's Extract of Meat Company, Limited, 9, Fenchurch Avenue, E.C.—This company's preparations were in evidence at this exhibit, and were most artistically arranged, they have so often been described and are so well known that recapitulation is needless.

Lorimer and Company, Britannia Row, Islington, N.—The exhibit of this firm was a very extensive one, comprising specimens of all the preparations and goods of which they are the manufacturers and agents. An interesting feature of the display was a complete show of specialties bearing chemist's own name and a revolving apparatus showing the labels of chemists who have availed themselves of this mode of advertising the various articles in which they deal. Infants' food is a specialty with the firm, and it is put up in tins which also bear the chemist's name, and any title he may choose to give the food. Numerous pharmaceutical preparations were shown, also Pills, Capsules, Cachets, and Household Specialties, Extracts prepared *in vacuo*, Cod-liver Oil, Beef and Malt Wine, Coca Wine, etc. Special prominence was given to "X" crystals, a new granular effervescing preparation, the "Gold Medal" Parrish's Food, Syr. Hypophosph. Co. (Lorimer), and to Perfumery, and Miller's American Fancy Toilet Soaps; amongst the latter was a very attractive novelty, which caused a good deal of amusement to lady visitors, especially the large number of nurses who attended the exhibition, namely, the "Good American Baby," each baby being wrapped in cotton-wool and placed in a box.

Marshalls, Limited, of Red Lion Square, had a prominent display which contained articles of special interest. Amongst them were graduated measures with vulcanite foot (which will unscrew) to prevent chipping and breakage; this has long been a desideratum. There was also shown a new tablet machine of small size and moderate price, which we hope shortly to describe for the information of our readers. This firm's enamelled tubes in various sizes, and suitable for toilet preparations, and any surgical dressings which can be applied in cream or jelly form, are well known, and in increasing demand. Dr. Latham's poultice bag is ingenious, handy, and cheap. "Geloids" are portable foods in lozenge form, having for a basis Armour's extract of meat, Kola, Coca and Lime Juice forming the other ingredients. The Maintenon series of perfumes and toilet preparations formed an attractive display. Marshall's Reel Fly Catcher, a most ingenious and useful contrivance, belongs to this company.

S. Maw, Son, and Thompson, 7 to 12, Aldersgate Street, E.C.—Standing out from a splendid exhibit of surgeons' instruments and appliances, aseptic instrument cabinets, antiseptic dressings and fancy articles was an object which immediately attracted the attention of all visitors; this was an enormous sponge, supposed to be the largest and best shaped sponge in the world. Close to it stood a case of remarkably good shaped Turkey toilet cup sponges, such as are very rarely seen. Amongst fancy articles were some very pretty tinted sprays and English-cut stoppered bottles of perfumes, which should sell well. and the same may be said of the tooth pastes and other toilet articles, the "get-up" being all that can be desired. A new dispensing bottle for prescriptions should prove of great use to chemists, it is a distinct improvement on the old styles, inasmuch as by an ingenious contrivance the name of the chemist, or dose and nature of the prescription can be inserted in the top of the bottle and removed when not needed. It is a screw-topped bottle, the cap being made in the shape of a ring with a rim, into which a transparent piece of talc is fitted forming the top, a piece of white paper bearing the necessary inscription is placed next the talc, whilst a piece of greased paper protects the label from the contents.

The Medico-Hygienic Inventions Co., Limited, 63, Queen Victoria Street, E.C.—"Autosprays" were the principal feature of this exhibit; these are solutions of a variety of remedies for immediate application in the form of a fine spray, the following solutions being amongst those shown:—Naphthol, 3 per cent.; carbolic acid, $2\frac{1}{2}$ per cent.; cocaine hydrochlor., 2 per cent.; corrosive sublimate, 2 per mille; creolin, 3 per cent.; eucalyptol, 5 per cent.; ichthyol, 3 per cent.; iodine, $2\frac{1}{2}$ per cent.; menthol, 5 per cent.; oleum sinapis, 1 per cent.; resorcin, $2\frac{1}{2}$ per cent.; salicylic acid, 3 per cent.; thymol, 5 per cent. As the "autosprays" are being prominently brought to the notice of the medical profession, it should be worth while to stock them. Autosprays with perfumes—"lance perfumes"—a seasonable novelty, were also displayed, and ought to sell well. "Trillat's system of aërial disinfection" with "Formochloral" was practically illustrated, and "Formine," a purified 40 per cent. solution of formic aldehyde, was shown.

Newball and Mason, Nottingham.—If novel and judicious advertising is of any value from a business point of view, then Messrs. Newball and Mason's Extracts of Herbs, etc., Wine Essences, Coffee Essence, and Non-alcoholic Fruit Wines should continue to keep in the front rank. The chief feature of their exhibit was the novel advertising mediums.

Parke, Davis and Co., North Audley Street, W.—Once again this firm presented to the view of visitors an exhibit well worthy of attention. It occupied a large space and comprised a varied assortment of chemists' specialties and physicians' requisites, fluid extracts, digestive ferments, Mosquera's Food Products, etc. An improved Aluminum Hypodermic Case, fitted with Schimmel's Patent Aseptic Hypodermic Needles, attracted the attention of medical men, the needles being contained in a stoppered tube vial constructed to hold six, and to keep them absolutely clean, sharp, and perfect in every particular in all climates. To the right of the exhibit stood a large cylinder of Syrup Hematic Hypophosphites, the special feature of which was that the compound has stood in the same tube for two years, exposed to light and temperature, without losing its colour and with no precipitation. On the left was another cylinder containing a splendid sample of Emulsion of Cod-liver Oil with Hypophosphites. Among the specialties were Ammonia cubes, which are used as smelling salts and absorb perfume of any desired odour. They are extremely handy for ladies when travelling, as there is no danger of leakage should the bottle get broken. Cascara Tablets are extremely useful as an intestinal tonic. Red Gum Tablets possess the special feature that they will not crush when moistened, but can be sucked to the thinnest film; empty oval Gelatin Capsules, Glycerin Suppositories, etc., were also shown.

Potter and Clarke, 60 to 64, Artillery Lane, E.C.—This exhibit comprised an extensive collection of specimens of botanic, Australian, American, Indian, and Continental drugs and new remedies. Special prominence was given to fluid extracts, which are guaranteed to be of definite strength, 16 fl. ozs. of extract representing one pound of the crude drug, and in cases where the drug has a definite active principle the extract is carefully standardised to ensure uniformity in quality and therapeutic value; Composition Essence, Liq. Kava Co. cum Santal, Distilled Extract of Witch Hazel, coated pills, medicinal herbs in packets (Winged Lion Brand), bird seed put up in card-board cases with attractive designs in colours; Dr. Thompson's Dandelion Coffee, Potter's Datura Asthma Cure, and Cigarettes, Headache Powders, etc., were also shown, and a rather novel line of 1*d.* "Sweet Kiss" sachets; also Coca-kola Wine with Quinine in reputed pint bottles to be sold retail at 1*s.* In addition to the articles already enumerated there were some very good perfumes; tooth paste in tubes, camphor ice cream, English lavender flowers, etc.

Price's Patent Candle Company, Limited, Belmont Works, Battersea, S.W.—A statue of "Liberty," composed of stearine, was the principal attraction to the ordinary visitor to this exhibit, and among numerous other products were shown samples of Price's pure glycerin, also toilet soaps and preparations, ceratine, a pure petroleum jelly, night-lights, etc.

Randall and Son, of Southampton, in addition to their well-known B.P. and Black Currant Lozenges, made a special feature of Coca Wine, which they supply in bulk and ordinary-sized bottles. Their exhibit also comprised chemical food, cod-liver oil, malt extract, linseed meal, petroleum jelly, fruit essences, etc.

Reynolds and Branson, 13, Briggate, Leeds. — This well-known firm had an interesting exhibit of numerous medical and surgical appliances, comprising celluloid dressing boxes, charts for temperature and weight, pill-box shoots, sterilisers, enema clips, valve strainers and cupboards, glass ligature reels, and many other articles associated with the medical and pharmaceutical professions.

John Sanger and Sons, 2, Winsley Street, Oxford Street, W.—Druggist and general sundries, photographic apparatus and sundries including camera cases, tripods, dishes, printing frames, washing racks, etc., were here exhibited, and chemists visiting the stands could not fail to observe that many things under the heading of "Sundries" may be obtained with advantage from this firm. One very good idea worth notice is the putting up of medicated gauzes into one and three yard cartons which should prove convenient in many cases, as the gauze is ready for use, and the waste almost unavoidable when cutting into lengths is avoided.

The Sanitas Company, Limited, Three Colt Lane, Bethnal Green, E.—"Sanitas" disinfectants and preparations are now universally known, and therefore need no description here, except to say that the exhibit presented a most artistic appearance, comprising as it did "Sanitas" in numerous varieties of liquid, powder, and soap for toilet, medicinal, and household use, also antiseptic preparations, including peroxide of hydrogen, eucalyptus soap, and disinfectors, Kingzett's Patent Sulphur Fumigating Candles, L.G.B. Corrosive Sublimate Pellets in tubes, each pellet when dissolved in a pint of water gives a blue solution of strength 1 in 1000; and many other kinds of tablets, lozenges, etc.

Andreas Saxlehner, Buda-Pesth (Hungary) and Trafalgar Buildings, Charing Cross, W.C.—Here was displayed the celebrated "Hunyadi János" Natural Aperient Water in bottles arranged in tiers, forming an attractive exhibit.

H. Silverlock, 92, Blackfriars Road, S.E.—Every description of chemists' labels and other stationery was displayed on the two stands of this exhibit, which included chemists' prescription books, ledgers, and account books, counter bills in great variety, folding card-board boxes, chemical fly-papers, sticky fly-papers, novel calendars for 1898, and numerous other articles. Special mention should be made of the Chemists' Sale of Poisons Register Book, published in conformity with the Sale of Poisons and Pharmacy Acts. It is 12 inches deep and $4\frac{3}{4}$ inches wide, very convenient for either desk or counter. The Postal Order Record Book is also very convenient and useful for registering small remittances. Temperature charts for nurses were shown of eight different kinds, also specimens of a medical visiting list for 1898, which will be published in October together with a chemists' prescription list, specimens of which will be sent on application.

Southall Brothers, and Barclay, Lower Priory, Birmingham.—A great attraction to this exhibit was a most ingeniously constructed wood model of the firm's cod-liver oil factory at Balstad, Norway, made to scale at the factory by their own workmen. The modelling is not confined to the exterior, but the interior of the building is also depicted to illustrate the apparatus used, etc. The firm has always taken a leading position in the provision of specimens for teaching materia medica, and Southalls' Biblical Herbarium, a collection illustrating the materia medica and botany of the Bible is their latest addition to the series. The "A1" Series of Oils is represented by three large cylinders, each containing a sample of the "A1" cod-liver, castor, and olive oils respectively. Flexible gelatin capsules, containing doses of the "A1" cod-liver and castor oils, were exhibited, as well as other capsules containing volatile or unpalatable medicines. Standard tincture tablets, manufactured from Southalls' well-known standardised tinctures, were exhibited for the first time. Amongst other pharmaceuticals the "Perfect" Blaud's pill, the term applied to Southall Brothers and Barclay's Blaud's pill by the *British Medical Journal*, coated in various ways, and also in mass, were shown, as also were samples of Galenicals, new Granular Effervescent Compounds, Potassium Iodide, the firm's own manufacture, their well-known "Dimatos" in its pure state, and also camphorated and carbolised. At least one half of the space occupied was devoted to the exhibition of attractive specialties, amongst which may be noticed an Essence of Coffee. To meet the enormous demands of the present day for non-amylaceous nutritives, Southall Brothers and Barclay have introduced a soluble food for infants and invalids. The food is put up in bottles with fancy composition stoppers and has a most attractive appearance. Southall Brothers and Barclay have for many years been engaged in the manufacture of table waters, and their "Diamond Spark," which consists of pure distilled water charged with carbonic acid gas, has been largely recommended by the medical faculty. They have now introduced a complete series of chemically pure waters all made from "Diamond Spark."

A. de St. Dalmas and Co., Leicester.—Anyone in passing round the first tier of the theatre and looking down at the various exhibits could not help stopping to admire the attractive

and artistic display of the various plasters and bandages prepared by this firm. The exhibit was rendered the more remarkable by the fact that it was principally arranged on a circular table which, in moving round, caused a reflection of its burden to appear in three large mirrors, so placed that every side of the exhibit could be seen at once. Amongst the celebrated "Leicester" series is a plaster of Paris bandage, the plaster being so incorporated with the material that there is no shedding of dust when used, which is a great improvement, a remark which applies also to the adhesive umbilical pads and to the porous belladonna plasters on white kid and on scarlet felt. A very convenient plaster caddy was shown for the use of surgeons and in hospitals. There was also a good display of the "National" series of plasters, together with the "Trilby" and "Crescent" corn plasters, and Francis' capsicum leaves, bronchial protectors, and plasters.

Stephen Smith and Co., Limited, Malmesbury Road, Bow, E.—The exhibitors deserve great credit for the good taste displayed in arranging their exhibit, which was beautifully intermingled with choice specimens of ferns, palms, and other plants, and presented a very pleasing appearance, so that one could scarcely pass without stopping to examine the various kinds of wines and preparations shown, which included "Hall's Wine," "Keystone Brand," Meat and Malt Wine, Orange Quinine Wine, B.P., and all wines for pharmaceutical purposes.

United British Castor Oil Company, Limited, Ossory Road, S.E.—Since the last exhibition this company has largely increased its share capital, and has taken new and extensive manufacturing premises, so they are now in a better position than ever to meet the demands of customers. The exhibit was composed principally of the noted Mitchell's Castor Oil, which is a pure cold-drawn oil put up in bottles of various sizes ranging from one ounce up to Winchesters. Pure Castor Meal is a bye-product which contains nitrogen equal to from 5 to 6 per cent. ammonia, and is a very valuable manure for all crops and pastures.

Vimbos, Limited, Queen Victoria Street, E.C.—Visitors to the exhibition were invited to refresh themselves with this fluid beef, which we were informed is the result of many years' experience and research, and, it is claimed, contains the entire nutritive constituents of the finest ox-beef. Invalid Vimbos is an unflavoured variety specially prepared for invalids. Vimbos lozenges for cyclists and athletes were highly extolled by visitors who had previously tried them.

Vincent Wood, Victoria House, Albion Place, Blackfriars Bridge, S.E.—Surgical Elastic Hosiery, Absorbent Wools, Belts, Trusses, Bandages, and all kinds of material and appliances used in medical and surgical cases were to be seen at this exhibit.

Wright, Layman, and Umney, 48 and 50, Southwark Street, S.E.—This exhibit was displayed on a handsome tri-partite stand consisting of three sections, representing in one perfumes, soaps, essential oils, etc.; in the second galenical preparations, soluble essences, etc.; and in the third coated pills, compressed tablets, and the more modern pharmaceutical products. A special feature was made of terpeneless essential oils, some very good samples of which were shown. The perfumery department looked extremely well, the perfumes being put up in various fancy styles for retail use.

Wyleys, Limited, Coventry.—This was one of the principal pharmaceutical exhibits, and reflected great credit on the artistic abilities of those responsible for the arranging of the stands, which were literally packed with the numerous galenicals and other preparations, prominent among the specalties exhibited were "Tropels" (Lozenge Pellets), and Floral tropels. Each tropel is made of a definite weight, the floral tropel or cachou being a very elegant little lozenge. Another line of goods, of which a specialty is made, is pearl-coated pills in all sizes and combinations; flexible gelatin capsules and perles, cachets varying from 1 grain to 15 grains; emulsions and extracts of varied combinations, granular effervescent preparations, suppositories, pessaries and bougies were also shown, as well as medicated wines, select veterinary preparations, packed goods, medical specialties, etc.

A. and M. Zimmermann, 9 and 10, St. Mary-at-Hill.—This exhibit was especially attractive to photographers, Schering's Chemicals for Photography being on view, but the chief attraction was a number of photographs printed on sensitised linen, satin, silk, and velvet, manufactured by Messrs. Meister, Lucius, and Bruning, Hœchst-on-the-Main. It is claimed that prints on these fabrics are most permanent, will stand exposure to the sun, and even washing with soap or soda.

NOTES AND FORMULÆ.

(Specially abstracted for the Pharmaceutical Journal.)

Separation of Morphine and Codeine.—It is suggested by Fouquet that anisol may be utilised for the quantitative separation of morphine and codeine. The solubility of these two alkaloids is very different in that substance, that of codeine being, in 100 parts of the solvent, 7·8 at 9°, 15·28 at 16°, and 164 at 100°, while morphine is only soluble to the extent of 0·95 in 100 at 100°. A mixture of 1·044 gramme of codeine and 0·710 gramme of morphine was extracted with 20 C.c. of anisol, thrown on a filter, washed with another 10 C.c. of anisol, and the insoluble morphine dried and weighed. The weight found was 0·702, showing a loss of morphine of 1·026 per cent. For the separation of these two alkaloids anisol is to be preferred to other solvents in toxicological researches.—*Journ. de Pharm.*, 1897 [6], v., 49.

Assay of Iodoform Gauze.—Schacherl takes from 1 to 1½ gramme of the gauze, introduces it into a strong flask with 30 grammes of a solution of sodium ethylate containing about 2 per cent. of Na, and heats under pressure on the water-bath for half-an-hour. On cooling the residue is thoroughly washed with water, the alcohol evaporated off, and the alkaline liquid faintly acidulated with dilute nitric acid. 30 C.c. of $\frac{}{10}$ silver nitrate solution are then added, and the measure of the liquid carefully adjusted to 200 C.c. by the addition of distilled water. 100 C.c. are filtered off, and the uncombined silver determined in it with $\frac{}{10}$ ammonium sulphocyanate, using iron alum as an indicator. Each C.c. of $\frac{N}{10}$ silver nitrate solution = 0·01309 gramme of iodoform. Two specimens of gauze said to contain 50 and 30 per cent. were found to give only 14·9 and 6·4 respectively.—*Apoth. Zeit.*, xii., 95.

Separation and Detection of Potassium and Sodium.—According to Kreider and Breckenridge, when a mixture of the salts of these metals is converted into perchlorate and treated with 97 per cent. alcohol, perchlorate of sodium is readily dissolved, but the potassium salt is quite insoluble in the alcohol. Perchlorate of sodium cannot be converted into chloride by heating, except with difficulty, but this may readily be effected by means of gaseous hydrochloric acid.—*Pharm. Centralh.*, xxxviii., 133.

Quantitative Separation of Barium, Strontium, and Calcium.—Rawson recommends the following method for the quantitative determination of these elements. The carbonates are evaporated with nitric acid, either in a beaker or in a porcelain dish, upon the water-bath until the mass is quite dry. Concentrated nitric acid is added in excess and the mixture well stirred, when the nitrates of barium and strontium remain insoluble; this residue may be washed either with the concentrated acid by decantation, or in the customary way upon the paper. The filtrate is evaporated either to dryness, taken up with hydrochloric acid, and the calcium precipitated as oxalate, or evaporated down with sulphuric acid, and the residue, after ignition, weighed as sulphate of calcium. The remaining insoluble nitrates are dissolved in water, the solution made alkaline with ammonium hydrate, acidified with acetic acid, and the barium precipitated as chromate. The filtrate is warmed with hydrochloric acid and alcohol until the excess of chromate is reduced, the chromium precipitated as hydrate and filtered off. The filtrate is evaporated to dryness upon the water-bath with a little sulphuric acid. The residue is treated with dilute alcohol and washed, and the residual strontium sulphate weighed as such.—*Journ. Soc. Chem. Ind.*, xvi., 114.

EXTRACTS FROM CONSULAR REPORTS.

Otto of Roses.—The export value of otto of roses from Eastern Roumelia increased from £70,000 in 1895 to £74,000 in 1896. Of this amount £28,000 went to France, £15,500 to Germany, £15,000 to Great Britain, and £11,000 to Turkey.

Drugs, Medicines, etc., imported into Eastern Roumelia during 1896 amounted to 22 tons, value £1810, a decrease of £155, or 8 per cent., the value per ton being £82 5*s*. One ton of perfumery was imported, value £403, an increase of £280, equal to 227 per cent. The quantity of chemical products imported was 326 tons, value £4872, an increase of 37 per cent., or £1317, the value per ton being £15.

Patents and Trade Marks in Japan.—The stipulations for the registration and protection of foreign patents and trade marks, made under the British and German Treaties having come into force, numerous applications have already been made under these provisions to the Japanese Patent and Trade Marks Bureau.

Drugs, Medicines, Dyes, etc., exported from Yokohama (Japan) during 1896 realised £7335, as against £7319 the previous year. 270,521 lbs. of ginseng, value £29,405, were shipped, being an increase of 393 lbs. (£2378) over the export of 1895. The quantity of menthol crystal exported was almost doubled in 1896, 70,757 lbs. (£30,725) being recorded, as against 37,518 lbs. (£19,779) in 1895. The export of peppermint oil, although largely exceeding in quantity that of 1895, did not realise as much per lb. In 1895 39,587 lbs. brought in £11,460, whilst last year 91,073 lbs. was valued at £19,861.

Drying of Vanilla by Chloride of Calcium.—Consul C. W. Bennett, in his report upon the trade and agriculture of Réunion, gives a descriptive account of the treatment of vanilla by chloride of calcium. The old methods of preparation—drying in the open air upon screens in an airy situation or in hot-air stoves—resulted in a loss of perfume and required a large amount of hand labour. These drawbacks are avoided, however, by drying in closed vessels by means of chloride of calcium, $CaCl_2$. This operation is carried on in boxes of galvanised iron with a hinged door, closing on an indiarubber edging to ensure air-tightness. Each box has eleven drawers or trays, which can be drawn out separately. In the bottom and the sixth drawer vessels containing 18 kilos. of chloride of calcium are placed, the other drawers holding 45 kilos. of vanilla. When the trays are filled with vanilla and the chloride vessels are in their places the door is made to fit perfectly into the door-jamb, the rivets in the box having previously been soldered to ensure it being hermetically closed. Every two or three days the vanilla is carefully examined, and any pods showing moisture are removed and put aside to be sunned and prepared by themselves in a special box. In from twenty-five to thirty days the vanilla reaches the required degree of dryness. If insufficiently dried it will not keep, and breeds small worms; if over-dried it keeps well, but is not supple, and is called "broken" (brisée), and has less commercial value. When the perfume of the vanilla is well developed, it is thoroughly cleaned, 15 to 20 kilos. of vanilla being thrown into a perfectly clean receptacle containing 25 to 30 litres of water at about 60° C. (140° F.), and is vigorously stirred by hand. The pods are then withdrawn, lightly wiped, and put to dry in the shade, and when dry are sorted and classed according to length and quality, and made up into bundles and placed into tin boxes with covers holding 4 to 5 kilos. each. Mildewed pods are worked up by various processes and sold as inferior vanilla. This process was briefly referred to in the Journal some time ago.

The Chinese Opium Import is fast declining. In 1895 two piculs (266⅔ lbs.) of Malwa and ½ picul (66⅔ lbs.) Szŭ-ch'uan opium were imported into Newchwang, but they were re-exported, and in 1896 32·13 piculs of Indian opium (including 1 picul of Persian) a total of 4284 lbs. were brought into the port by steamer. Twenty years ago (1876) 307,043 lbs. of foreign opium of the value of 1,056,066 Haikwan taels were imported, but it is believed that in a few years this drug will disappear altogether from the import returns of the Imperial Maritime Customs, or continue only in such insignificant quantities as are necessary to satisfy the luxurious few.

LETTERS TO THE EDITOR.

A Correction.

Sir,—In to-day's Journal (p. 142, col. 2, line 26) I am reported to have said at the Glasgow Conference:—"It (the B.P.) should certainly go into such details as the odour of an oil, though at present it did do so to some extent." What I did say was that the Pharmacopœia should not dwindle into such petty details as the odour of a drug, although it does that in the case of benzoin, whilst, in the same instance, it leaves unnoted the presence of foreign matter, and makes a statement about solubility that is not according to fact.

Glasgow, August 14, 1897. Thomas Dunlop.

The Presidential Address at Glasgow.

Sir,—Reading through Dr. Symes' address at the Pharmaceutical Conference, one cannot but be struck at the cry that has gone up for years at the unsatisfactory position held by the British pharmacist. The panacea most relied on all through for the uplifting of pharmacy has been "education." There can be no doubt this is the right key-note and the best path to take, but whether it will lead to financial betterment or to glory I am unable to predict; but one thing certain, it will not lead to ignorance. I feel we must push forward on this road and chance the terminus. It is urged that a better scientific training, a more thorough grounding in the art of pharmacy is most necessary in the future pharmacist; true, but when obtained how is he to apply this knowledge? Many imagine that the great corner-stone to look forward to is dispensing, the getting back to the pharmacist this profitable part of his business, but if having obtained his higher knowledge there is nothing left to dispense, what then? When our leading lights in medicine declare that the one book they are least acquainted with is the Pharmacopœia, it appears to me that the art of prescribing is dying out, and the looking forward to this branch of the business is leaning on a broken reed. Sir Malcolm Morris only the other day said the chief progress that had been made in medicine during Her Majesty's reign was to teach people to do without it. Is this teaching to go on, or is a stand to be made? My own belief is it will go on and offer but a poor look-out for the dispensers. The medical student has now to devote two years more to his studies, chiefly devoted to bacteriology, and no doubt to the neglect of medicine.

We see also all around us factory-made medicine. Is the future pharmacist to be merely the purveyor of these medicaments, or where is he to look for help? He is very much disposed at present to look to Acts of Parliament, but would he believe it, matters pharmaceutical are worse, or as bad in France as they are in England? I was speaking to a friend last week who has just come from there, and I am told the drug-store man is in full swing, in spite of Acts of Parliament, so for once they do not manage these things better in France than in England. Let us recognise the great fact that the old order changeth. The pharmacist, like other men, must recognise this, and adapt himself to the altered condition of things, and nothing will help him so much as sound education in his art. The Society, too, might recognise this and help him by a wider range of teaching, *i.e.*, bacteriology, hygiene, photography, sanitation, disinfection, etc. Why should not the pharmacist in the coming century be the man of the hour? I see no insuperable difficulty. Who so likely as he to know about these matters, about materia medica, about chemistry, about analysis, about electricity? Is there no scope here for him? I believe there is. One word more. Examine your man and have done with him. Have no "finnikin" examination, first for one thing and then for another. When he is qualified let him be qualified, either as master or man. When a solicitor is examined and passed he can either enter as an assistant or principal. For goodness sake keep to your present system, and when you have passed your man let him be fully fledged to commence on his own account or not as he pleases.

August 16, 1897. S. G. (107/8.)

Poor Law Dispensers.

Sir,—I shall be grateful if you will grant me a space in your valuable journal to discuss the position and remuneration of Poor Law dispensers, with suggestions as to their amendment. In the 1876 Annual Report of the L.G.B. it is stated "That the Board acknowledge the value and onerous nature of our duties That the position of Poor Law dispenser is one of great importance, having most responsible duties assigned to him." Yet

the ancient maximum scale of £140 per annum remains the same as when no evidence of qualification was necessary (viz., before the Pharmacy Registration Act), showing evidently that the high standard of the pharmaceutical examinations which now exists, and make competent dispensers, are not appreciated. The inequitable condition of Poor Law dispensers as compared with other officers in the same service seems an anomaly, and the more mysterious the more we investigate it. Take our previous training, viz., examination in general education, three years' apprenticeship, education and examination in professional subjects, and the expense incurred, and compare the remuneration with that of other officers.

A relieving officer need not have (and generally has not) any previous knowledge of the duties he undertakes. It is sufficient that he can read and write fairly well, yet he invariably commences his apprenticeship at a salary of £140 per annum, increasing by annual increments of £5 to £165 per annum, and finally after fifteen years' service to £180 per annum. Again, the first assistant clerk, although a subordinate officer, has generally a maximum salary of at least £200 per annum. A workhouse master has a post three or four times the value of a dispenser's, and masters are invariably recruited from such sources as gate-porters, pantrymen, labour-masters, etc. Even the gate-porter, who, in many instances, has £65 per annum, with quarters and board, is as well remunerated as the dispenser. On Wednesday last the President of the Local Government Board received, by appointment, a deputation of relieving officers (sent by the Relieving Officers' Association), who presented a petition asking that their scale of remuneration should be a commencing salary of £140 per annum, increasing by annual increments of £10 to £230 per annum. His reply, I understand, was favourable. There is no doubt dispensers are too satisfied; they are contented to look on at the energy and consequently more prosperous condition of other officers.

I would suggest that a Poor Law Dispensers' Association be established for the purpose of investigating the best means of improving our position, and to make the necessary preparations to push our views through the proper source, that a small annual fee be required to pay for an office in a central district, stationery, and other incidental expenses, that the members meet monthly or bi-monthly to conduct business, that a treasurer, secretary and chairman be appointed by nomination and voting from amongst the members themselves, and that lastly, but not least, if the Association is to be a success, unanimity, sincerity, and solidity is imperative, more especially as we are not a numerous body.

August 6, 1897. A (Very) Poor Law Dispenser.

ANSWERS TO QUERIES.

Botanical Specimens.—1. *Aster tripolium;* 2. *Senecio erucifolius.* [*Reply to* H. J.—107/1.]

Botanical Specimen.—Your plant is *Lysimachia vulgaris*, yellow loose-strife. [*Reply to* J. A. P.—105/20.]

Solution for Preserving Milk.—This consists of formalin. [*Reply to* J. S.—105/32.]

Preliminary Examination.—Read the proposed Bye-law 11, on page 28 of the *Ph. J.* for July 10. [*Reply to* X.—106/8.]

Book on Minor Ailments.—Stretch Dowse's 'Pocket Therapist' is a handy little volume, which will contain all you want. It is published by Simpkin, Marshall and Co. Another work is 'Minor Ailments,' published by the *British and Colonial Druggist*, 44, Bishopsgate Street Without, E.C. [*Reply to* J. S. H.—105/19.]

Damage to Seed.—You say a sack of seed consigned to you at "owner's risk" was damaged in transit, owing to the tarpaulin with which it was covered containing numerous holes and allowing rain to penetrate. The liability of the sellers of the seed must be determined by, and will depend upon, the terms of sale and purchase. A railway company is liable for negligence, and the term "owner's risk" will not ordinarily relieve them of such liability. [*Reply to* F. Dean.—104/2.]

Specimen of Salt.—The salt you send is sulphate of nickel, slightly effloresced. [*Reply to* W. M. B.—106/11.]

Manganate of Soda in Bulk.—The answer addressed to you last week has induced a correspondent, to whom we are indebted, to write suggesting that you would do well to get quotations for the manganate from the United Alkali Co., St. Helens, near Liverpool. [*Reply to* M. E. S.—105/10.]

Bacillus Typhosus.—Fortunately this bacillus is one of the most easily destroyed at a moderately high temperature. It is killed in 10 minutes at 60° C., and more rapidly at a higher temperature. Even the spores would not survive exposure to 100° C. But we should advise you to keep your milk at boiling-heat for 10 minutes. Pharmacists should always preach and practise the text, "Boil your milk." Doubtless a large proportion of infectious diseases, especially among children, are due to the consumption of unboiled milk, and probably raw milk is responsible in very large degree to the prevalence of tuberculosis in this country. The precaution of boiling is so easily carried out that, as a mere safeguard, it should be a part of the daily routine in every household. [*Reply to* J. A.—106/6.]

Aqueous Extract of Kola.—It is not possible to completely extract kola nuts with water and then to keep all the matter extracted in solution when the aqueous extract is concentrated to the extent so that 3 fluid parts are equivalent to one part of the drug. You might try as follows, but it is not a purely aqueous solution. Make a menstruum of water, 50; glycerin, 3; and citric acid, one half parts. Moisten dried kola nuts in No. 20 powder, 10 parts, with enough of the menstruum to make damp but not sticky. Allow to stand for twelve hours, then pack lightly in a percolator, and percolate with the rest of the menstruum. When this ceases to pass through, continue the percolation with water until the percolate as it drops is nearly tasteless; reserve the first 27 fluid parts, and set aside, evaporate the rest to 3 fluid parts, then mix with the reserve. Allow to stand twenty-four hours, then filter. A weak alcoholic menstruum is far more satisfactory for kola than an aqueous one. [*Reply to* Calumba.—104/48.]

"Blood Purifier" Fermenting.—The probable *causa causans* of your trouble is the taraxacum juice in your recipe. This is very apt to ferment in hot weather unless carefully stored in a cool cellar. If fermentation was only just commencing you would probably not notice it, and when mixed with the other ingredients it would proceed more rapidly; the decoction of sarsaparilla would give the ferment more sustenance to feed on. You can easily Pasteurise your succus tarax. Put it in a boiling flask fitted with a long wide-bore tube to serve as an upright condenser, plug the open end of the tube with a pellet of cotton wool, and boil it briskly for a couple of minutes, and let it cool. If it is not an essential ingredient, you might omit it altogether, since it has practically no medicinal action in the small dose in which it is given in here. Certainly it is not the "amount of alcohol" that causes the bursting of the bottles. If there were more, this would not occur at all, for, as you know, alcohol above a certain proportion totally arrests fermentation. [*Reply to* W. H.—104/8.]

OBITUARY.

Burn.—On July 13, William Burn, Chemist and Druggist, Durham. Age 72.

Wood.—On July 30, James Arthur Wood, Chemist and Druggist, late of Leicester. Aged 41.

Tuck.—On August 3, William Henry Tuck, Pharmaceutical Chemist, Surbiton. Aged 60.

Delf.—On Aug. 5, Frederick Daniel Delf, Pharmaceutical Chemist, Dewsbury. Age 61. Mr. Delf had been a member of the Pharmaceutical Society since 1863.

Sleeman.—On August 6, James Sleeman, Chemist and Druggist, late J. Helston. Aged 84.

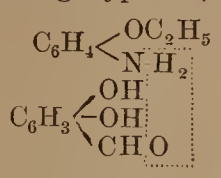
Reckless.—On August 7, Arthur Henry Reckless, Chemist and Druggist, Ashbourne, Derbyshire. Aged 70. Mr. Reckless had been a member of the Pharmaceutical Society since 1881.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Bainbridge, Barrett, Boothroyd, Botham, Braithwaite, Cantwell, Carr, Colley, Dunlop, Elsdon, Finlayson, Forret, Gaubert, Glyn-Jones, Greenville, Guyer, Jackson, Knight, Laing, Langley, Liesegang, Longley, Ross, Smith, Thursfield, Turner, Turver, Urwick, Watney.

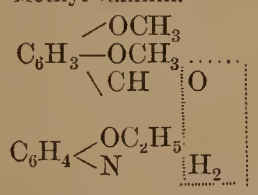
"THE MONTH."

New Synthetic Remedies.

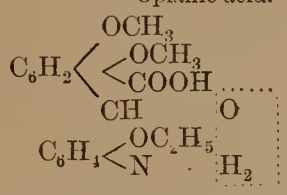
By condensation of *p*-phenetidine with protocatechuic aldehyde, C. Goldschmidt has obtained a product soluble in water crystallising with two molecules of water and melting at 220°. It is described as possessing hypnotic, antineuralgic and antipyretic properties. With the dimethyl derivative of protocatechuic aldehyde *p*-phenetidine yields a product melting at 210° C., and crystallisable from hot water with two molecules of water. With opianic acid *p*-phenetidine yields a product melting at 175° C., insoluble in water. Both products possess antipyretic properties, and are powerful hypnotics.



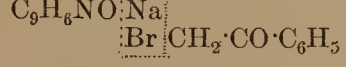
Methyl vanillin.



Opianic acid.



By the reaction of bromacetophenone and sodium oxyquinoline Zimmer and Co. have obtained a powerful basic product forming crystallisable salts, and possessing marked hypnotic properties. The base is readily soluble in alcohol, chloroform or acetone, it crystallises in needles, and melts at 130° C., and it differs from acetophenone in being both odourless and tasteless.



Barbaloin.

The fact that investigators have proposed no less than nine different formulæ to represent barbaloin has led Leger to investigate that substance. He concludes that the discrepancies of different workers are in the main caused by the ease with which aloin is decomposed, particularly in the presence of alkalis, and even of water. As most workers have employed water in their process of extraction, the body which they have ultimately obtained has probably not been pure. In his research the author has avoided the use of water, treating the aloes with acetone containing a little glacial acetic acid. The insoluble residue was impure aloin, a portion of which, however, was removed by the menstruum, to which ether was added, partially precipitating the resins. The ether and part of the acetone were distilled off, leaving a syrupy residue, which in a few days formed a mass of interwoven needles. These, with the crystals insoluble in the first menstruum, were united and purified by two or three recrystallisations from methylic alcohol. The body then has the formula $C_{16}H_{16}O_7H_2O$. From water it crystallises in cottony-yellow needles, having three molecules of H_2O. With benzoyl chloride it gives benzoyl barbaloin, $C_{16}H_{14}(C_7H_5O)_2O_7$, and with acetyl chloride, diacetyl barbarbaloin, both of which are amorphous tasteless bodies. From the mother liquors of the acicular barbaloin crystals another form separates out on concentration, in the form of short yellow lamellæ grouped in clusters. These proved to be an isomeric barbaloin containing $3H_2O$.—*Comptes rendus*, cxxv., 188.

Eka Iodoform.

In order to render iodoform antiseptic, a preparation is made by Messrs. Schering in which that deficiency is remedied by an addition of paraformaldehyde, and Dr. A. Gottstein reports favourably on its effects as a dressing for wounds.—*Therapeut. Monatsheft*, 1897, 381.

Phenyl-hydrazine and Metallic Nitrates.

Moitessier finds that the nitrates of metals of the magnesium group unite directly with phenyl-hydrazine, and give crystalline combinations, which give reactions for both their constituents. The cobalt compound, $Co(NO_3)_2.2(C_6H_5N_2H_3).H_2O$, is prepared by mixing alcoholic solutions in proportion of one molecule of cobalt salt to two or three of phenyl-hydrazine. A precipitate of the compound in minute stellate groups rapidly separates out. The zinc compound, $Zn(NO_3)_2.3(C_6H_5N_2H_3)$, is at first precipitated mixed with oxide of zinc, from which it is removed by boiling alcohol. It then gives pearly crystals resembling boric acid in appearance. The cadmium compound closely resembles that of zinc. The nickel salt, $Ni2NO_3.4(C_6H_5N_2H_3)$, crystallises in small microscopic rhomboid lamellæ.—*Comptes rendus*, cxxv., 183.

Mangani-molybdates.

When a solution of acid molybdate of ammonium is boiled with hydrated peroxide of manganese a ruby-red liquid is formed. According to Péchard, this is a mangani-molybdate of ammonium. To prepare the salts in definite crystalline form, the author first transforms the acid ammonium molybdate into a double molybdate of ammonium and manganese by mixing hot solutions of molybdate and of a manganous salt. The yellow precipitate of the double salt thus obtained is suspended in water and permanganate of potassium gradually added to it, when the violet colour of the permanganate is changed to the ruby-red of the mangani-molybdate. Ammonium mangani-molybdate—$3(NH_4)_2O.MnO_2.12MoO_35H_2O$, forms fine red stable crystals, slightly soluble in water; the potassium salt forms small crystals not so deep in colour as the preceding salt, and almost insoluble in water; the sodium salt forms large blood-red crystals, $3Na_2O.MnO_2.12MoO_3.13H_2O$; mangani-molybdic acid is obtained in the free state by treating the barium salt with an equivalent of normal sulphuric acid; by evaporating the red liquid so obtained *in vacuo* a blackish mass with a vitreous fracture showing no signs of crystallisation is obtained. The formula for this is $MnC_212MoO_310H_2O$.—*Comptes rendus*, cxxv., 31.

Triphenylalbumin.

If dry powdered egg albumin is dissolved in ten times its weight of phenol by being heated for several hours on the water bath and alcohol is then added, a flocculent precipitate is obtained, which washed first with alcohol and then with water, gives an odourless and tasteless body, which is insoluble in hot alcohol, water, and potash solution, but soluble in phenol; like ordinary albumin, however, it is subject to fermentation. According to Shimada this body makes an excellent culture medium for bacteria. According to the analysis, three hydroxyl molecules are replaced by as many phenyl groups after the formula—

$$C_{72}H_{112}N_{18}SO_{22} + 3C_6H_5OH = C_{12}H_{109}(C_6H_5)_3N_{18}.SO_{22} + 3H_2O.$$

—*Pharm. Post.*, xxx., 293.

Oxysantonin.

Jaffé obtains from the organisms of dogs and rabbits which have been given santonin, a substance which he calls santogenin. He recently succeeded, by means of repeated (10 to 15) crystallisations of santogenin with hot alcohol, in obtaining a compound of the formula $C_{15}H_{18}O_4$, which he describes as α-oxysantonin. This is very difficult to dissolve in boiling alcohol, or in chloroform, and is almost insoluble in ether. Continual boiling with water dissolves small particles, which separate again almost completely on cooling. The solution is neutral. The compound is readily soluble in hot acetic acid; sparingly so in cold. It is slowly dissolved on being heated with diluted alkalis and alkaline earths. α-Oxysantonin

crystallises from alcohol and chloroform in colourless, transparent, irregularly fringed tablets, from acetic acid in shining leaves, from alkaline solution, on the addition of acids, in fine needles. The author also isolated from the ether extract of the urine of the rabbit β-oxysantonin. The oxysantonin obtained from *Artemisia maritima* is considered to be a third isomer, and may be described as γ-oxysantonin.—*Pharm. Centralh.*, xxxviii., 351.

Benzylmorphine.

Benzylmorphine, $C_{17}H_{18}NO_2.O.C_2H_5C_6$, is formed by the action of benzyl chloride on morphine in the presence of an alkali and a diluent such as alcohol. It crystallises in large prisms, which are readily soluble in alcohol, ether, benzene, etc., but it does not give the blue colour reaction with ferric chloride peculiar to morphine. The preparation is said to have various advantages over codeine, as a substitute for which it is largely employed.

—*Pharm. Zeit.*, xlii., 448.

Caffetannic Acid.

Cazeneuve and Haddon, working on the osazones obtained from caffetannic acid and the sugar which results from its decomposition, find that the hitherto accepted formula of Hlasiwetz for these bodies is erroneous. The acid prepared according to that author's directions gave a crystalline osazone with phenyl-hydrazine, which was easily obtained pure, melting at 180° C. Analysis of this body shows that the molecule caffetannic acid consists of one molecule of caffeic acid with two molecules of a sugar in the form of a saccharine di-ester, as represented by the formula—

$$C_6H_3\begin{cases}CH:CH\cdot COOH\\OC_6H_{11}O_5\\OC_6H_{11}O_5\end{cases}$$

or $C_{21}H_{28}O_{14}$. The examination of the sugar resulting on the hydrolysis of the acid points to the formula $C_6H_{12}O_6$. Treated with basic lead acetate it gives first a white and then a yellow precipitate. The latter has the composition $(PbO)_2Pb(C_{21}H_{27}O_{14})_2$.

—*Journ. de Pharm.* [6], vi., 59.

Acetylene as a Quantitative Reagent.

Acetylene may be employed for the determination of copper. The salt to be analysed is dissolved in 100 to 200 times its volume of water mixed with a few cubic centimetres of ammonia and heated for a short time on the water bath. Acetylene is then introduced into the dark blue fluid to saturation. The precipitate is complete even in the cold, but it takes place more quickly, and is better aggregated on warming, while at ordinary temperatures a portion often adheres obstinately to the sides of the vessel. In a closed flask the precipitate can be preserved for any length of time without decomposition; in an open vessel a part of the precipitate is again dissolved as long as the fluid remains alkaline. The copper acetylide is now collected, washed, and decomposed by being digested for half an hour with hot diluted nitric acid, filtered from the carbonaceous residue and the filtrate evaporated to dryness and ignited. The ash of the filter and residue is also taken and the whole weighed as CuO. This separate ignition of filtrate and insoluble residue is advisable to prevent explosion. A too large excess of acid must be avoided. The acid contained in the original copper salt can easily be detected in the filtrate from the acetylene precipitate. For the separation of zinc and copper, as salts of the former metal are not decomposed by acetylene, the method is most useful. In the presence of excess of sulphurous acid the whole of the copper is precipitated by acetylene in a mixture of a solution of salts of the two metals. In an experiment with a known quantity of zinc, it was found that none was carried down by the copper acetylide precipitate.

—*Pharm. Centralh.*, xxxviii., 426.

Glyceric Ether.

Stochr obtains glyceric ether by distilling glycerin with phosphoric acid. The product $C_6H_{10}O_3$, which results from the condensation of two molecules of the alcohol, crystallises from ether in shining tablets or in prisms, which melt at 124° to 125° C. and boil at 209° C. without decomposing. The glyceric ether is removed from an aqueous solution by mercuric chloride with which it forms a crystalline compound.—*Pharm. Centralh.*, xxxviii., 441.

Paucin.

Paucin is the alkaloid of the nuts of *Penthaclethra macrophylla*, growing in the Congo States. It is obtained by alcoholic extraction after distilling; the residue is subsequently extracted with petroleum ether, to separate the oil and the other components, the alkaloid dissolved out with dilute acids and liberated by an alkali. It crystallises in yellow foliaceous crystals which melt and decompose at 126° C. They have the formula $C_{27}H_{39}N_5O_5$, are soluble in soda solution, but not in ether or chloroform.—*Pharm. Zeit. f. Russ.*, xxxvi., 295.

Decomposition of Iodoform by Light.

The decomposing action of the actinic rays on solutions of iodoform has been found, after a time, to cease. Various theories have been advanced to account for this. Fleury considers that the free iodine in solution prevents the passage of the ultra-violet rays. He finds that when reduced metallic silver is placed in the solution so as to combine with the iodine as soon as it is formed, practically the whole of the iodoform is decomposed by light.—*Journ. de Pharm.* [6], vi., 97.

Bitter Fennel Oil.

Tardy finds that French cultivated bitter fennel oil contains phellandrene, cymene, fenchone, estragol, anethol, anisic aldehyde, anisic ketone, anisic acid, and a crystalline body having the formula $C_{13}H_{14}O_2$.—*Journ. de Pharm.* [6], vi., 98.

Sedanolic and Sedanonic Acids.

These two acids have been isolated by Ciamician and Silber from the higher boiling fractions of celery oil. The oil was saponified with 25 per cent. potash solution under a reflux condenser in an oil bath, and the acids liberated from the potash salts in the aqueous solution with sulphuric acid, which gives an oily liquid consisting of sedanonic acid and sedanolide. On shaking with warm sodium carbonate solution the former is removed. Sedanolide thus left boils between 183 to 185° C. at 17 Mm., and is the anhydride $C_{12}H_{18}O_2$ of sedanolic acid. This acid obtained from the anhydride crystallises in white needles, melting between 90 to 91° C. It is insoluble in water, but soluble in ether and benzene. Sedanolide obtained pure by the distillation of the acid is colourless, having a strong odour of celery. It exists in the free state in the plant, and without doubt is the odorous principle. Sedanonic acid, $C_{12}H_{18}O_3$, is liberated from the sodium salt obtained as described above. It forms white crystals melting at 113° C. It appears to be an acid acetone of the constitution—$C_6H_8<^{CO—C_4H_9}_{COOH}$

—*Journ. de Pharm.* [6], vi., 79, after *Berichte.*

Oxidising Power of Animal Charcoal.

Dupuoy demonstrates the oxidising power of animal charcoal by the addition of a few grains of that substance to a few C.c. of fresh tincture of guaiacum. An immediate intense blue coloration is produced in the cold. Wood charcoal does not give this reaction. It is thought that probably to this oxidising power is due the beneficial effect of animal charcoal on ulcerations and granular wounds.—*Bull. de la Soc. de Pharm. de Bordeaux*, xxxvii., 171.

Testing Egg Albumin.

The value of albumin as a clarifying agent is so great, and its technical application so wide, that it is important to have practical tests to determine the value of commercial samples, which have been found to vary greatly in purity and effectiveness. The following test, by Carles, will be useful :—Two grammes of the albumin are weighed out, mixed thoroughly with a little water, then more water is gradually added, with thorough agitation, to bring the volume to 200 C.c. If the albumin is free from coagulated particles, this solution will be clear. One hundred C.c. of it are taken and 35 C.c. of a 1 per cent. pure tannin solution are added to them, together with a pinch of potassium bitartrate. After brisk shaking 10 or 15 C.c. are thrown on to a small filter, and the filtrate divided into two equal parts in twin tubes. To one of these a few drops of tannin solution are added, to the others a little 5 per cent. solution of transparent gelatin. If neither tubes show a precipitate the sample is of a good quality. If the gelatin solution gives a precipitate from tannin still being present it shows that the albumin is weak, either from being overheated or from admixture with inert matter. If, on the other hand, tannin gives a turbidity it shows that a gelatin having a higher precipitating power for tannin than egg albumin is present. If the presence of gelatin or other bodies is suspected they may be proved by gradually warming a solution of the sample on the water bath to 100° C. The whole of the egg albumin is coagulated, while gelatin, dextrin, and other bodies are unaffected, and may be found in the filtrate.—*Journ. de Pharm.* [6], vi., 102.

Ferment from Locust Beans.

In the course of the study of the products of the fruits of *Ceratonia siliqua*, Effront has isolated a new zymase caroubinase, which is developed during the germination of the seeds of the "locust bean." It acts energetically on caroubin, liquefying gelatinous solutions of that carbo-hydrate. It appears to be most active at between 40° C., and 50° C. It is destroyed at 80° C. A trace of formic acid increases its liquefying power. The liquid resulting from the action of the ferment on the caroubin jelly is rich in a reducing sugar precipitated by alcohol, and soluble in water, the solution being strongly dextro-rotatory. Treated with dilute mineral acids, it gives a peculiar sugar, caroubinose.

Caroubinose, a New Sugar.

The sugar, caroubinose, produced by the hydrolysis of caroubin by dilute acids is a syrupy, non-crystalline body, soluble in water and in alcohol, having the formula $C_6H_{12}O_6$. When treated with phenyl-hydrazine two ozazones are obtained. The one, crystallising in prisms, which are insoluble in boiling absolute alcohol, caroubophenyl-hydrazone, $C_{12}H_{18}N_2O_5$, melts without decomposition at 183° C. The other, crystallising in needles, has the composition $C_{18}H_{22}N_2O_4$, and melts at 198° C.—*Comptes rendus*, cxxv.

Prunus Virginiana.

G. E. Cooley has studied the bark of *Prunus virginiana*, with the view of ascertaining how far the official bark (U.S.P.) collected in the autumn may be distinguished from that collected at other seasons of the year. No distinctive histological distinction was found, but it was observed that a study of the starch grains in the bark gave much information. Barks collected in summer and winter contain little or no starch, the maximum starch content being found in October and early November, just after the fall of the leaves. By the end of November the bark is again nearly free from starch, and remains so throughout the winter, but starch formation begins once more in the spring, reaching its maximum about the end of April when the leaves are bursting the bud scales. Bark collected in the autumn should, therefore, contain much starch. To distinguish bark collected in the autumn from that collected in spring, a test for tannin is applied, as the amount of tannin in spring bark is noticeably greater than in autumn bark.—*Journal of Pharmacology*, iv., 168.

Chemistry of Cusco Leaves.

From Bolivian cusco leaves Liebermann, Cybulski, and Giesel have isolated an alkaloid which they called cuschygrine. It occurs as a colourless oily liquid of the composition $C_{13}H_{24}N_2O$, soluble in water, forming a hydrate, $(C_{13}H_{24}N_2O)_2 7H_2O$, which crystallises in needles melting at 40° to 41° C. It is dissociated slowly in the air. With hydrochloric acid the base gives a dihydrochloride, $C_{13}H_{24}N_2O \cdot 2HCl$; the platinum salt and gold salt have also been obtained. Besides this, another base has been isolated, having the composition $C_8H_{15}NO$, which gives an acid when oxidised by chromic acid; this has the formula $C_6H_{11}NO_2$, and is called hygrinic acid. This latter, on distillation, splits up into CO_2 and a methyl-pyrolidine, $C_5H_{11}N$, a powerful base, which resembles conine or nicotine in odour, and the fumes of which occasion intense headache. It does not give the same substitution bodies as piperidine, and appears to be a tertiary base of the constitution, $C_4H_8N - CH_3$.—*Berichte*, 1897 (28), 578 (30), 1113.

Structure of Eucalyptus Leaves.

Dr. Albert Schneider deals with the comparative anatomy of two distinct leaf-forms of *Eucalyptus globulus*, the dorsiventral and isolateral. The earlier (dorsiventral) leaves are of little value medicinally, and are readily distinguishable from the others. They are comparatively thin, rather large, ovate and cordate at the base. In cross section palisade cells are found only on the upper side, and stomata are found on the under side only, about forty to the square millimetre. The isolateral leaves (or phyllodes), which appear later, are sickle-shaped, pointed, and not cordate at the base. They take a vertical position with the convex edge directed upward. The thickness of the earlier form is 167 μ to 208 μ, and of the later form, 334 μ to 501 μ. The epidermis of the isolateral leaf is alike on both sides. It contains numerous stomata, thirty to thirty-five to the square millimetre, and these are visible as whitish dots scattered over the surface of the leaf when examined with a lens. In cross section the guard cells appear more sunken than in the dorsiventral type, and the thickness of the outer wall of the epidermis, inclusive of cuticle and wax, is from 15 μ to 20 μ, whereas in the dorsiventral form they measure from 4 μ to 5·5 μ. The isolateral leaves also have palisade tissue on each side, the spongy tissue being practically non-existent, and represented by the loosely united cells lying between the palisade tissues.

—*Journal of Pharmacology*, iv., 169.

Juglans Bark.

The inner bark of the root of *Juglans cinerea* is official in the United States Pharmacopœia, and an attempt to distinguish the powdered bark from that of *J. nigra* has been made by G. E. Cooley, acting under the direction of a research committee of the revision of the U.S.P. Transverse sections of the two barks revealed a similar distribution of the hard bast through the softer tissues, in much interrupted bands of fibres. In vertical sections, particularly in radial ones, rows of parenchymatous cells are seen accompanying the strands of long bast fibres which occur in both species. In *J. cinerea* each of these cells contains a cluster crystal of calcium oxalate, but this is never the case in *J. nigra*, the cells of which contain single klino-rhomboidal crystals only. Cluster crystals occur in both species, in cells scattered through the

soft bast, but the klino-rhomboidal crystals associated with the fibres are characteristic of *J. nigra*. An examination of coarse powders of the two barks shows that the characteristic crystals in each case still cling to fragments of the bast fibres, and afford a ready means of distinction. In finer powders the klino-rhomboidal crystals are not often found in connection with the cell tissue, but they are seen scattered in abundance over the slide when examined under the microscope. These crystals are very numerous and easily seen in the powdered root-bark of *J. nigra*, however fine the powder may be. To exclude the stem-bark of *J. cinerea*, it is suggested that the powder should contain no bast fibres of diameter so great as 0·05 in., and rarely any with a diameter greater than 0·001 in. Finally, unless the powder gives, immediately, a bluish (not greenish) black coloration with a 1 per cent. solution of ferric chloride, it should be rejected as having been prepared from bark not collected at the proper season of the year.

—*Journal of Pharmacology*, iv., 195.

Development of Fruit Flavours.

Some very interesting and suggestive results have been obtained by Jacquemin, who finds that by the addition of the leaves of fruit trees which in themselves have no marked flavour, to saccharine solutions undergoing alcoholic fermentation, a very marked bouquet of the fruit is developed. Thus by immersing pear or apple tree leaves in a 10 or 15 per cent. solution of sugar, and adding a pure yeast, which by itself gave rise to no marked flavour, after fermentation a liquid was obtained which had a strong odour of pear or apple respectively and an excellent flavour, and on distillation gave an alcoholic distillate, in which this aroma was still more marked. Vine leaves act in a similar manner, and the author suggests that it may be possible to improve the bouquet of a poor vintage by the addition of some leaves during fermentation. It is noteworthy that the results are far more marked when the leaves employed are from trees in which the fruit is approaching maturity. The author infers that the flavours of fruits are due to a body elaborated in the leaves, possibly of a glucosidal nature, which is not transferred to the fruits until the latter approach maturity, and is then acted upon by the special ferments contained in the fruit juices and develops distinctive flavours. The matter would appear to be of considerable practical importance.—*Comptes rendus*, cxxv., 114.

X-Ray Tubes.

J. Wimshurst points out that when X-ray tubes are very highly exhausted they become capricious, sometimes doing good work and at others refusing to illuminate. This difficulty he overcomes by coating the kathode end of the tube with tinfoil, leaving about $\frac{1}{4}$ inch gap between the tinfoil and the kathode terminal of the tube. A tube thus treated illuminates with certainty and with a much shorter spark-length than formerly, when it was uncertain with a 6-inch spark-length and frequently required heating. In fact, a highly-exhausted tube can then be easily and well illuminated with an influence machine which has 17-inch plates.—*Nature*, lvi., 364.

Photometer for X Rays.

Mibert and Bertin Sans have devised a photometer which allows of the approximate determination of the comparative value of a tube for radiographic purposes. It consists of a wooden box furnished with two eyelet holes, containing a mirror suitably focussed and having a screen of barium platinocyanide on one side. Strips of lead wire are placed at equal distances over the screen and over them a prism of aluminum. The intensity of the light is determined by the number of shadows of the pieces of lead visible on the screen.—*Compt. rend.*, cxxv., 99.

Mounting Chara.

A. Flatters finds that the fruit of chara makes a good slide when mounted in glycerin jelly. After cleaning he places it in 92 per cent. alcohol for several hours, then transfers into a mixture of equal parts of spirit and glycerin for several hours longer, after which he pours off nearly all of the mixture and adds pure glycerin at intervals till the glycerin becomes concentrated. Finally the object is mounted in glycerin jelly in a cavity slip just deep enough to take it without pressure. A second method is to mount in balsam, as follows:—After cleaning, graduate through 25 per cent., 50 per cent. to 92 per cent. alcohol and allow to stand in the last strength for several hours. Take a tube and put in it oil of cloves. On the top of the oil pour a little absolute alcohol. Immerse the specimen gently in the alcohol and allow it to sink to the bottom of the tube. When clear mount in balsam and benzole. If transferred direct from the spirit into oil of cloves, objects will shrivel and be spoiled, hence the necessity of the graduating method. To see the antheridia properly sections should be made.—*Science Gossip*, iv., 88.

Microbe of Ambergris.

According to Professor Beauregard, the intestinal concretions of the cachalot are caused by a microbe very similar to the comma bacillus of cholera. Here is a new field for the enterprising pharmacist; he might inoculate a few sperm whales in confinement and patiently await the formation of the calculi. The difficulty is, as usual, first to catch the cachalot.

Butter and Margarine.

J. Hoffmann finds that when a drop of 10 per cent. ethereal solution of butter is allowed to fall from a height of $\frac{1}{2}$ millimetre on to a sheet of glass, it leaves a circular residue, which always has a crenate margin, whereas margarine similarly treated, leaves a spot of fat with a markedly serrate edge. By adding 10 per cent. of absolute alcohol to a 20 per cent. solution of butter and of margarine, and allowing drops to evaporate, the distinction is still more marked. In the case of butter an unbroken fatty residue with a crenate edge is left, while margarine only leaves an aggregation of scattered oil globules. The author also finds that butter gives a notably higher percentage of fatty bodies soluble in pure alcohol than margarine.—*Chem. Zeit.*, xxi., 571.

Soldering Aluminum.

A. T. Stanton points out that it is not easy to solder aluminum simply by using an alloy of definite composition without a flux, and also that the use of silver chloride for this purpose is very troublesome indeed. Cadmium iodide, however, gives more satisfactory results, a violent evolution of iodine vapour being accompanied by the formation of an alloy of cadmium and aluminum on the surface of the metal. A further improvement is effected by mixing concentrated zinc chloride solution with a little ammonium chloride, evaporating in a porcelain dish, igniting at a low red heat till part of the ammonium chloride is volatilised, then mixing the fused chlorides with cadmium iodide. The proportions of zinc chloride and cadmium iodide must be found by experiment, and the result is a flux which enables tin, etc., to unite perfectly with aluminum. The melted flux should be dropped on the surface of the metal to be soldered, and some powdered metallic tin is also sprinkled on the surface. Then heat the aluminum over a Bunsen flame till the flux just melts, after which it can be spread where wanted with a piece of copper wire. As the temperature is further raised the flux decomposes and the tin readily alloys itself with the surface of the aluminum. Fused lead chloride may be used instead of cadmium iodide.—*Nature*, lvi., 353.

CLEARING OF VEGETABLE MICROSCOPICAL SECTIONS.

BY WILLIAM KIRKBY, F.L.S.
Pharmaceutical Chemist.

The clearing of vegetable sections prior to staining and permanently mounting for microscopical examination is a necessary, but frequently a troublesome operation, especially if starch be present in any considerable quantity. As the process which I have followed for over ten years has given me such uniformly good results, and as I am not aware that the exact procedure has been described by anyone else, it seems worth while publishing it in order that other microscopists may make trial of it.

Clearing agents are of two kinds, namely, those which act by virtue of their property of strongly refracting light, and those which disintegrate and dissolve the obtrusive cell-contents. To the first class belong clove oil, cedar-wood oil, cajuput oil, xylol, dammar resin, Canada balsam, glycerin, and other similar bodies; to the second class solutions of caustic potash, eau de Javelle, eau de Labarraque, phenol, chloral hydrate, etc. The usefulness of most of these substances is comparatively limited, while some of them are decidedly objectionable for permanent mounts because of their energetic action upon the tissues. An efficient clearing method should ensure the thorough removal of the cell-contents, but should have a minimum effect upon the cell-walls. Without discussing the merits of each of the usual methods adopted for clearing, I may say that in my hands the process I use more nearly fulfils the above conditions than any other I have tried, the sections after treatment being obtained in a condition suitable for putting up in liquid, gelatinous, or resinous mountants.

Place the sections in a fresh clear solution of chlorinated lime and allow them to remain until quite bleached, say, from two to four or five minutes; gently warm in a test tube for a few seconds, then quickly replace the solution with distilled water and boil for two or three minutes; repeat the treatment with boiling water three times; wash with a 1 per cent. solution of acetic acid, and finally with cold distilled water. The sections are then quite ready for the staining operations.

Although alkaline glycerin has been recommended for several purposes in micro-technique, it does not appear to be generally known how serviceable it is as an extemporary mountant in vegetable histology. The mixture which I find excellent for general use is composed of glycerin, 2 ozs.; distilled water, 1½ oz.; solution of potash, B.P., ½ oz. This combines the refringent property of the glycerin with the clearing action of the caustic potash, and it has the great advantage that the undesirable swelling action of the potash is considerably restrained.

KINOS.*

BY JOSEPH BOSISTO, C.M.G.,
Honorary Member of the Pharmaceutical Society of Great Britain, etc.

The question whether the place of the official variety of kino, which is now almost unobtainable, can be effectively supplied by others met with in commerce (B.P.C. Blue List, No. 49), is answered from Victoria, Australia, to the following extent. Although the *Pterocarpus marsupium* and other species of the natural order Leguminosæ yielding kino are not known to exist in Australia, yet the natural order Myrtaceæ, which exists throughout Australia, contains many species which exude kinos and some catechus. Those have not so far (save and except one) been found of commercial value, owing to their sparse solubility in water, and in all other known cheap solvents. This arises from the gum kino not being collected within a few days after its appearance on the outer bark. The extreme bright sunlight of Australia, together with the warm thermal lines existing both night and day, causes it rapidly to degenerate into a degraded bassorin, which is insoluble.

Quantities of such kinos exist throughout Australia obtainable chiefly from *Eucalyptus marginata*, *E. amygdalina*, *E. sideroxylon*, *E. fissilis*, and many others. The one I have already indicated is *Eucalyptus rostrata* from which is exported annually about two tons of its gum, this is almost entirely soluble in water, and is a true kino. It is mentioned in Squire's 'Companion to the B.P.,' 1882, and in Martindale's 'Extra Pharmacopœia,' as gummi rubrum from *Eucalyptus rostrata*.

Eucalyptus rostrata is one of the leading trees in many of the forests of Victoria, and is productive of this kinic substance, which being unable to force its way through the hard, tough outer bark, lodges itself in treacly form in large orifices or carbuncles between the wood and the bark in such quantities that I have known one and two bucketsful of the liquid to be obtained by boring a small orifice in the swollen part. This liquid kino when evaporated in a vacuum pan is obtained as beautiful ruby-red gum kino entirely soluble in water or spirit. The supply from Australia would be very great if only a remunerative market opened.

* This paper was intended to be read at the Glasgow Conference, but unfortunately arrived too late for that purpose.

COLLECTION OF SEAWEEDS.

There are few classes of plants more interesting than the Algæ, in the variety of their forms and the diversity of their habits, to say nothing of the pleasure which attends the mere excursion to procure them; and yet probably they are less studied than almost any other branch of the British flora. From an æsthetic point of view, a fasciculus of well-mounted seaweeds will bear comparison in elegance and beauty of tint with the best dried specimen of flowering plants in an herbarium. The Algæ when carefully dried keep their colours well, and look when dry quite as natural as the more highly developed Phanerogams in the *Hortus siccus*.

The ardent collector of seaweeds will not, as a rule, start on a collecting expedition in the same array that his friends will don for a promenade on the parade of a fashionable watering-place, nor must he expect warm recognition from acquaintances if haply his return to the thickly-peopled pier or parade, when he is soaked with sea-water and laden with the spoils of the deep, synchronises with the gathering of a well-dressed crowd.

The best time for these excursions is naturally at new and full moon, when the tides are lower, and many rocks that are in the ordinary way covered, are then exposed and accessible. In working on the extreme fringe of the ebb in this way, great caution must be exercised and a sharp eye kept on the tide, especially on a rocky coast, or the collector may easily be cut off. If not thoroughly familiar with the coast, it is well to pay one or two visits to the hunting-ground before beginning to collect, so as to take bearings and to get the "lay of the ground." This will often, in the end, save time, as then the position of the most productive spots will have been noted. Large pieces of weed should always be examined for smaller parasitic species growing upon them. The thick layers of overhanging weeds which fringe the edges of the rock pools should be removed or pushed aside. In this many delicate or rare specimens may be found. The whole plant should, in most cases, be secured, not, of course, in the case of such giants as *Laminaria*, but with the smaller species, and special care should be taken to secure, if possible, some fruiting fronds. A pocket lens, a jack-knife, a vasculum, a few wide-mouthed bottles with corks for the smaller and more delicate specimens, and a geologist's hammer are the needful implements. A coat with poachers' pockets is of great service, and

common rubber-soled shoes, to a great extent prevent slipping on the rocks. As to the nether garments, a pair of trousers that have seen a session's service in the laboratory will be "bad to beat."

For the successful mounting and drying of seaweed patience and perseverance are required, as in all other branches of practical work. With these and practice, skill in the preparation of specimens will soon be acquired. The following is the general method to be followed. The specimen should be floated in a basin of sea-water and thoroughly rinsed; it is then transferred to another basin of clean sea-water, in which it should be allowed to float with the branches fully spread out. If too thick and dense a careful pruning with a sharp scissors will give a better specimen for drying, but care must be exercised that in thus trimming, that the specimen's characteristic form is not interfered with. A large bread-pan makes a very good vessel for the first washing, and a washing basin will answer for the second process. When the branches are fully spread out, a piece of stiff paper of the requisite size is slipped beneath the specimen and raised slowly and carefully out of the water. This requires careful manipulation and manœuvring; the first effort is often not successful, so that the process must be repeated until a satisfactory result is obtained; then the superfluous water is drained off by placing the sheet on a slanting board. At the same time the finer branchlets are picked out and arranged with a fine needle, or with a camel's hair brush. This should be done quickly lest the paper dry and wrinkle before it can be put in the press. Several specimens may be pressed and dried simultaneously, the arrangement being in this sequence, a board, a drying paper, folded layer of rag, specimens on paper, rag, drying paper, and board, and so on *de novo*.

The rags should be changed within twelve hours and fresh ones substituted; similarly, if the drying paper has become moist, it should be replaced with dry sheets. Two or three changes may be necessary for complete drying. In removing the rags take away from below upwards, from roots to branches; in this way there is less risk of disturbing the arrangement of the branches. On no account must drying paper and specimen come into direct contact, during the process; or the paper will adhere to the plant. As in drying Phanerogams the form of press may be varied to suit the requirements of the individual. A couple of thick teak or deal outside boards with half a dozen thinner ones for separating the specimens, and two leather straps with buckles to regulate the pressure will be found a convenient form. The paper for mounting should be thick and not too highly glazed, the kind that is usually employed for Phanerogams will answer admirably. If the reader be inclined to follow this delightful hobby, even merely as a pastime while enjoying a seaside holiday, he will find it add in no small degree to the pleasure of the vacation. The marine flora of our coasts is at least as varied as that of the land and not at all less interesting. To carry on a complete and scientific collection it is necessary, on account of the perishable nature of the plants, either to live on the coast or to resort to that necessary evil, the exchange club.

These notes are obviously not intended as guides to those who would take up the serious scientific study of seaweeds, but it is possible that some who may begin in a dilettante manner may desire to follow up the matter thoroughly. These may be referred to the standard authors on the subject.

Tincture of Myrrh for Diphtheria.—Tinct. myrrhæ, 4; glycerin, 8; aq. destill. ad., 200. To be taken hourly throughout the day; at night every two hours.—*Therap. Monats.*, xi., 182.

SIR HANS SLOANE, BART., M.D.*

[1660–1753.]

Here is a reply to a correspondent who had sent him a huge manuscript on the profoundest theological problems. "I am very much obliged for the esteem you have of my knowelege, which I am very sure comes far short of your opinion. As to the particular controversies on foot in relation to natural and revealed religion and to predestination, I am no ways further concerned than to act as my own conscience directs me in those matters, and am no judge for other people. . . . I have not time to peruse the book you sent." Then there was another tribe of correspondents, petitioners for aid of various kinds, pecuniary among the rest. One of his biographers who has explored his voluminous correspondence has found enough in it to rebut the charge of parsimony which, already mentioned, has been brought against Sloane. "He was a very liberal giver," we are told, "and also a discriminating and conscientious giver. I have rarely seen," it is added, "a correspondence which mirrors more strikingly than does that of Sloane, a just and equitable attention to multifarious and often conflicting claims." The same kind of attention was paid by him to the innumerable requests made to him for the use of his influence at Court, at the Treasury, at the London hospitals, and at the Council Boards of the Royal Society, and at the College of Physicians. Last but very far from least was his generous profusion of medical aid to the poor. Of course in the controversy (the story of which has been told in the biographical sketch of Garth in the *Pharmaceutical Journal* for April 24, 1897) between the College of Physicians and the London Society of Apothecaries on the establishment of a dispensary for the supply of drugs to the poor, Sloane sided actively with the College. The approaches to his house were thronged early in the day by crowds of needy sick, sure of assistance with professional advice, with medicine, and with more substantial aid for the deserving. The interesting spectacle drew from an eye-witness (Maittaire) a little Latin poem addressed to Sloane. "Upon the sight of the poor people waiting this morning at your door." After sketching the scene presented at a great nobleman's or minister's levee attended by a crowd of greedy sycophants, Maittaire wound up in this fervid strain:—

> Hôc quanto es major! sub formâ pauperis ipse
> Christus dignatur limen adire tuum.

Sloane was an active promoter of the Colony in Georgia established for the benefit of emigrants who had failed at home, and the plan of the Foundling Hospital owes much to his suggestion and advice.

In 1740 Sloane was in his eightieth year, and could well claim relief from active work and official responsibility. He resigned accordingly the Presidency of the Royal Society, and in the following year he migrated from London to his manor house at Chelsea, where already he had occasionally spent the months of summer. Though tolerably old, since Anne of Cleves died in it, it was called the New Manor House. It was a stately building forming a square of more than a 100 feet on each side, enclosing a spacious court, and with a fine garden behind it, near the Physic Gardens, which he had haunted in early years. It stood in Cheyne Walk, fronted by the Thames, "between the Pier Hotel and Don Saltero's coffee-house." This latter hostelry survived, much diminished in its attractions, to our own day. It contained a museum of curiosities collected by its tenant, one Salter, a barber, whom Admiral Munden, after long cruising on the Spanish coast, dubbed Don Saltero. It is another proof of Sloane's liberality in general, and to Chelsea in particular, that he contributed largely from his own museum to the gimcracks and curiosities of the humble Don's establishment. To his spacious Chelsea domicile Sloane removed from Bloomsbury his own vast and various collections, among which, in serene old age, he passed the remaining twelve years of his long and useful life, with a curator to take care of them and show them to ordinary visitors.

A year later Sloane is found presenting from his museum interesting relics of antiquity to a far greater personage than Don Saltero. In Pope's correspondence for 1742 there are two letters from him to Sloane. One of them, which explains itself, we proceed to quote. The reader will observe the tone of respect in which the poet, two years before his latter end, addresses the venerable octogenarian at Chelsea.

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* Concluded from page 103.

Twickenham, May 22, 1742.

Sir,—I have many true thanks to pay you for the two joints of the Giant's Causeway, which I found yesterday, at my return to Twitnam, perfectly safe and entire. They will be a great ornament to my grotto, which consists wholly of natural productions, owing nothing to the chisel or polish, and which it would be much my ambition to entice you one day to look upon. I will first wait on you at Chelsea, and embrace with great pleasure the satisfaction of so extensive a view of Nature in her most curious works.

I am, with all respect, Sir,

Your most obliged and most obedient servant,

A. Pope.

Doubtless the visit to Chelsea was paid by the poet and duly returned by Sloane, but nothing certain is known of any subsequent correspondence or commune between the two.

Six years afterwards Sir Hans received at Chelsea and did the honours of his museum to royalty itself in the persons of Frederick Prince of Wales (brother of the inoculated princesses) and his Princess, the parents of George III. The following is the account of the visit given in the *Gentleman's Magazine* for July, 1748, and slightly abridged by one of Sloane's biographers :—

"Three of the principal rooms of the Manor House were, on the occasion of this Royal visit, filled successively, as the visitors passed from one room into another, with the finest portions of the collections in its most portable departments. The minerals were first shown. The tables were spread with drawers filled with all sorts of precious stones in their natural beds, as they are found in the earth, except the first table, which contained stones found in animals, such as pearls, bezoars, and the like. Emeralds, topazes, amethysts, sapphires, garnets, rubies, diamonds, . . . with magnificent vessels of cornelian, onyx, sardonyx, and jasper delighted the eye.

"When their Royal Highnesses had viewed one room and went into another, the scene was shifted. When they returned the same tables were covered, for a second course, with all sorts of jewels, polished and set after the modern fashion, and with gems carved and engraved. For the third course the tables were spread with gold and silver ores, and with the most precious and remarkable ores used in the dresses of men from Siberia to the Cape of Good Hope, from Japan to Peru, and with both ancient and modern coins in gold and silver.

"The gallery, a hundred and ten feet in length, presented a surprising prospect. The most beautiful corals, crystals, and figured stones, the most brilliant insects, shells painted with as great variety as the precious stones, and birds vying with the gems, diversified with remains of the antediluvian world.

"Then a noble vista presented itself through sevcral rooms filled with books, among these were many hundred volumes of dried plants, a room full of choice and valuable manuscripts, and the rich present sent by the French King (Louis XV.) to Sir Hans of the engravings of his collections of paintings, medals and statues, and of his palaces, in twenty-five large atlas volumes.

"Below stairs, some rooms were then shown, filled with the antiquities of Egypt, Greece, Etruria, Rome, Britain and even America; other rooms and the great Saloon was filled with preservcd animals. The halls were decorated with the horns of divers creatures. Fifty volumes in folio would scarce suffice to contain a detail of this immense museum, consisting of above 200,000 articles.

"The Prince of Wales, on taking leave of his host, said 'It is a great pleasure to me to see so magnificent a collection in England. It is an ornament to the nation. Great honour would redound from the establishing of it for public use to the latest posterity.'"

The wish thus expressed was to be fulfilled, though Prince Frederick did not live to see its fulfilment, and the Chelsea Museum which he admired was destined to become the nucleus of that magnificent national institution the British Museum in Bloomsbury with its noble annexe the Natural History Museum at South Kensington.

As the description of this Royal visit proves, Sloane was, even in his 89th year, actively occupied with his collections. He was in his 85th year, when there was issued from the press his solitary medical publication, the story of which connects itself with a phase of his professional life to which we have not as yet adverted. Mention has already been made in our article "The Plough Court Pharmacy," of the numerous proprietary medicines vended in Sloane's time, the majority of which were not protected by patents, but by the secrecy which shrouded their constituents in days when chemical analysis, qualitative and quantitative, was in its infancy. Some of these were recommended to the public as guaranteed by the names of eminent physicians attached to them, who doubtless often reaped a golden harvest by their sale, and among them was Sloane. The best known of his proprietary articles seems to have been the specific known as Dr. Sloane's "eye-water." Early in his medical practice Sloane had observed many eye diseases cured by a salve which a Dr. Rugely applied in the case of those of his patients thus afflicted. Sloane, in his medical pamphlet of 1745, states quite frankly, as if it were a matter of course and nothing to be ashamed of, that he asked "a very understanding apothecary" of his acquaintance to endeavour to find out the composition of Dr. Rugely's salve. He failed to procure in this way the desired knowledge. But at last, says Sloane, "a person whom I believe he had employed in making his medicine came to me, and for a pecuniary reward, joined to a promise not to divulge the secret, delivered me up the genuine receipt, in the doctor's own handwriting, which I reformed, improved, and used many years." In 1745 Sloane found himself absolved from secrecy "for many reasons," none of which he gives, and for the benefit of mankind he made it public. Indeed, he affirms with some justifiable complacency, that, unless when he was bound to secrecy, he never concealed from his brethren the composition of any medicine which he had found efficacious. In consultations he was, he says, "very free and open," unlike "some other physicians," who, under all "circumstances," practised concealment, even though they were of good morals and great reputation. Here is the text of the wondrous prescription as revealed in Sloane's pamphlet, which was dedicated to George II. and entitled: "An Account of a most Efficacious Medicine for Soreness, Weakness, and other Distempers of the Eyes. By Sir Hans Sloane, Bart., Physician to His Majesty, London. Printed for Dan. Browne at the Black Swan, Without Temple Bar, 1745."

> Take of prepared tutty one ounce; of lapis hæmatite, prepared, two scruples; of the best aloes, prepared, twelve grains; of prepared pearls, four grains. Put them into a porphyry or marble mortar aud rub them with a pestle of the same stoue very carefully, with a sufficient quantity of viper's grease or fat, to make a liniment. To be applied with a small hair pencil, the eye winking or a little opened.

Sloane appends a disquisition, rather amusing now, on the efficacy of viper's grease or fat. According to the original recipe, obtained by a "pecuniary reward," it was hog's lard that was to be used. But Sloane had been told of "the great virtue of viper's grease or fat" by Dr. William Stokehouse, "a very ingenious gentleman, physician to King William III., who had spent years among the physicians at Padua, and who found viper's grease recommended for the eyes by Daniel Ludovicus, 'De Pharmacia Moderno seculo Applicanda,' Gotha, 1671, 12mo." Sloane therefore had, in his treatment, substituted viper's grease for hog's lard, and found that it added much to the efficacy of the medicine. Nay, after being absolved from secrecy, Sloane having with his usual professional liberality confided the prescription to the great Dr. Arbuthnot, Queen Anne's physician, and, far greater distinction, the friend of Pope and Swift, "he tried the viper's fat alone, and found it quite equal to the whole medicine." How characteristic of the quaint medical theorising of the times, with its attempts to discover a basis for the non-existent, is such a passage as the following in Sloane's pamphlet on the possible origin of the purely imaginary virtues of viper's fat, which, however, is to this day in several country districts regarded by simple-minded rustics as an infallible remedy for cuts and wounds. "It is an observation made by many naturalists," he says, with the utmost gravity, "that those serpents cast their skins every year, and with them the coverings of their eyes. Whether far, or whether at all their fat is concerned in this phenomenon I leave to others to determine." To finish up this curious episode in Sloane's career, he has reported one conspicuous cure which he effected with the liniment, and from which he might have reaped great profit had he not been a man of the strictest integrity. Some time before he had been absolved from secrecy as to the constituents of his precious "eye-water," there came to him, with a letter of introduction from Paris, a Monsieur Anisson, who was "sent hither with the Duke d'Aumont, Commissioner for Soliciting a Treaty of Commerce with France." He had "a great soreness and weakness of his eyes," of which Sloane cured him with the aid of the viper's fat liniment. The delighted Frenchman offered Sloane, "on the part of the King, his master, being accustomed to oblige his subjects in that way," any reward he might think fit for a disclosure of the contents of the specific. But Sloane, a man of his word, and still bound to secrecy, peremptorily declined Monsieur Anisson's offer. Pulteney, in his 'Illustrations of the History of Botany,' published in 1790, says that Sloane's "ointment for the leucoma has not yet lost its credit with many reputable names in physic."

Thus, for some time after his migration to Chelsea, the octogenarian Sloane was congenially and appropriately occupied, nor did he altogether pretermit correspondence. But at last, espccially when the octogenarian had become a nonagenarian, his physical strength gave way, while his mind remained vigorous. It was wonderful, indeed, how long his health had been unimpaired. Extreme temperance aiding, this was perhaps due to his habit of following in his own person the counsel which, professionally, he was fond of giving to others: "I advise you," he would say, "to what I practise myself. I never take physic when I am well. When I am ill I take little, and only such as has been very well tried," this last remark being specially characteristic of his professional procedure. Although when during his latest years it was only in an invalid chair that he could move from room to room, or occasionally into his garden, his interest in what was going in his own peculiar world remained unabated. But to have his curiosity satisfied was no longer easy. A man of ninety has survived most of his old friends, and Chelsea was very far from being as easily and speedily accessible from London as it is now. Visits to him were few and far between. Almost his only visitor and authority for his life during his latest years was George Edwards, an old *protégé* whom he used to employ in making drawings for him, and for whom he had procured a librarianship. He asked Edwards as a favour to visit him once a week and tell him the news of the town, and particularly what the Royal Society was saying and doing. Edwards cheerfully complied with his old patron's request. Sloane was liberal in money matters to the last; Edwards speaks of his beneficence in those years to the many families of cultivators of science whom he had survived. Knowing Edwards himself to be poor, Sloane calculated each year what Edwards had spent in coach hire and boat hire to visit Chelsea, and paid him annually, in spite of his protests, the whole cost of the journeys.

The end of his useful and fruitful life came on January 11, 1753, when he had reached the extreme age of ninety-three. On the preceding day Edwards found him sinking and suffering greatly. On the 11th Edwards saw him at the point of death. "I continued with him," Edwards wrote, "later than any one of his relatives. But I was obliged to retire, his last agonies being beyond what I could bear; although under his pain and weakness of body, he seemed to retain a great firmness of mind and resignation to the will of God." He was buried in the graveyard of Chelsea Old Church (of which he was the patron) and in a vault in which he had twenty years before deposited the remains of his wife. He left two daughters co-heiresses; to the husband of one of them, the second Baron Cadogan, ultimately came most of his property, even then very valuable, hence Cadogan Place.

By his will he offered to the nation his collections, including a considerable library of books and manuscripts, and his Manor House at Chelsea, on payment to his executors of twenty thousand pounds—a sum, he said, "not being, as I apprehend, or believe, a fourth of their real or intrinsic value." The following passage of his will shows the spirit in which he made this hypothetical bequest:—

"Having had from my youth a strong inclination to the study of plants and all other productions of Nature, and having through the course of many years, with great labour and expense, gathered together whatever could be procured either in our own or foreign countries that was rare and curious, and being fully convinced that nothing tends more to raise our ideas of the power, wisdom, goodness, providence, and other perfections of the Deity, or more to the comfort and well-being of his creatures than the enlargement of our knowledge of the works of Nature, I do will and desire that for the promoting of these noble ends, the glory of God and the good of man, my collection in all its branches may be, if possible, kept and preserved together, whole and entire, in my Manor House in the Parish of Chelsea, situate near the Physic Garden, given by me to the Company of Apothecaries. I do give, devise, and bequeath, etc., etc."

Then came the names of his son-in-law, Lord Cadogan, and of forty-nine others, chiefly eminent persons in Church and State, to act as trustees for carrying out the testator's objects, if Parliament accepted the bequest. It and its conditions were brought forthwith under the notice of George II., who cared nothing for science, art, or literature. He dismissed the matter summarily with the remark, "I don't think there are twenty thousand pounds in the Treasury." Fortunately a notable and influential public man, Onslow, the veteran Speaker of the House of Commons, deeply interested and vigorously exerted himself for the execution of Sloane's project. More than this, he expanded it very considerably and very usefully. More than half a century before Sir John Cotton had bequeathed to the nation the valuable collection of manuscripts, consisting of State papers and other documents illustrative of English history and biography, which had been brought together with no small pains and expense by his zealously antiquarian ancestor, Sir Robert Cotton, during the reigns of Elizabeth, James I., and Charles I. Then, too, at the time of Sloane's death there was purchaseable the great collection of MSS. now known as the Harleian, the contents of which were vaster and more various than those of the Cottonian, and which had been made by the two Harleys, father and son, the first and second Earls of Oxford. To solve the money difficulty Onslow proposed a public lottery to yield a surplus large enough for the purchase of the Sloane Muscum on its testator's terms, and of the Harleian MSS. (for which £10,000 were required), and to provide a suitable national repository in which should be housed with those other two collections, the Cottonian MSS. The proposal was sanctioned by Parliament. The lottery brought in £100,000 less its expenses, and the British Museum was founded.

Sloane had left it open to his trustees to remove his museum from Chelsea if they thought it for the public benefit. After much deliberation they decided on its removal to Montagu House, Great Russell Street, which though in the growing and then fashionable region of Bloomsbury, was so isolated northwards that as late as 1750 the field behind it formed the favourite resort of duellists. The old red brick mansion of the Dukes of Montagu, now replaced by the present magnificent building, required much alteration to adapt it for its new uses. It was not until 1759 that the British Museum was thrown open for the inspection of the public, and then under all sorts of harassing restrictions, most of which now seem ludicrous. Sloane's zoological collections have been transferred of late years to South Kensington, such of his others as remain in Bloomsbury are as a drop in the ocean compared with the vast treasures, historical, archæological, scientific, artistic, literary, printed and manuscript, which by purchase, by gift, and by bequest, have been accumulating there during successive generations, and which make the British Museum the greatest, most valuable, and most varied in the world. But the museum of Sir Hans Sloane was the nucleus which rendered it possible that such an accretion with its splendid results should have been in steady process of formation for nearly a century and a half, and so long as the British Museum exists his name deserves to be remembered and honoured as that of its virtual founder.

LEGAL HINTS FOR PHARMACISTS.

Medicine Stamp Acts.

(Continued from last volume, page 458.)

Patent Right.—One thing may be said of the liability accruing under this heading; it is fairly straightforward and obvious. Nothing could well be plainer than the words "which have at any time heretofore been, now are, or shall hereafter be prepared, uttered, vended, or exposed to sale under the authority of any letters patent under the Great Seal." Most authors on the subject of patent medicines have pointed out that the medicines vended under the authority of letters patent are very few. Ham's 'Year Book' goes so far as to say that the cause arises from difficulties inseparable from organic analysis, which frequently make it possible "to prevent the exact composition becoming known." A very droll reason indeed, though scientific and somewhat subtle. A less profound explanation is that proprietors have not patented their preparations because the process offered no commercial advantage, and that they could make fortunes without the aid of the Patent Office. This view is to a large extent borne out by the fact that since the definition of "patent medicines" in Section 16 of the Pharmacy Act, 1868, by the Courts in 1893, certain nostrum makers have discovered that there may be sufficient virtue in the Great Seal to take them out of the Pharmacy Act, and now scarcely a week passes but one may see in the 'Illustrated Official Journal (Patents)' records of applications in respect of medicinal preparations. It looks as though the applicants were willing to risk the difficulties of organic analysis—whatever they may be—if there is a chance of securing immunity from the tyrannical operation of a wretched Poisons Act!

A patent medicine within the meaning of the Stamp Acts does not cease to be within the scope of those Acts, when by effluxion of time or non-payment of fees, the validity of the patent expires.

Assuming a medicine to have enjoyed the full fourteen years' term of protection, at the end of that period its formula becomes public property, and any person is free to make use of it if he thinks fit, but it retains it liability to stamp duty. Let us suppose that A has patented a medicine and has sold it during fourteen years as "A's Patent Tonic Elixir." B may now go to Chancery Lane, pay 8*d.* for the specification of A's patent, obtain the requisite information therefrom, and make and sell A's mixture as "Tonic Elixir" without infringing any rights; but whether he uses descriptive phraseology implying a proprietary right, or whether he does not, he must still stamp the mixture, precisely as A did. The onus of proving that the tonic mixture was not the mixture referred to in A's specification would rest on B. In such cases the "organic analysis" difficulty might offer a mode of escape, but the Revenue authorities have rarely to involve themselves in such difficulties, for they have three cunningly laid traps to catch the medicine vendor still remaining, and if he ingeniously contrives to evade the "patent" Scylla, he is almost bound to come to grief on the triplicate Charybdis.

In reading the Stamp Acts in conjunction with the Patents, Designs, and Trade Mark Acts, one point seems worthy of attention, viz., the position of medicines in respect of which applications for patents have been made, but which never become patents. It is common knowledge, which may be verified each year by the Comptroller's Report, that only a small proportion of the applications ever reaches the Sealing Room. Now, it might be argued in the case of a medicine—this is not a nostrum or secret preparation because the applicant has disclosed the composition; it is not a patent and never has been, therefore it is not liable to duty under that heading; and it is not recommended for the cure of any human malady. Ergo: it should be free from stamp duty. At first sight the conclusion seems just, but on reflection it will be seen that the applicant would be hit under the "Proprietary Right" section of the Stamp Acts, for he implies, in fact specifically mentions, in his application that he is the inventor of the combination for which he claims protection. Application through or by an agent would not materially alter the position; for "qui facit per alium facit per se."

DENTAL NOTES.

[*These notes have been compiled for the benefit of pharmacists in this country and abroad who are also registered dentists, while others may find it useful to direct the attention of their dental friends to this column occasionally.*]

To Retain Rubber Dam.—Dr. Bergstresser uses sandarac varnish instead of the painful silk ligature. He says this is a most valuable method, and that if the plan has not been universally adopted, it ought to be.—*British Journal Dental Science.*

A Substitute for Articulating Paper.—When correcting an articulation one may some day be caught without articulating paper; to remedy matters, take a little thin paper, wet the finger with a little alcohol or water, and rub on a little polishing rouge. This dries quickly, and takes but a few moments' time to prepare. No matter how many flasks one may have, there is no need of putting an extra one that does not contain a denture in the vulcaniser each time. Many desire to have a flask in the upper portion of the vulcaniser. Take for the purpose an iron block or thick tubing just the height of the flask, then an extra flask is available, that may be called into service while vulcanising.—*Ohio Dental Journal.*

Removal of Teeth from Rubber Plates.—It sometimes falls to one's lot to remove teeth from an old rubber base. It is common to proceed by holding the plate over a gas-jet until the teeth can be prised off, and in doing so operators seem to forget that the odours of H_2S, SO_2, and other gases have found their way to the remotest corner of the room, and possibly to adjoining premises. This might be avoided by boiling the plate for a few moments, when the rubber will be found yielding, and by grasping it with the pliers the rubber may be sprung from the teeth, and a few repetitions will complete matters.—*Ohio Dental Journal.*

Rubber Matrix.—In regard to the filling of the incisors with cement, where there are two adjacent cavities, and it is desirable to fill them with one mixing of the cement, a neat matrix may be found in a narrow ribbon of rubber dam drawn taut over the adjacent tooth until the cavity is filled, and then reversed over the new filling until the second cavity is filled. After the fillings are sufficiently hard, the strip may be trimmed quite close with a little tension while cutting, and what remains will act as a separator, so that at the next sitting there will be no trouble in properly finishing the filling. It may be added that the patient can very often hold the strip in place.—*Ohio Dental Journal.*

Dirty Wax.—To renovate dirty wax, melt in water. When cool, scrape the dirt from the under side; melt again in pure water and add one tablespoonful of sulphuric acid when it comes to a boil.—*British Journal Dental Science.*

Hard Drills.—A drill can be made hard by heating it to a cherry-red and cooling in mercury.

Pulp Protection.—Dr. William Storer Howe writes, in the *Dental Cosmos:* "To protect the pulp from thermal shock or irritation, cut two small discs of rubber dam. Having the cavity dried ready for filling, touch the floor and walls with pure mastic varnish and apply one of the discs, on the other place a little soft cement, and with fine pointed pliers apply—cement down—on the first disc, spreading the cement under the disc with a ball burnisher."

Sensitive Dentine.—Dr. Osman writes, in the *International Dental Journal:* "My theory for several years has been, in reference to obtunding sensitive dentine, that the best method is to have clean, sharp burs, steady hands, an engine revolving at a moderate speed but running steadily, telling the patient you are going to hurt him a little, and then doing the work deftly and quickly. Up to the present time I have not found anything that I would trade off for my sharp, up-to-date instruments, deftly handled."—*British Journal Dental Science.*

A Dental Act for Natal.—The Natal Legislature has passed a Dental Act, under which the Government prosecutes. It is not necessary under this Act that a man should call himself a dentist, etc.; the performance of a dental operation by an unregistered man is made penal—six months' imprisonment or a £100 fine. Americans are excluded for the future, but L.D.S. men are accepted. There are so many dentists in the colony that, as they cannot all make a living, some of them are leaving.—*Ash's Quarterly.*

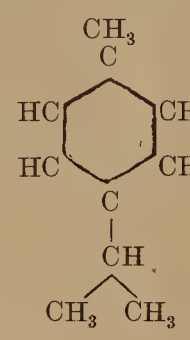
How to Insert Root Canal Dressings.—Sometimes one feels uncertain whether the cotton which has previously been dipped into some medicament has been successfully placed in the pulp canal, because, having lost its stiffness by becoming damp, it seems to pack in a lump in the pulp chamber. This may easily be overcome by making the cavity reasonably dry, forcing a hard, dry twist of tapering cotton up the canal, and then apply the medicament to this by a pellet of wool; capillary attraction will do the rest. It may be desirable afterwards to place cotton over this, but it should not be allowed to absorb the medicament placed on the first pellet. This may be prevented by placing between the two a small piece of rubber dam, cut to size, with or without a little varnish to hold it in place. If this be placed carefully there will be no disagreeable taste in the mouth when coal tar and other preparations are used.—*Ohio Dental Journal.*

Eucaine in Dental Practice.—Blotz reports very favourably on eucaine hydrochlorate as an anæsthetic in dental work, after having employed it in over 200 cases. From 1 to 1½ grain in 10 per cent. solution is sufficient for five contiguous teeth. If the teeth to be operated on are scattered, 0·3 of a grain will generally be found sufficient for each tooth. A total of 3 grains should not, if possible, be exceeded. Insensibility to pain supervenes in from two to five minutes. The only unpleasant symptom observed is the swelling of the injected parts, but this may be avoided to a great extent by sterilising the gums with hydrogen peroxide before puncture, and subsequently pressing out the liquid from the injected area. The author quotes cases where twenty-one roots, and ten and fourteen teeth respectively, were extracted painlessly in one sitting. Eucaine has the advantage of being effective in periostitis where eocaine frequently fails.—*Brit. Journ. Dent. Sci.*, xvii., 311, after *Zahn. Ref.*

THE STUDENTS' PAGE.

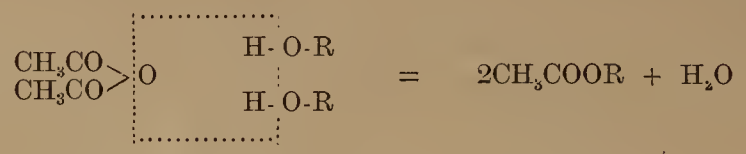
EXPLANATORY NOTES ON THE B.P.

Oils (Essential).—The essential oils are composed chiefly of substances belonging to the benzene (aromatic) series. The body to which most of these bodies are most nearly related is cymene. Cymene is para-methyl-iso-propyl-benzene. Benzene is C_6H_6, methyl-benzene is $C_6H_5{\cdot}CH_3$, methyl-propyl-benzene is $C_6H_4(CH_3)(C_3H_7)$, the methyl and propyl groups having each displaced an atom of hydrogen from the benzene nucleus. Para-methyl-propyl benzene indicates that the two replacing groups occupy the para position to each other in the benzene ring, and the prefix iso shows that the propyl group is not normal propyl, $-CH_2-CH_2-CH_3$, but iso-propyl, $-CH<^{CH_3}_{CH_3}$, isomeric with normal propyl, but having the branched or iso formation. An inspection of the formula shows what an immense variety of isomeric compounds can be derived from such a body as cymene by the replacement of different hydrogen atoms by the same group, OH, for example. These derivatives would yield the same formula by analysis, but their physical properties, such as melting and boiling points, would exhibit certain differences, and their chemical behaviour would also vary with the various positions taken up by the replacing group. The terpenes having the formula $C_{10}H_{16}$ are mostly di-hydro-cymenes, that is, they are derived from cymene, $C_{10}H_{14}$, by the *addition* of two atoms of hydrogen. This can be accomplished artificially by submitting cymene to the action of reducing agents. Many isomeric terpenes are known, limonene in lemon oil and menthene in peppermint oil for example. Turpentine consists almost entirely of a terpene. Besides the terpenes essential oils contain various oxidised derivatives, alcohols, aldehydes, and esters, and their aroma chiefly depends upon these. Lately so-called terpeneless or "concentrated" essential oils have been introduced into commerce. They consist of these oxygenated derivatives separated from the accompanying terpenes by fractional distillation. The terpenes, which have little value as flavouring or odoriferous bodies, and act as diluting agents, having a lower boiling point than the more valuable alcohols, aldehydes, etc., come over first, and leave a residue in the still more powerful in flavour and odour than the entire oil, in consequence of the removal of the bulk of the comparatively valueless terpene. Lemon oil by careful fractionation can be separated into about 90 per cent. of limonene and 10 per cent. of aldehydes, citral and citronellal, and traces of other bodies to which its flavour is due. The distillation is usually accomplished under diminished pressure, so as to lower the boiling point of the terpene, for some of the oxygenated substances, particularly the esters, decompose at the temperature at which the terpenes boil under ordinary atmospheric pressure.



The commercial and medicinal value of the essential oils depends therefore chiefly on the non-terpene portion of the oil, so that various, mostly well-known, processes commonly employed in organic chemistry have been adapted for the determination of the percentage of these bodies present in the various essential oils. For instance, the determination of aldehydic bodies is made by utilising the well-known property of aldehydes to form definite compounds with acid sodium sulphite. The oil is shaken up with a strong solution of $NaHSO_3$, which abstracts any aldehydic constituent, and after adding sufficient water to dissolve the compound formed, the non-aldehyde portion is measured; the difference between this and the volume of oil taken represents the amount of aldehyde present. Examples of aldehydes in oils are citral in lemon oil, cinnamic aldehyde in cinnamon and cassia, and benzoic aldehyde in bitter almond oil. For the constitution of the aldehyde and acid sulphite compounds see 'Bernthsen' or other modern book on organic chemistry.

For the determination of alcohols advantage is taken of the capacity which is shown by bodies containing a (OH) hydroxyl group to react with acetic anhydride to form the acetic ester of the hydrocarbon radicle of the alcohol. If we represent this radicle by R the following shows the nature of the reaction—



Acetic Anhydride. Acetic Ester.

In the case of ordinary alcohol, R in the general formula above would be, C_2H_5 for menthol, $C_{10}H_{19}$, since the formulæ of these two alcohols are respectively, C_2H_5OH, and $C_{10}H_{19}OH$.

The oil containing a free alcohol, such as peppermint oil or santal oil, is therefore treated with excess of acetic anhydride and anhydrous sodium acetate. The latter facilitates the reaction by absorbing the water which is liberated during "acetylation," as the process is called. The next step is to remove the excess of acetic anhydride and sodium acetate. This is done by washing with water in a separating funnel. The washed oil will now contain an amount of acetic ester equivalent to the amount of alcoholic body previously present. It is next boiled in a flask with a reflux condenser with a known quantity of caustic potash in alcoholic solution. This hydrolises the acetic ester thus—$CH_3COOR + KOH = CH_3COOK + ROH$ again liberating the alcohol from the ester. The quantity of potassium hydrate which is used up during the hydrolysis can be determined by titrating with standard acid at the end of the reaction. By deducting this amount from the known quantity added we find how much has been consumed by the hydrolysis of the ester, and from the equation above the quantity of alcohol can be easily found, for every 56 parts (Mol.wt.KOH) is equivalent to one molecular weight of the alcohol. Besides menthol, santalol, geraniol, linalool, and other alcohols are thus determined. The esters occurring in some essential oils are determined by simple saponification with potash, and from the weight of potassium hydrate required the equivalent amount of ester can be deduced. Peppermint oil contains, in addition to menthol, menthyl acetate and menthyl valerianate, *i.e.*, the radicle $C_{10}H_{19}$ of the alcohol, menthol $C_{10}H_{19}OH$, combined with acetic and valerianic acid respectively, just as ethyl acetate is a combination of the radicle ethyl C_2H_5 (from ethyl alcohol C_2H_5OH) combined with acetic acid. When peppermint oil is treated with potash, these two esters are decomposed:—

$$CH_3COOC_{10}H_{19} + KOH = CH_3COOK + C_{10}H_{19}OH$$
$$C_4H_9COOC_{10}H_{19} + KOH = C_4H_9COOK + C_{10}H_{19}OH$$

acetate and valerianate of potassium being produced, while menthol is liberated. In precisely the same way ethyl acetate is hydrolysed, and this being a more simple body and one well known to the student, may serve to make the decomposition clearer, thus—$CH_3COOC_2H_5 + KOH = CH_3COOK + C_2H_5OH$.

In addition to the above there are several constituents of essential oils which are regarded as phenols. Thus eugenol, the chief constituent of clove and pimento oils, is para-oxy-methoxy-allyl-benzol—

$$C_6H_3\begin{cases}CH_2-CH=CH_2\\OCH_3\\OH.\end{cases}$$

Since it forms a soluble compound with aqueous solution of KOH, the amount present in an oil such as clove oil may be determined by treating a known volume of the oil with KOH solution and determining the amount of "non-phenol" left undissolved. Thymol is another phenol, methyl-propyl-phenol—

$$C_6H_3<^{CH_3}_{C_3H_7}_{OH}$$

Carvol, on the other hand, is regarded as a ketone—

$$C_6H_7.C<^{CH-CO}_{CH=CH}>CH\cdot CH_3.$$

It is the chief constituent of caraway oil, existing in a dextro-rotatory form, while in oil of spearmint it occurs as lævo-rotatory carvol.

The composition of an essential oil varies considerably, the variations being the result of a number of factors, *e.g.*, the season, the place of origin of the plant from which the oil has been distilled, and the part of the plant used. Consequently it is difficult to give exact tests for their purity, but the specific gravity and rotatory effect on polarised light are valuable indications. These, with fractional distillation and a determination of the known constituents, are generally relied upon. The characters and tests given in the present Pharmacopœia are insufficient to detect anything but the grossest sophistication, but a good deal of the progress in our knowledge of essential oils has been made since 1885, and the next edition will probably be more satisfactory in this respect.

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LOCAL ORGANISATION IN PHARMACY.

The article recently published in these columns on the importance of local organisation has attracted a considerable amount of attention amongst readers of the Journal, and several of the more thoughtful and far-seeing members of the craft have expressed their appreciation of this further effort to arouse in the minds of chemists and druggists a due appreciation of the value of union and efficient organisation for political purposes. The term "political," as used in this connection, is applied, of course, to all movements having for their object the maintenance of the honour and interests of the body pharmaceutic. Such a movement is the apparently eminently successful one which has resulted, in the short space of two years, in the union of some two thousand five hundred chemists and druggists who have arrived at the conclusion that it is high time to check the suicidal tendency to reduce trade profits to something approaching vanishing point. But that is only one direction in which political activity may with advantage be manifested, and the crying need of the time is a general combination of chemists, prepared at the shortest notice to deal with any of the numerous problems, directly or indirectly affecting pharmacy, that are continually presenting themselves for consideration.

In the great majority of such instances, and certainly in all where its influence can make itself felt, the Pharmaceutical Society takes prompt action and frequently attains results of no mean importance. But if local organisation in pharmacy were as complete as it should be, the support that could be given to the Society's executive might greatly enhance the value of the concessions obtained. And, altogether apart from this aspect of the question, complete and efficient local organisation would afford the means of dealing with many problems—such as the maintenance of fair prices, the fixing of railway rates, the interpretation of Acts of Parliament by local authorities, etc., etc.—in regard to which the Pharmaceutical Society as a body is practically powerless. Locally, each chemist and druggist ought to be able to exert some little influence, and if in each village, town, and city the scattered units would but bring their collective influence to bear, many of the grievances they now find no means of redressing might soon be non-existent. But to cry for the moon, or, what is strictly equivalent, to complain that the Pharmaceutical Society does nothing to remove disabilities which the grumblers alone are competent to strive against, is the height of unreasonableness.

What is needed, for example, to effect reforms that involve parliamentary procedure is the means of simultaneously taking action in every parliamentary division throughout the country, so that the whole of the elected representatives at Westminster could have a clear statement of the questions at issue placed before them. Consider what a marvellous effect might be produced if practically every member of Parliament, on a Bill interesting chemists being introduced into the House of Commons, understood from the outset exactly what it was about and fully appreciated the extent and importance of the interests involved. And such a result need be no chimera if chemists and druggists would only rise to their opportunity and make efficient local organisation a reality instead of a dream. The rapid growth of the Proprietary Articles Trade Association has proved that, when a definite issue is raised, chemists are quite capable of responding to a call to protect their own interests. Why, then, can they not have faith in the outcome of a wider movement which shall have for its object the protection of all their legitimate interests, supplementing the work of the Pharmaceutical Society in that respect?

Let every chemist and druggist make it a point to discuss all matters affecting the craft with the whole of his pharmaceutical neighbours, and the first step towards complete organisation will be taken. If next, arrangements are made to meet for the discussion of questions of pressing importance and agreement upon some joint line of action, progress will be rapid. Then let one or more delegates from each small district in a parliamentary division assemble and compare notes, and after reporting the results of their deliberations to those whom they represent, meet once more to complete the case to be presented to the parliamentary representative or representatives, and to appoint one or two influential individuals to state that case. Or, one chemist in each parliamentary division might act as local secretary and be equally prepared to convene meetings of his fellows on the one hand, or to communicate with the local parliamentary representative on the other. Then would local organisation be complete. With regard to questions of general importance, immediately on receiving an intimation from headquarters that discussion of a particular subject was desirable, the local secretaries might convene meetings, and everyone would then feel that he was in a position to do something in the matter. The opinion of the entire body of chemists and druggists could thus be obtained in a minimum of time, and action be promptly taken thereon in a way that would not otherwise be possible.

The above is necessarily but a very brief outline of what might be done and how it ought to be done. It should nevertheless serve as a sufficient basis upon which the secretaries of local associations and other active spirits in pharmacy may erect a goodly edifice. The chief idea to bear in mind in any such scheme of organisation is that a beginning should be made with the units and not with an executive body. Having got the majority of the individuals concerned fully interested in the matter, the processes of aggregation and accretion will naturally come into operation, and no difficulty need then be experienced in arranging the necessary details required to make the organisation a success. The first point to be considered, then, is how the desired interest may

be aroused, and this problem might well be attacked by the Federation of Local Pharmaceutical Associations. That body has shown itself of such a modest and retiring disposition since its formation some years ago, that many may be surprised to learn it yet survives. It may be stated, however, that a satisfactory meeting of the Federation was held at Glasgow during the Conference week, at which steps were taken to bring about the simultaneous consideration of matters of importance, by the various local associations, during the approaching winter session. At the same meeting Mr. R. Darton Gibbs, of Birmingham, was appointed secretary of the Federation, and it may be anticipated that in the case of a man of his calibre the office will not be regarded as a sinecure. But whatever the Federation or any other body may attempt, no results of enduring value need be looked for except in proportion as the local and general organisation of chemists and druggists is rendered more complete and efficient.

THE GERMAN APOTHEKER-VEREIN.

This body commenced its proceedings at Strasburg on Sunday, when there was a general assemblage of visitors and local members of the Verein and their friends at the Casino. Conversation and convivialities were continued until an early hour on Monday, and a useful opportunity was afforded for making and renewing acquaintance with the leaders of German pharmacy. On arriving at the bureau of the Verein to inscribe their names as members, the visitors were presented with a very useful little guide to Strasburg and its environs, especially the Vosges mountain district, and with a very well got-up 'Festschrift,' which has been prepared by a local committee consisting of Professor Schaer, Herren J. Berger, C. Binder, C. Jehl, and G. Munke, with the assistance of various contributors. The idea which gave rise to the production of the work was that since this is the first occasion on which the Apotheker-Verein has met in Strasburg, it would be appropriate to mark in some way the event with a permanent memorial, and also to make the production a tribute to the memory of the late F. A. Flückiger, who was such an enthusiastic promoter of scientific pharmacy. The opportunity was a favourable one, and it has been taken advantage of by the committee in such a manner as to provide the members of the Verein with an interesting and very useful account of the natural history of the provinces of Alsace-Lorraine, and with a history of the pharmaceutical school in Strasburg, including biographical notices of the eminent men who have been connected with it, among whom were Persoz, Emil Kopp, Louis Pasteur, Gerhardt, and many other distinguished men.

Two of the chapters, giving a history of Pasteur's work in Strasburg, by Professor Schaer, and another by Dr. A. Schneegans, on the labours of Friedrich A. Musculus, are especially interesting, and, from a scientific point of view, the description of the Hirsch Apotheke, the oldest pharmaceutical establishment in Strasburg, dating from the middle of the thirteenth century, by Dr. Adolf Seyboth, we learn that in 1770 Goethe, while a student at Strasburg, attended the lectures on chemistry delivered by Karl Reinbold Spielmann in a room now used as a warehouse, who was at the time the owner of the house. Among the names of former assistants in the pharmacy are those of the celebrated Andreas Sigismumd Marggraf, and of Emanuel Merck, the founder of the well-known Darmstadt firm. The second part of the volume comprises a number of scientific memoirs contributed by members of the Strasburg Pharmaceutical Institute: "On the Use of Drugs as Fish Poison," by Professor Ed. Schaer; "Microcrystalline Precipitates of Alkaloids and Picric Acid," by D. P. Zanetti; "The Solubility of Alkaloids, Glucosides and Bitter Principles in Concentrated Solution of Chloral Hydrate, and the Application of Chloral Hydrate in Toxicological Analysis," by R. Mauch; "Note on the Compounds of Salicylic Acid with Iron," by J. E. Gerock; "Examination of Brandy," by Dr. C. Amthor and J. Zink.

On Monday evening there was another social meeting, after the business proceedings of the Council had been carried out and preparations made for the following day. The first general meeting was held on Tuesday, the proceedings commencing at 9 a.m., when the President, Herr Frölich, took the chair. Addresses of welcome were delivered by the Under-Secretary of State, v. Schraut, on behalf of the Government; by Treiherr v. Freyberg, Apotheker Jehl, Dr. Wöhrlin, Dr. Freund, and Hof-apotheker Munke, on behalf of the municipal authorities of Strasburg and the local medical and pharmaceutical associations. Several representatives of foreign countries then addressed the meeting in terms of friendly congratulation—Herr van Ledden-Hulsebosch for Holland, Dr. Paul for Great Britain, and Professor Remington for America.

The next business was the award of the Flückiger Medal, for which the President reported that the Committee recommended Mr. E. M. Holmes, the Curator of the Museums of the Pharmaceutical Society, as the first recipient. A motion to that effect was put to the meeting, and carried with acclamation. The President then addressed Dr. Paul, and requested him to receive the medal on behalf of Mr. Holmes.

A discussion on the subject of reform in the educational system relating to pharmacists was afterwards commenced by Apotheker Eilers, who suggested that more active measures should be taken by the Council, by approaching the Government and urging the necessity of immediate provision for increased preliminary education and improved technical training of all persons admitted to the practice of pharmacy. An animated discussion took place on this subject, and some objections were raised to the disposition of the Council to await action on the part of the Prussian Government authorities; but when it was shown that the Imperial Government is not disposed to favour the demands of pharmacists, and that the only hope of their being recognised lies in the more favourable disposition evinced by the Prussian authorities, the policy of the Council was very generally admitted to be right, and the motion of Herr Eilers was adopted in a modified form on the suggestion of Dr. Vogt.

After adjournment for luncheon the admission of women to the practice of pharmacy was the subject of a long discussion, and it was decided that until the Government takes steps in that direction, it is not the duty of pharmacists to move in the matter. A very interesting address was delivered by Herr van Ledden-Hulsebosch on the microscopic examination of excreta, the substance of which will appear in a future number of the Journal, and among the proceedings of Wednesday especial interest was excited by an address delivered by Dr. Schaer on the relations of pharmacy to the various branches of science. The next meeting of the Apotheker-Verein will be held at Cologne.

ANNOTATIONS.

The Ninth International Pharmaceutical Congress will, in all probability, meet at Paris three years hence, though there was not any formal decision to that effect at the Brussels meeting. But, though no proposition was put to the vote, M. Petit spoke of Paris as the place proposed by French pharmacists for the next congress. The Belgian officials neither raised nor attempted to decide the question, and in view of the absence of representative British and German pharmacists, which tended to minimise the international character of the Brussels meeting, that was undoubtedly the correct attitude to adopt. The English-speaking contingent which did attend the Belgian Congress, though small, did its best to show appreciation of the hospitable manner in which the individuals composing it were received. Their hosts were especially pleased at the part taken by English and Irish visitors in the discussion on Professor Remington's paper, and much amused at the surprising attitude adopted by the editor of a London organ of the drug trade, who spoke in defence of secret remedies, and appeared (? for this occasion only) as the exponent of a new line of advertising.

The Use of Iced Water for drinking is a peculiarly American institution, and some of the Glasgow hotel waiters were not a little startled when requested by American visitors to supply the fluid at breakfast time. It is needless to say that such would hardly have been the case at Liverpool hotels, where Transatlantic guests are much more frequently entertained. In favour of this iced water habit it may be said that it grows upon one, without appearing to cause any of the deleterious effects that those who have not tried the drink attribute to it. And its regular use by several who attended the Glasgow meeting could not, by any stretch of the imagination, be conceived as being attended by such startling, even fantastic, results as were witnessed in the case of some who partook freely of another liquid, the temperature of which was strictly normal.

But to Return to Iced Water, a correspondent has contributed some notes of travel in which this beverage is referred to. My travelling companion, he remarks, hailed from America, and was not wanting in that admiration for American ideas and usages which his countrymen seldom lack. Among other things he was "very far gone" in regard to the virtues of water, and especially iced water. On every possible occasion he held forth on that subject with a vigour which allowed of no opposition, and constrained those who differed in opinion to remain silent. But as everything comes to those who wait, compensation was found on the water question on reaching German territory. During the *table d'hôte* dinner at Metz, my American friend pointed triumpantly to a large group of German officers who were, after their habit, engaged in animated conversation at the dinner table, and, singling out one of the number who was rotating a lump of ice in a wine goblet, he exclaimed that there seemed to be still some hope of the salvation of the country as the practice of drinking ice water was followed. "Unfortunately for my companion, his hopes were soon rudely dashed when it turned out that the German officer who had excited his admiration and prophetic faculty was an ultra *bon vivant*, and had only been using the ice for cooling his wine glass and preventing the champagne *frappé* from having the orthodox chill taken off it."

The German Formulary published by the Deutscher Apotheker-Verein under the fully descriptive title of 'Arzneimittel die im Deutschen Arzneibuch nicht erhalten sind' has reached a second edition. It was first published six years ago with the idea of securing for non-official substances the uniformity of condition which is provided for in respect to official medicines by the German Pharmacopœia, resembling in that respect its forerunner, the 'B.P.C. Unofficial Formulary,' though greatly exceeding the latter in bulk. In all there were 811 monographs in the original 'Arzneimittel'; the second edition contains 892, the additions being considerable, as might be anticipated considering the progress of medicine during the past few years. The acids now included number 19, the waters 44, plasters 20, extracts 63, liniments 7, solutions 22, oils 50, pastes 9, pastilles 10, pills 7, powders 11, syrups 22, spirits 14, tinctures 68, and ointments 28. Much credit is due to the Apotheker-Verein for producing so useful a compilation.

The New South Wales Pharmacy Act, which was passed on July 1 last, established the Pharmacy Board of New South Wales as a body corporate, in place of the old Board of Pharmacy as constituted by the Poisons Act of 1876. The new Board is to consist of eight members, all of whom must be registered pharmacists. To secure registration as a pharmacist, except in the case of individuals already engaged in pharmacy, it is necessary to be of full age, to have served an apprenticeship, and to have passed a preliminary education in English, Latin, and arithmetic, subsequently to which the candidate must attend courses of lectures in chemistry, practical chemistry, botany, and materia medica, and pass an examination in practical pharmacy. Registered pharmacists are compelled to allow their apprentices time to attend lectures during the last year of their apprenticeship. The penalty for falsely pretending to be a registered pharmacist is not less than five pounds, and not more than fifty, and no pharmacy may be kept open except it be in charge of a registered pharmacist, "who shall personally superintend the carrying on of the said business," under a penalty not exceeding twenty pounds. Finally, the word "person" is deemed to include any corporation. Our New South Wales friends have thus fully protected pharmacy and the public, and brought themselves into line with the Colony of Victoria, which we have previously referred to as possessing an "ideal" Pharmacy Act. We congratulate them and regret our own shortcomings.

The British Pharmaceutical Conference list of papers is added to this week by a communication on "Kinos," received from Mr. Joseph Bosisto, of Victoria, which has arrived too late to be presented at the Glasgow meeting. This makes a total of eighteen papers accepted for publication by the Executive Committee of the B.P.C. In regard to the number of papers there is a suggestive reference in the *American Journal of Pharmacy* for August, where the editor speaks of the Conference as a body "noted for the large amount of scientific work it can accomplish in a short time." It is not clear whether this is meant as a compliment or as sarcasm, but doubtless the officials of the Conference will interpret it as seems to them good.

The P.A.T.A. Dinner was an undoubted success, in spite of the fact that many were prevented from attending, owing to the holiday season being on. Mr. Councillor Wilson, J.P., of Harrogate, who proposed the first toast, made a dashing speech, that carried all before it, and the well-earned applause that greeted Mr. Glyn-Jones' statement of the present position of the Association was sufficient proof that chemists can appreciate the value of services that bring them tangible results, though they may at times seem sceptical in regard to hypothetical advantages that may accrue if a given line of conduct be adopted. The Proprietary Articles Trade Association now includes 2500 chemists who are presumably determined not to

work for nothing any longer, however foolish they may have been in that respect in the past. That determination is to be commended, as even those chemists who disapprove of P.A.T.A. methods must admit. There was an excellent musical performance after the dinner, the presence of ladies at which added an extra charm to the meeting. An idea worthy of imitation was the seating of visitors from a given district with their friends and acquaintances from that district. The effect of this was admirable, as the risk of placing incompatibles together was minimised.

The Owens College Pharmaceutical Department has issued its prospectus for the session 1897–8, and this should be consulted by all pharmaceutical students in Manchester and district. The first year classes (composition fee, £17 17*s.*) in the various subjects cover the ground of the Minor examination, and the second year classes (composition fee, £15 15*s.*) serve for Major candidates. The Bradford Technical College prospectus is also ready, and gives full particulars of the classes and courses of laboratory instruction in chemistry, botany, materia medica, and pharmacy, as also of the general pharmaceutical course arranged to meet the requirements of students preparing for the Minor examination. We shall be glad to receive any further particulars in regard to educational matters, for publication in the "Students' Number" of the Journal. Such information should be sent without delay.

The Disinfection of Sleeping Apartments is the subject of an article in the *Centralblatt für Chirurgie*, by Professor Konig, of Göttingen, who says that at one time, while he was practising medicine in Hanau, he suddenly discovered that his bedroom was thickly inhabited by bugs. A friend assured him that he could easily get rid of the pests by fumigating the apartment with corrosive sublimate. This dangerous method was duly resorted to, the story proceeds, and when the room was opened the dead bodies of various kinds of insects were seen strewn about the floor. As a result, trial of the same plan was made in private houses after scarlet fever or measles, and in hospitals after erysipelas or pyæmia, with "most satisfactory results," as since adopting this method the professor has never seen a second case of a contagious disease which could be attributed to infection remaining in the room in which the patient had been confined. Whether any cases of mercurial poisoning have occurred is not stated, but the risk of such would appear to be very grave, the more especially as the mode of procedure is exceedingly crude. About two ounces of the corrosive sublimate is put on a plate over a chafing dish, and the windows and doors of the room are then closed. Doubtless, everyone leaves the room first, but that is not stated. At the expiration of three or four hours the windows are opened, and the apartment is thoroughly aired, a very necessary operation. Persons entering the room are, with good reason, advised to take the precaution to hold a sponge or a cloth over the mouth and nose in order not to inhale the vapour. On the following day the windows are again closed, and some sulphur is burned in the room in order to neutralise (*sic*) any of the mercurial fumes which may linger about the furniture and other articles. After the room has been again aired and cleaned, it is said to be ready for occupation. But insurance companies ought to increase the premiums on life policies of persons who propose to occupy such a room, and what about damage to the furniture?

The Name of the Late W. H. Harrison is probably not familiar to a large number of our readers, but many of them are largely indebted to him as having been the first to publish the results of experiments with gelatin as the basis for a medium for coating dry plates. He began life in the employment of the Great Western Railway Company, in the Telegraph Department at Paddington, and was selected for his aptitude as a careful experimenter to take charge of the Haverfordwest end of the submarine electric cable between that place and Wexford, his chief duty being to test the cable daily for damages and interruptions. During his stay at Haverfordwest he devoted much attention to photography, and in 1865 he obtained land and sea views on wet plates preserved by Mr. Valentine Blanchard's method. Three years later he communicated to the *British Journal of Photography* a paper describing his discovery of a bromide emulsion dry plate, and also the use of an alkaline developer. Though a large industry is the outcome of these discoveries, and several fortunes have been made by dry plate manufacturers, Mr. Harrison never received any pecuniary reward for his important discovery and work. He died at his residence, near Herne Hill, on August 10.

The Dangers of Safety Matches were recently referred to in a curious action for personal injuries, which was heard at Bromley County Court. The plaintiff sued a Beckenham grocer for fifty pounds damages for injuries sustained through the ignition of a box of "safety" matches warranted "to strike only on the box." The matches were purchased from defendant's shop, and as plaintiff was in the act of opening a box the matches suddenly ignited, inflicting such injuries that for six weeks she was incapacitated from carrying on her business. For the defence it was urged that the term "safety matches" was merely a trade designation, and implied no legal warranty, but the Judge held that "safety matches" had come to be generally considered as matches striking only on the box, and therefore as being safe in that respect. The way in which these matches had ignited was quite inconsistent with such a description, and he must give judgment for the amount claimed, with costs.

A University Extension Romance, related by the *Daily Telegraph*, is probably unique in its way. The events have transpired in connection with the present summer meeting of Extension students at Oxford, where one of the Brackenbury scholars of Balliol College is Joseph Owen, of Oldham, the son of a Lancashire artisan, who has himself worked in an Oldham mill. He left school at thirteen, and his chief means of education have been free libraries and University extension. For many years he was constantly mentioned in examiners' reports, and in 1895 Mr. A. L. Smith, Fellow of Balliol, was struck by the quality of his work in English history, and recommended that he should come to Oxford. But Owen was twenty-three years of age, married, and had no knowledge of Latin or Greek. Nevertheless, the college admitted him on the strength of his University Extension work, and gave him a special exhibition of £50 a year. By the generous help of the Marquis of Ripon, Mr. M. E. Sadler, Mr. and Mrs. Arthur Sidgwick, and other friends of University Extension, the necessary funds were provided, and Mr. and Mrs. Owen took up their residence in a cottage in Oxford. The lucky scholar's subsequent career has been remarkable. He entered Balliol in October, 1895, and six weeks later won, in open competition, the Brackenbury Scholarship for history, which is of the value of £80 a year, and tenable for four years. "Within eighteen months from learning the Greek alphabet he has passed both Responsions and Moderations, cleared away all preliminaries, and is now just embarked on an honours' course in history, with every prospect of a brilliant degree."

REAGENTS, REACTIONS, METHODS AND FORMULÆ, KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 96.)

Lunge and Lwoff's colorimetric test for nitrous acid. A solution of 0·1 Gm. of α-naphthylamine in 100 C.c. of water, with 5 C.c. of glacial acetic acid and 1 Gm. of sulphanilic acid in 100 C.c. of water. The normal solution contains 1/100th Mgm. of nitrogen from nitrites per cubic centimetre (0·0493 Gm. of sodium nitrite is dissolved in 100 C.c. of water, and 10 C.c. of this solution diluted to 100 C.c. with concentrated sulphuric acid). Place in each of two cylinders 1 C.c. of the reagent and 40 C.c. of water; then place in one 5 Gm. of crystallised sodium acetate, and in the other 1 C.c. of a normal solution of the substance to be tested, and compare the colours.

Lunge and Lwoff's test for nitric acid in the presence of nitrous acid. A colorimetric determination by means of a solution of 0·2 Gm. of brucine in 100 C.c. of pure concentrated sulphuric acid. Mix separately 1 C c. of normal solution (10 C.c. of a solution of 0·0721 Gm. of potassium nitrate in 100 C.c. of water is diluted to 100 C.c. with concentrated sulphuric acid), and 1 C.c. of the solution to be tested, with 1 C.c. of brucine solution. Dilute each sample to 50 C.c. with concentrated sulphuric acid, heat to 70°-80° C., cool after the solutions have acquired a sulphur-yellow colour, and compare the intensities of the colours in suitable glass cylinders. The above normal solution contains 1/100 Mgm. of nitrogen from nitrates in each cubic centimetre.

Lunge's test for nitrous acid. This depends upon Griess' reaction (*q.v.*) with sulphanilic acid and α-naphthylamine, which, according to Lunge, should be kept in readiness dissolved in dilute acetic acid. Solutions containing nitrous acid are coloured red with this reagent.

Lusgarten's method for syphilis bacillus. Place sections in gentian-violet aniline water (*vide* Koch-Ehrlich method) at the ordinary temperature of the room for 12 to 24 hours, then for 2 hours at 40° C. They are then transferred to absolute alcohol for a few minutes, next placed for 10 seconds in 1·5 per cent. solution of potassium permanganate, and afterwards washed in sulphurous acid. If the ground substance of the sections is not completely decolorised, repeat the second part of the process, then dehydrate, clear, and mount in balsam.

Lustgarten's reaction for naphthol. See Wolff's reaction.

Lustgarten's reactions for iodoform. (1) Upon warming 1 or 2 drops of an iodoform solution with a little phenol and potassium hydrate a red substance is formed, which dissolves in alcohol to form a red solution. (2) Dissolve 0·1 Gm. of resorcin and a piece of sodium in 5 C.c. of alcohol, mix 5 drops of the resulting green solution in a test tube with the ethereal iodoform solution, and carefully evaporate the ether. A cherry-red colour results, which is destroyed by acids, but restored by alkalies.

Lutesch's method for staining flagella. Use as a mordant a warm, freshly prepared, saturated ferric acetate solution, to each 16 C.c. of which 5 to 10 drops of acetic acid have been added. After treatment with this, wash the preparation in water, then treat with 20 per cent. acetic acid, again thoroughly wash, and finally stain with a hot solution of fuchsine or gentian-violet in aniline water.

Lux's test for fatty oils in mineral oils. In a paraffin bath kept at 200-210° C., heat for 15 minutes two samples of the oil contained in test-tubes, to one of which has been added some sodium hydrate, to the other some metallic sodium. Even if the specimen contains only 2 per cent. of fatty oil, one or other of the samples, but generally both, will form a stiff jelly.

Lyon's mixture for shaking out strychnine and brucine. This consists of 3 volumes of ether and 1 volume of a mixture of 88 C.c. of chloroform, 12 C.c. of alcohol, and 2 C.c. of ammonia.

Maas' carmine and malachite green stain. After staining with borax-carmine, follow with weak alcoholic solution of malachite green and wash out with stronger alcohol.

MacLagan's cocaine test. Treat 50 C.c. of an approximately 0·1 per cent. solution of a cocaine salt with 2 or 3 drops of ammonia, and rub the walls of the glass vessel vigorously with a glass rod. Pure cocaine separates out in crystals; a milky turbidity indicates the presence of amorphous alkaloids (isatropylcocaine).

Magini's stain for nervous centres. This is said to be an improvement on Golgi's method. Cubes of tissue measuring 2 to 3 Cm. are hardened for 2 or 3 months in Müller's solution, then well washed with distilled water and placed in a 0·1 to 1 per cent. solution of zinc chloride. Change the solution for fresh every day for 7 to 10 days, until it ceases to become more yellow than bichromate solution, cut the sections, wash them quickly with alcohol, imperfectly clear with creosote, and mount in dammar.

Mährenthal's (Von) method. See Lee's osmic acid and pyrogallol stain.

Maisch's test for turmeric. See Houvier's test.

Malassez's ammonia-carmine. See Ranvier's formula.

Mandelin's reagent for alkaloids. A solution of 1 Gm. of ammonium vanadate in 200 C.c. of concentrated sulphuric acid. This reagent yields brown, red, or green colorations with alkaloids.

Manfredi's gold method. Treat fresh tissues with 1 per cent. solution of gold chloride for half an hour, then with 0·5 per cent. oxalic acid solution; warm in a water bath to 36° C., allow to cool, and mount in glycerin.

Mangini's reagent for alkaloids. Treat 3 parts of potassium iodide and 16 parts of bismuth iodide with 3 parts of hydrochloric acid. With this reagent a brown precipitate is formed with solutions of alkaloids. Compare Dragendorff's reagent. Mangini's reagent has the advantage over the latter of not becoming turbid when mixed with water.

Mann's albumin fixative. Shake 1 volume of egg albumin with 10 volumes of distilled water, and filter twice through the same paper. Spread the filtered mixture on clear slides which are then left to drain and dry. Sections to be mounted are floated on water warmed to 40° C., arranged on slides passed beneath them, the slides placed for 5 minutes on a stove heated to 35° C., and then treated with xylol and alcohol.

Mann's osmic acid mixture for nerve centres. Mix equal volumes of 1 per cent. osmic acid solution and saturated solution of mercuric chloride in normal salt solution (0·75 per cent.).

Mann's picro-sublimate mixtures. (1) Dissolve 1 per cent. of picric acid, with or without 1 per cent. of tannin, in a saturated solution of mercuric chloride in normal salt solution. (2) Absolute alcohol, 100 C.c.; picric acid, 4 Gm.; mercuric chloride, 15 Gm.; tannin, 6 to 8 Gm.

Mann's reagent for water in alcohol, air, etc. Triturate 1 part of molybdic acid with 2 parts of citric acid, fuse the mixture, and when cool dissolve in water; filter-paper is then saturated with the solution and dried at 100° C. This blue paper becomes white through the absorption of water when exposed to moist air, or when dipped into alcohol or ether containing water.

Maréchal's test for biliary colouring matter. Add 2 or 3 drops of tincture of iodine to acid or neutral urine; in the presence of biliary pigments a chrome-green colour appears. See Smith.

Marmé's reagent for alkaloids (potassium cadmium iodide). Add to a boiling concentrated solution of potassium iodide (4 parts in 12 parts of water) cadmium iodide to saturation (2 parts), and mix the solution with a like volume of a cold saturated solution of potassium iodide. The concentrated solution is permanent; the weak solution decomposes upon standing. With solutions of alkaloids this reagent yields white to yellowish precipitates. (Dragendorff, 'Ermittelung der Gifte'; Hager, 'Pharm. Praxis.') This is also known as Lepage's reagent.

Marque's test for sparteine. Sparteine sulphate warmed with one-third its weight of chromic acid yields a green colour owing to reduction of the latter; at the same time the penetrating odour of cicutin is developed.

Marsh's chlorine method for bleaching sections. Chlorine is generated in a small bottle by treating crystals of potassium chlorate with strong hydrochloric acid, and the gas is led through a piece of glass tubing, bent twice at right angles, to the bottom of a bottle containing the sections immersed in water.

Marsh's decalcification mixture. Dissolve 15 Gm. of pure chromic acid in 7 oz. of distilled water, and add 30 minims of nitric acid. Objects are macerated in this for 3 or 4 weeks, the fluid being changed frequently.

Marsh's gelatin cement for glycerin mounts. Soak half an ounce of Nelson's gelatin in water until it swells, then pour off the excess of water, melt the gelatin, and stir in 3 drops of creosote. The cement is used warm, and when the rings are quite set and dry they are painted over with a solution of 10 grains of potassium bichromate in 1 oz. of water. Subsequent exposure to daylight renders the gelatin insoluble in water.

Marsh's test for arsenic. By reduction with pure zinc and dilute sulphuric acid, arsenious hydride (arsine) is given off from solutions of arsenates or arsenites. Oxidising agents must be

* After Schneider, Altschul, Lee, Squire, Crookshank, and others.

absent. If the arsine be passed through a red-hot glass tube metallic arsenic is deposited on the cold portion of the tube beyond. Upon igniting the arsine and placing a cold porcelain plate in the flame, metallic arsenic is deposited upon the plate. (Concerning further tests, distinction from antimony, and precautions to be observed in manipulation, see Fresenius, 'Qualitative Analysis,' and Hager, 'Pharm. Praxis.') Davy's modification consists in the use of sodium amalgam instead of zinc and sulphuric acid for the reduction of the arsenic compounds. In Himmelmann's modification, zinc, iron, and concentrated ammonium chloride solution are used to accomplish the same result. Fleitmann's modification employs zinc and sodium or potassium hydrate to liberate the arsine.

Martinotti's picro-nigrosine stain. Pathological objects are stained for 2 or 3 hours or days in a saturated solution of nigrosine in saturated alcoholic picric acid solution. Then wash out in a mixture of 1 part of formic acid with 2 parts of alcohol until the grey matter appears clearly differentiated from the white to the naked eye.

Martinotti and **Resegotti's** safranine method. Sections of alcohol-fixed material, lightly stained with safranine are differentiated with a freshly prepared mixture of 1 part of 0·1 per cent. aqueous solution of chromic acid with 9 parts of absolute alcohol, followed by pure alcohol and bergamot oil. Elastic tissue is fixed by Martinotti in a chromic liquid, washed, stained for 48 hours in Pfitzner's (5 per cent.) safranine solution, again washed, dehydrated, cleared, and mounted in balsam. The elastic fibres are stained an intense black.

Martin's benzoazurin stain. Immerse in a dilute aqueous solution of benzoazurin for an hour or so, and wash out with 70 per cent. alcohol acidulated with 0·5 to 1 per cent. of hydrochloric acid (sp. gr. 1·16).

Masin's solution. This is a solution of potassium mercuric iodide of almost the same composition as Mayer's reagent for alkaloids, which see.

Masset's test for biliary colouring matter. See Gmelin's reaction.

Maugin's reagent for the microscopical examination of textile fabrics. An ammoniacal oxychloride of ruthenium (ruthenium red).

Maumené's reaction for distinguishing oils. Observe the rise in temperature which results when the oil is mixed with concentrated sulphuric acid. Drying oils evolve much more heat than non-drying oils.

Maumené's test for glucose. Saturate woollen threads with a 33 per cent. solution of zinc chloride and dry. When moistened with a glucose solution and heated to 130°, the threads are coloured brown or black.

Mayer's acidulated alcohol. Add 3 volumes of pure hydrochloric acid to 97 volumes of 90 per cent. alcohol in which is dissolved a small quantity of picric acid.

Mayer's albumin fixative for slides. Shake well together 50 C.c. of egg albumin, 50 C.c. of glycerin, and 1 Gm. of sodium salicylate, then filter into a clean bottle.

Mayer's alcoholic carmine. (1) Boil 100 Gm. of alcohol with 1 or two drops of hydrochloric acid and an excess of carmine, until a clear solution is obtained, taking care that the carmine remains in excess. (2) Boil carmine, 4 Gm., water, 15 C.c., and hydrochloric acid, 30 drops, until the carmine is dissolved, then add 95 C.c. of 85 per cent. alcohol and neutralise by adding ammonia until the carmine begins to precipitate.

Mayer's aluminum chloride carmine. Dissolve 1 Gm. of carminic acid and 3 Gm. of aluminum chloride, in 200 C.c. of water.

Mayer's Berlin blue injection. Add a solution of 10 C.c. of tincture of ferric chloride in 500 C.c. of water, to a solution of 20 Gm. of potassium ferrocyanide in 500 C.c. of water, allow to stand for 12 hours, decant, wash the deposit for 1 or 2 days with distilled water until the washings come through dark blue, then dissolve the blue in about a litre of water.

Mayer's bleaching method. Place the specimens in 70 to 90 per cent. alcohol and add potassium chlorate in crystals until the bottom of the vessel is covered. Then add a few drops of hydrochloric acid and warm if necessary until the chlorine begins to be evolved. Nitric acid may be used instead of hydrochloric, if desired.

Mayer's borax carmine. See Grenacher's alcoholic borax-carmine.

Mayer's carmalum. Dissolve 1 Gm. of carminic acid and 10 Gm. of alum in 200 C.c. of distilled water; decant or filter and add a few crystals of thymol, 0·1 per cent. of salicylic acid, or 0·5 per cent. of sodium salicylate. A weaker solution contains 3 to 5 times as much alum and 5 times as much water.

Mayer's cochineal stains. (1) Macerate 1 Gm. of cochineal in coarse powder for several days in 8 to 10 C.c. of 70 per cent. alcohol, stirring frequently. Filter before use. (2) Rub up in a mortar 5 Gm. of finely powdered cochineal, 5 Gm. of calcium chloride, and 0·5 Gm. of aluminum chloride, then add 100 C.c. of 50 per cent. alcohol and 8 drops of nitric acid (sp. gr. 1·2), heat to boiling point, cool, leave standing for some days, with frequent agitation, and filter. In using these stains, prepare and wash out the objects with alcohol of the same strength as that with which the stain is prepared.

Mayer's desilification process. Place the objects in alcohol contained in a glass vessel coated internally with paraffin, then add hydrofluoric acid drop by drop until desilification is complete, avoiding the fumes meanwhile.

Mayer's hæmacalcium. Rub up together 1 Gm. of hæmatein or the ammonium salt (*vide* supra) and 1 Gm. of aluminum chloride; add 10 C.c. of glacial acetic acid and 600 C.c. of 70 per cent. alcohol, and finally 50 Gm. of calcium chloride.

Mayer's hæmalum and glychæmalum. Hæmalum is prepared by dissolving 1 Gm. of hæmatein or the ammonium salt (prepared by dissolving 1 Gm. of hæmatoxylin with the aid of heat in 20 C.c. of distilled water, filtering if necessary, then adding 1 C.c. of solution of ammonia, sp. gr. 0·875, and evaporating at the ordinary temperature) in 50 C.c. of 90 per cent. alcohol, and adding to a solution of 50 Gm. of alum in a litre of distilled water. Allow to cool and settle, filter if necessary, and add a crystal of thymol to preserve from mould. Mayer's acid hæmalum is the same with the addition of 2 per cent. of glacial acetic acid. Glychæmalum is a mixture of 0·4 Gm. of hæmatein, 5 Gm. of alum, 30 Gm. of glycerin, and 70 Gm. of distilled water. The hæmatein is first dissolved in a few drops of the glycerin.

Mayer's indigo-carmine with carmine or hæmatein. Dissolve 0·1 Gm. of indigo carmine in 50 C.c. of distilled water or 5 per cent. alum solution, and combine with 4 to 20 volumes of carmalum or hæmalum.

Mayer's method for bluing sections. After staining with hæmatoxylin, treat the sections for a few seconds with 0·5 to 1 per cent. potassium acetate solution.

Mayer's mucicarmine for staining mucus. Heat for 2 minutes in a capsule over a small flame 1 Gm. of carmine with 0·5 Gm. of aluminum chloride, and 2 C.c. of distilled water. Stir thoroughly until the mixture becomes dark and thick, then add a little 50 per cent. alcohol to dissolve the warm mass, and make up with same to 100 C.c. Stand for 24 hours and filter.

Mayer's mucihæmatein for staining mucus. Mix 0·2 Gm. of hæmatein with 40 C.c. of glycerin, 1 Gm. of aluminum chloride, and 60 C.c. of water. Rub up the hæmatein with a few drops of the glycerin first. An alcoholic solution may be prepared by dissolving the hæmatein and aluminum chloride in 100 C.c. of 70 per cent. alcohol, with or without the addition of 2 drops of nitric acid.

Mayer's paracarmine. Dissolve 1 Gm. of carminic acid, 0·5 Gm. of aluminum chloride, and 4 Gm. of calcium chloride, in 100 C.c. of 70 per cent. alcohol. Allow to settle and filter.

Mayer's picro-hydrochloric acid. Mix 100 volumes of distilled water with 8 volumes of 25 per cent. hydrochloric acid, and saturate with picric acid.

Mayer's picro-nitric acid. Mix 100 volumes of distilled water with 5 volumes of nitric acid (of 25 per cent. N_2O_5), and saturate the mixture with picric acid.

Mayer's picro-sulphuric acid. Mix 100 volumes of distilled water with 2 volumes of sulphuric acid, and dissolve in the mixture 0·25 per cent. of picric acid, or enough to saturate.

Mayer's reagent for alkaloids. Dissolve 13·546 Gm. of mercuric chloride and 49·8 Gm. of potassium iodide in water, and the solution is diluted to 1 litre. With most alkaloids in weakly acid solutions this reagent yields whitish precipitates, and this property permits its use in quantitative determinations. (Dragendorff, 'Analyse der Pflanzen'; Dragendorff, 'Werthbestimmung'; Hager, 'Pharm. Praxis.' This reagent is also known under other names, such as Delf's reagent, Planta's reagent, Tanret's reagent, Winkler's reagent.

(*To be continued.*)

PROPRIETARY ARTICLES TRADE ASSOCIATION.

MEETING OF THE COUNCIL.

A meeting of the Council was held at the Chemists' Exhibition, Covent Garden, on Thursday, August 19, Mr. W. Jones, of Birmingham, President, in the chair. There were also present the following members:—Mr. A. Tebbutt (Sutton and Co.), and Herbert W. Seely, of Halifax (Vice-Presidents); C. Sanger (Lambert and Co.), H. Gadd (Evans, Gadd and Co.), B. Hirst (Hirst, Brooke, and Hirst), J. Shorrock (Bovril, Limited), E. P. Sanger (Sanger and Sons), S. N. Pickard (Bradford), F. Rowsell (Exeter), A. Cooper (South Kensington). Letters of apology were received from the following members:—Messrs. J. E. Garratt ("Frog in your Throat"), Mr. Cocks of Phymouth, T. P. Garrett of Newport, T. S. Wokes, Liverpool, and Mr. John Williams of Manchester, who wrote in reference to the formation of a Grocery Section as follows:—

"I regret to say that I cannot attend your Council meeting or the banquet at which you have so kindly invited me to be present. I hope, however, that you will have a good attendance at both, and that you will make the opportunity another occasion for moving on in the lines the chemists have so successfully worked for the past two years. I must congratulate them and yourself on the large measure of success you have achieved in, at any rate, lessening the evils of undue cutting in proprietary articles, and I trust that at your next banquet it will be possible to congratulate the grocers of the United Kingdom on having arrived at a like success. This success, I may say, is assured if even a small percentage of those who speak and write in favour of the movement will do what lies in their power to help, in a practicable manner, your efforts on their behalf. I feel just as assured as I have done since the movement was first explained to me that, to the rank and file of the tradesmen of this country, whether they be chemists or grocers, the P.A.T.A. can be made of more practicable benefit than any other of the projects that have been placed before them during any period of my experience, which is now nearly an experience of forty years' trading. Of course, as with every other proposal made to tradesmen, we find some who, having fought for their own hand successfully many years, are loth to fall in line, but even with many who have achieved success I find a disposition to take up this movement as being the most beneficial of any that has been proposed. I enclose you herewith the name of a manufacturing firm whose goods are in great demand among grocers, who, I believe, will join the grocers' section when formed, and I have the names of several others to give you at the proper time who have assured me of the sympathy they have with your movement. Again wishing you all success."

The Secretary (Mr. Glyn-Jones) read the following report of the Executive Committee:—"During the five weeks which have elapsed since the last meeting of the Council there have been three additions to the protected list. Messrs. Raimes and Co., of York, have joined the wholesale section. The additions to the retail section during the same period number 120, and twenty local secretaries have been appointed in as many new centres. The long series of negotiations between this Association and the Grocers' Federation culminated most satisfactorily at the meeting of the Conference, which was held at Liverpool early in July. At this Conference several hundred representative grocers were assembled, being delegates from the local grocers' associations throughout the country. The Secretary was present to explain the scheme to the Conference, and after a most exhaustive discussion, the following resolution was passed by an overwhelming majority:—'That the Federation of Grocers' Associations of the United Kingdom are of opinion that the objects and methods of the Proprietary Articles Trade Association offer the most feasible method of preventing the evils of excessive cutting in proprietary articles. It respectfully urges all proprietors of such articles to co-operate in the movement, and strongly recommends the various affiliated associations to assist in the work of the P.A.T.A. This recommendation is made subject to the grocery section being under the control of those engaged in the grocery trade, and that no trader be allowed to give any bonus or make any abatement in the minimum prices fixed. Active measures will now be taken for forming the grocery section, and it is hoped that, as a result of the work during the winter months, an important list of grocery articles will be formed. The Secretary has received numerous applications to visit various grocers' associations with a view to organising the work of the P.A.T.A. in these districts. During the past few weeks, interviews have been held with some of the proprietors of photographic materials, but owing to the holiday season, our negotiations with several important houses have been delayed. This section is to receive the attention of the Executive Committee during the coming weeks, and it is confidently hoped that before the next meeting of the Council it will be in working order. Circulars have been sent to various wholesale and manufacturing firms connected with the drug trade in reference to the provision made at the last meeting of the Council with respect to donations and honorary subscriptions. The following have already sent in donations:—Charles Sanger, F. Newbery and Sons, J. C. Eno (Limited)."

On the motion of Mr. Rowsell, seconded by Mr. Pickard, the report was adopted.

The Secretary stated that he was anxious to get the local associations, throughout the country, who were actively supporting the P.A.T.A. to bring the movement before their members as often as possible during the winter. It was suggested that during the Grocers' Exhibition conferences should be arranged between prominent retailers and manufacturers, in order to obtain expressions of opinion as to the best means of starting operations.

On the motion of Mr. Seely, seconded by Mr. Pickard, the Secretary was instructed to point out to proprietors of articles, which were not numbered, that it was impossible to completely control the supplies of such articles.

It was reported that since the last meeting of the Council the official canvasser had visited a number of towns. The Association continued to be well received by the majority of chemists, but those of the grocers who had been called on expressed a desire to await the formation of a grocery list of protected articles before becoming members. About ten days spent in the eastern counties resulted in the addition of over forty chemists. In Ipswich there were seventeen chemists, twelve of whom were members; in Norwich, twenty-seven, sixteen of whom were members; and in Yarmouth, nineteen, including sixteen members.

In view of the resolution of the Conference of the Grocers' Federation at Liverpool, it was decided to take immediate steps to form a grocery section, a preliminary committee of representative retail grocers to be formed to make arrangements for private conferences with the leading proprietors of grocery articles, with a view to the compilation of a "protected list." The Secretary was also instructed to avail himself of the offers of a number of local grocers' associations to arrange visits, at which he could organise the work of the Proprietary Articles Trade Association amongst the grocers in their districts.

ANNUAL DINNER.

The first annual dinner of the above Association was held at the Holborn Restaurant, W.C., on Thursday, August 19, Mr. William Jones, of Birmingham, President of the Association, in the chair. Amongst those present were Alderman Gadd, J.P., Exeter (Evans, Gadd and Co.); Herbert W. Seely (Secretary Halifax Chemists' Association); Charles Sanger (Lambert and Co.—Dr. Scott's Pills); A. Tebbutt (W. Sutton and Co.); R. Darton Gibbs (Secretary Federation of Chemists' Associations); Albert Cooper (South Kensington); Councillor Wilson, J.P. (Mayor of Harrogate); Mr. Glyn-Jones (Secretary); Messrs. G. R. Barclay, S. Roberts (May, Roberts and Co.), C. H. Corbett, W. Gee (Hall's Coca Wine). The following firms were amoug those represented:—Edward Cook and Co. (Messrs. Goodwin and Hobbs), Mellin's Food (Messrs. Oakes and Cowper), Bovril (John Shorrock), Liebig (W. A. Gilligan), Lynch and Co., Mariani Wine, Wilcox and Co. (W. H. Thomas), Sanger and Sons, Maw, Son, and Thompson (T. C. Martin, C. Martin, and R. W. Carter), Burgoyne, Burbidge and Co. (E. J. Reid), Oppenheimer and Son (A. Ball and F. H. Moore), T. Powell, Ltd. (F. W. Powell), W. A. Goodall, D. Marshall, T. G. Pirie, W. H. Thomas. Many of these and other gentlemen present were accompanied by ladies.

Mr. Councillor Wilson, J.P. (Mayor of Harrogate), said he trusted that this was the first of a great number of successful dinners to be held in the future. The toast he had to submit was "The P.A.T.A.," coupling with it the name of their Secretary, Mr. Glyn-Jones. What they wanted was enthusiasm to back up their Secretary and organiser in his work. The P.A.T.A. was established not to attack the cutter personally, and not to make any particular

attack upon reasonable variation of prices, but simply to check the ruinous system of cutting, which, if carried to extremes, could do no good to the trade or the cutters themselves. Some people said they should do this and do that, but Rome was not built in a day, and the P.A.T.A. was going on very well for a young institution. They had twenty or thirty chemists' associations pledged to the principles of the P.A.T.A. The organisation benefited not only those in the Association, but those who were outside, and it was high time that those outside came in and joined them. There was another pleasing feature in the Association. Before the advent of the drug store cutter, there was a gentleman who was called the omnivorous grocer, whom the chemist looked upon with some fear. But the grocer, clear hard-headed man as he was, when the matter was explained to him by the clear hard-headed Mr. Jones, that grocer, who was supposed to know so much about business, had grasped the principle of the P.A.T.A., that there was no use in working for nothing, and grocers had joined the army which Mr. Jones had enrolled; and he gave Mr. Jones great credit for that work.

Mr. Glyn-Jones, who was received with cheers, said the success of the Association was due mainly to the fact that they were fighting a just cause. It was also due to the fact that they had now around them a number of men who, urged by dire necessity into combination for the purposes of trade defence, were thoroughly in earnest in the matter, and who were determined to allow no stone to go unturned by way of securing what they considered to be their right, viz., that they should be adequately and fairly paid for the work they did, both for the proprietors and the public. It was always the case that someone or another figured somewhat prominently in a movement of that character, but they knew that all the solid work was done behind the scenes, and the success of the P.A.T.A. was due in one respect to the very hearty support they had received in the early stages from the members of the wholesale section. He would not for one moment argue that they were entirely disinterested in the support of the Association, and had that been so his faith in mankind would not be sufficient to justify him in thinking that they would be sure of their continued support. But it was because he felt strongly that the matter affected all sections of the trade—it was because he knew that the interests of the manufacturers and wholesalers and the retailers were all bound up together—that he felt sure they would achieve their end. What he had always felt—and what grocers and chemists felt—was that if they as commercial men were to be successful they should know what was the market value, not only of their services, but of the goods they sold. They all recognised that the public would not be willing to pay them a high rate of profit for the goods which they could get cheaper from other tradesmen. He thought they should distinguish between the cutter from choice and the man who had to cut from compulsion. Men outside the trade were selling goods at a ruinous price, and it was to secure the market value for their goods that the Association was started, in order that the trader might secure from the public a fair remuneration for the work he was doing. Still, everybody bought in the cheapest market, and he did not blame the public for buying goods where they could get them cheapest. At the present time they were all on one level without a profit. He maintained they might just as well be on a level with a profit. The man who went into a town and thought he could monopolise the trade of the district by cutting certain goods made a great mistake. There was a time when it was thought *infra dig.* to meet that competition; but they knew now that if a cutter went into a district he would be met, and the traders in the town would come down to his level. Some people argued that the members of the P.A.T.A. were anxious to join for extravagant prices, but he maintained that to a photographer or chemist who did not turn over as many shillings in the week as the grocer did pounds, a profit of 20 or 25 per cent. was not exorbitant. He had hoped that Mr. Kline, of Philadelphia, would be there that evening to tell them of the struggle they had had in the United States on the subject. If they had had to fight trades; if they had had to fight the grocers he would not have had much hope of the success of the chemists, but he could not understand anyone considering grocers such bad business men that they wanted to work for nothing. The grocers were anxious to secure a profit, and if they wanted evidence of that they had only to look to the proceedings of the Federation meeting at Liverpool. The Federation comprised delegates from nearly every important town in the country, and at Liverpool they had something like 400 or 500 representative grocers. Before the gathering the plan had been threshed out by the various associations, and what happened? By an overwhelming majority those gentleman whom Mr. Wilson called hard-headed business men came to the conclusion that the plan afforded the best project for preventing suicidal cutting, and they told him they were prepared to give the Association their moral support in forming a section to deal with grocery articles. If anyone thought the Association was composed of nothing but unbusiness-like chemists, let them disabuse their minds of that at once. The Association had secured the support of the Grocers' Federation, and the members desired to deal honestly with the public, and with the manufacturer—for he maintained that those who were cutters were not dealing honestly with the traders or with the public. He believed that with the support of the traders the Association would become one of the largest and most successful organisations this country or any other country had ever seen.

Mr. John Moss proposed "The Visitors," and Mr. G. A. Champion, President of the Natal Board of Pharmacy, in responding, said that in the unsophisticated colony of Natal they had no P.A.T.A., and he hoped it would be a long time before they would need any such organisation.

Mr. Alderman Gadd, J.P., of Exeter, submitted "The Ladies," and Mr. A. Tebbutt responded in a very happily conceived speech.

Mr. Charles Sanger proposed "The Chairman and Officers of the Association," and said the success which had attended the Association showed the energy of their recruiting officers and the local secretaries.

The Chairman, in reply, said he could not understand why the majority of the traders concerned at the present did not rally round the Association. He was glad to hear that the strength of the Association was 2500 members, or more. Mr. Glyn-Jones had done very hard work indeed for them, and the prosperity of the Association depended almost entirely upon him. A great deal had been said in certain trade journals in which they seemed to be attacked for their association with the grocers; but he did not think there was any harm in co-operating with the grocery trade. They had associated themselves for the purpose of trying to improve their position, and surely the position of the trade at the present time was most lamentable; it had got down as low as it possibly could when customers came and dictated to them as to what prices they should sell their articles. He hoped they would not attempt to do too much on their subscription of 5*s.*, for that was the cause of the collapse of the old Protection Association some years ago.

Mr. G. R. Barclay also responded briefly to the toast.

EXTRACTS FROM CONSULAR REPORTS.

The Production of Castor Oil is looked upon as a probable future industry in China. Last year there was an export of 580,000 lbs. of castor oil quoted in the Customs returns at the equivalent of about 1⅓*d.* per lb. At present it is a crude unrefined oil expressed by primitive machinery in the interior, and is utilised as a lubricant on board steamers.

Turkish Opium Trade.—About 900 cases of opium, each of 140 lbs., were shipped during 1896 from Baghdad to Hong Kong and Singapore, prices ranging from 75 l.T. to 80 l.T. (about £70 to £75) per case, but towards the end of the year, owing to the fall in Hong Kong and London, prices reached as low as 60 l.T. (about £55).

Essence of Orange Leaves, or "essence de petit grain" is manufactured at Yaguaron (South America) a village situated about twelve miles from the railway. It is chiefly exported to France, where it fetches 120 francs per kilo.

Syrian Oil was formerly an important article of export from Beyrout, but since the opening of the Suez Canal, which facilitated the transport of olive oil from the far East, the demand for the Syrian produce has fallen off. The price of native oil varies from 2*d.* to 2½*d.* per lb., that of imported oil from 2½*d.* to 4*d.*

LETTERS TO THE EDITOR.

Pharmaceutical Ethics.

Sir,—A lively hope that the Journal might open its pages to a broader and deeper consideration of this all-important question than the Conference meeting could allow, withheld me from making comment on Mr. Leo Atkinson's paper when delivered here. It would have a great influence for good if the Conference adopted, as part of its proceedings, consideration of such general questions bearing on the position of pharmacy, and sought to crystallise a policy from the discussion. No better centre than Glasgow could have been chosen for the section of ethics given, nor could a better exposition have been made, and—we are as we were. Ixion bound to the wheel endured no greater sense of restraint or feeling of impotence, but my duty is clear. Since last Council Election my mind has been much exercised in regard to this matter. A feeling of fear that Mr. Atkinson fairly reflected the mind of the Council of the Society, and virtually showed the scope of its intentions in regard to the immediate future of pharmacy and the policy to be pursued preys upon me so much that to remain silent would be disloyal to the Society and false to the more important interests of British pharmacy in general. During the nine years I have been in business I have acted up to Mr. Atkinson's ideal. The result is nearly enough disastrous to myself, but that is nothing ; it is futile as a means of elevating or educating public opinion or even influencing it to an appreciable extent. The trend of medical practice is against it ; the dominant spirit of the age is against it. To adopt it as a business factor necessitates a pretentious style and ostentatious display, which practically obviate the exercise of ethics, at least consciously, and take away any self-assumed merit. Moreover, no man has a right to say to another in business you ought not to do this or that, much less, you shall not. As it applies to the sale of nostrums "to provide perfect health and happy old age for 1*s.* 1½*d.* the box or bottle," the most simple and salutary mode of dealing is to let the public find out their worth or worthlessness to its heart's content so long as the law relating to medicine stamp duty remains as it is.

But pharmaceutical ethics applies as much to the duty the Council owes to the general body as to that of the individual towards his craft and the public ; and there is more need to discuss it in that higher altitude than in the mud puddles about our feet. To begin with, the present condition of pharmacy is unsatisfactory, the future is by no means assured or assuring. Education, the salve to be applied to ameliorate the strain, is a good thing in itself, but of no service to the pharmacists now in business ; and three years must pass before it begins to operate. Meanwhile, does the Council expect to rest and be thankful ? Parliament in the making of laws has no ethics and no morality, nothing save expediency. Our late President told us in Glasgow that Parliament was averse to granting monopolies. That in a general way is all right, but in the Pharmacy Acts it professes to have given us a monopoly, necessary in the interests of the whole community. Without that implied monopoly there would have been no Pharmacy Act, and if it is not effectually under the control of the Society the whole Act is vitiated. That is the true position, and until this vitiation is removed the Society cannot consistently ask for higher ethical and educational tone in the ranks of pharmacy. It is the duty of the Council to make such representation to Parliament, and if the absence of the word "persons" in the Act is all that is wrong a determined effort to have the missing word inserted ought to be instigated by the Council. Until this is done no betterment in the position of pharmacy can be experienced, and the longer it is left undone it will be the worse. In making such an effort every registered chemist who has a body to be kicked and a soul to be damned would support the Society. Shall we lift our eyes to the Hills and get no aid ? Not if I read the President of the Society aright. If we cannot find firmness of principle and strong endeavour in our high places, alas for the future of pharmacy, alas for pharmaceutical ethics.

Glasgow, August 17, 1897. Alex. Laing.

On the Naming of Alkaloidal Salts.

Sir,—In your editorial on "Pharmacopœia Topics," July 3, you take exception to a suggestion made by the writer to apostrophise such terms as "hydrochloride" and "hydrosulphate" to "'chloride" and "'sulphate." You agree with Dr. Dohme in his opposition to the use of the apostrophe, but you do not say he contends that a term like quinine sulphate is incorrect and should be quinine hydrosulphate—the hydrogen of the combining acid being retained in the case of oxyacid, as well as hydracid, alkaloidal salts. The writer believes Dr. Dohme's view to be perfectly correct from the standpoint of accuracy and consistency, but feels sure that this accurate terminology will not be accepted in practical nomenclature. It was, with a view of being both consistent and practical, that the apostrophe was proposed. As you will see by reading the letters of Drs. Oldberg and Greene, they go further than the writer and disregard the unreplaced hydrogen entirely, favouring contraction to chloride and sulphate. The latter has always been used, why not the former ? It is the great confusion we have now, which we are trying to remedy. You will doubtless admit that the greatest danger from contractions is in the prescription. At present many if not most physicians in this country, when writing for the hydrochloride of an alkaloid, use the abbreviation "mur." or "hydrochlor." Is not 'chloride a far clearer way of writing hydrochloride ? The salt is certainly just as much a chloride as quinine sulphate is a sulphate. Could any one fail to understand 'chloride ? We have abbreviations to contend with anyway, why not cut off the least important end of the word ? It is claimed that 'chloride means more than "hydrochlor." and is more easily written. The writer started out to argue for the adoption by pharmacy of the nomenclature of modern chemistry. He was at once met by the argument that terms like hydrochloride required such terms as hydrosulphate, hydronitrate, etc., for consistency. It was to meet this objection that the apostrophe was suggested.

East Orange, N. J., August 9, 1897. S. W. Williams.

*** We quite see Mr. Williams' point, but fail to realise that the apostrophe could be conveniently written. No difficulty is experienced on this side of the water in writing the word in full. [*Ed. Ph. J.*]

The Presidential Address at Glasgow.

Sir,—One thing I know, whereas I was blind now I see. One thing I have learned through a perusal last week of the letter of your correspondent "S. G.," and that is that "education will not lead to ignorance." "The panacea most relied on for the uplifting of pharmacy has been 'education.' This is the right keynote and the best path to take ; whether it will lead to financial betterment or to glory I am unable to predict, but one thing certain, it will not lead to ignorance." He at once transforms education into a right keynote and a best path—which is a capital piece of legerdemain. "It is urged that a more thorough grounding." He is not content with it being thorough seemingly. "Many imagine that the great corner-stone to look forward to is dispensing." Is it usual to look forward to a corner-stone ? "The looking forward to this branch of the business is leaning on a broken reed." So looking forward is leaning on. "Sir Malcolm Morris said the chief progress made in medicine during Her Majesty's reign was to teach people to do without it." How can "to teach" be a "progress" ? "The medical student has now to devote two more years . . . . . to the neglect of medicine." Strange ! "We see all around us factory-made medicine. Is the future pharmacist to be merely the purveyor of these medicaments, or where is he to look for help ?" How beautifully "where" fits in. Selling quack medicines is seemingly the pharmacist's only alternative to starvation. "Matters pharmaceutical are as bad in France as in England. I was speaking to a friend last week who has just come from there" (but where ?), "and I am told the drug-store man is in full swing, so for once they do not manage these things better in France than in England." Let Frenchmen be thankful if it does not occur "for twice." After this your correspondent races off in a gallop of grandiloquence. But if he would get a firm hold of the reins and pull the curb tightly on the jaw of his educational abilities, the running would be somewhat steadier. "The old order changeth." "The pharmacist, like other men, must recognise this and adapt himself to the altered circumstances," says S. G., and continues, "Nothing will help so much as a sound education in his art. The Society might help him by a wider range of teaching, *i.e.*, bacteriology, hygiene, photography, sanitation, disinfection, etc." The grammatical construction of "teaching" with "*i.e.*, bacteriology," is simply wretched. "Why should not the pharmacist in the coming century be the man of the hour ? I see no insuperable difficulty." Neither do I, except in point of time. "Who so likely as he to know about these matters, materia medica, chemistry, analysis, electricity, bacteriology, hygiene, photography, sanitation, disinfection, etc. ? Is there no scope here for

him? I believe there is." And so do I. I am inclined to believe there is greater scope than he wants or is likely to want. I, in fact, believe that students would be highly grateful if the present scope were greatly lessened. "One word more. Examine your man and have done with him. When he is qualified let him be qualified." At which remarks I imagine I can hear students all over the land applauding vociferously, and shouting with one accord, "Great is Diana of the Ephesians."

August 21, 1896. T. H. (107/21).

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

Weight of Seed and Bract.—The seed and bract together weigh 0·0145 gramme; the seed alone 0·0130 gramme, and the bract alone 0·0015 gramme. [*Reply to* Student.—107/4.]

Leaf.—Apparently *Plantago major*. What is the ointment used for? Thanks for your expression of appreciation of the Students' Page. [*Reply to* Young Student.—107/25.]

Botanical Works.—Read Kerner and Oliver's book for a general view of the subject, and De Bary's and Van Tieghem's works for the special points you refer to. [*Reply to* Advanced.—106/36.]

Biblical Materia Medica.—See Cassell's 'Dictionary of the Bible,' and J. Smith's 'Biblical Plants.' Southall's 'Biblical Herbarium' may also be of use to you. [*Reply to* F. B.—107/7.]

Botanical Specimens.—1. Probably *Lastrea spinulosa*, but it is impossible to say definitely without seeing the base of the rachis. 2. May be *Cardamine pratensis*, but we cannot judge from the leaf alone. [*Reply to* A. W. H.—107/32.]

Botanical.—1. *Agrimonia eupatoria*; 2. *Circæa lutetiana*; 3. *Cuscuta epithymum*; 4. *Epilobium angustifolium*; 5. *Melampyrum pratense*; 6. *Eupatorium cannabinum*. Please note that fragments of inflorescence without stem leaves are insufficient for correct identification. [*Reply to* Babs.—105/36.]

Ointment for Hæmorrhoids.—This contains about 0·5 per cent. of lead acetate. Probably by mixing 4 parts of spermaceti ointment and 1 part of lead acetate ointment B.P. you will get a product closely resembling sample. [*Reply to* B. and F.—107/3.]

London University Examinations.—You will find all the information you require on these, together with copies of the questions set at the last examinations, in the Calendar of the University of London. This you can see in any public library. [*Reply to* Nous.—107/11.]

Dental "Wax."—Take of French chalk, 14 parts; gum kauri, 8 parts; and stearine, 4 parts. Melt the stearine on a water bath, then add the finely powdered gum kauri in small quantities. When dissolved, sift in slowly the French chalk, and stir constantly till cold. The composition can be coloured with carmine if desired. [*Reply to* G. H. W.—107/12.]

Colour Reaction of Supposed Opium Alkaloid.—We cannot trace the colour reaction you obtain. The alkaloidal crystalline precipitate you get from the treament of the tincture of opium marc was probably a little morphine. It may be that the red colour you get is due to an impurity, an adhering trace of meconic acid, reacting with a trace of an iron salt. There is often enough iron in a common filter paper to give a pink tint with meconic acid, as you will notice in making the official *Liquor morphinæ bimeconatis*. [*Reply to* R. B.—106/18.]

Charge for Analysis.—Certainly you are entitled to charge for work done. [*Reply to* A. P. S.—107/26.]

To Remove Superfluous Hair.—Depilatory pastes are not to be recommended, as they are all more or less caustic, and the hair grows again after a time. The most effectual means of removing hair is by electrocautery (see reply to Pater, *P. J.* [4], v., 164). You may bleach dark hairs by applying peroxide of hydrogen twice a day until they are perfectly white; this is quite harmless. [*Reply to* Lady.—107/22.]

Colour Food for Birds.—The chief ingredient in this is "bird pepper," the non-pungent variety of capsicum, which has an intensely red, oily pericarp. You can obtain this from any wholesale seed merchant. Some of these powders contain, as well, a little turmeric, bread crumb, and, some of them, sugar. It has been found that almost any colour which will dissolve in oil, if given in that solution, will permeate the feathers, and even the bones and the eggs of birds constantly fed with food containing it. [*Reply to* D. F. H.—107/28.]

Soft Soap for Obstetric Use.—In some cases probably the use of carbolated soft soap would not be advisable, as it is found that the mucous membrane, as well as the epidermal tissue absorbs an active drug from a soap basis much more rapidly than from an unctuous one, and, of course, with phenol and analogous bodies, that is not desirable. Lanolin would probably answer better in most cases. In some instances soap would be extremely beneficial, in others harmful, and these can only be determined by a qualified obstetrician. It is for him to decide upon the use of such a vehicle, not for the pharmacist. [*Reply to* J. B. M.—107/27.]

Lady Dispensers.—There is a very good opening for qualified lady dispensers. Many of the provincial hospitals and some of the smaller London ones employ women pharmacists in that capacity. Book-keeping will be a useful accomplishment in such a post, but, except for your own convenience, shorthand will not probably increase your value. An advertisement would probably bring an answer to your requirements. Salaries vary with the actual qualifications of the applicant, but compare favourably with those obtained by ladies in responsible positions in other occupations. [*Reply to* English Girl.—106/20.]

Perspiring Hands.—Probably no local application will be of much use to remedy this, since the perspiration is the effect of some nervous derangement. A solution of chromic acid, 5 grains to the ounce, used several times a day may help to dry the palms, or the following:—Ammonium chloride, one drachm; tincture of belladonna, 4 drachms; spirit of camphor, 2 drachms; distilled water to 4 fluid ounces. Rub over the hands with a little of this and allow to dry on, but tonic treatment, plenty of cold water, including a cold spinal douche every morning, and brisk outdoor exercise will do more good. Gloves should not be worn at all—at least until cured, and then only woollen ones should be used. [*Reply to* H. W. C.—106/41.]

Thick Cod-Liver Oil Emulsion.—You must use more acacia to make a thick emulsion. The following will probably answer your purpose. Dissolve calcis hypophosph., 60 grains; sod. hypophosph., 120 grains; potass. hypophosph., 120 grains, in 7 ozs. of water. Put 4 ozs. of powdered gum acacia in a mortar, rub down smooth with 10 fl. ozs. of oil, add 3 drachms of tincture of quillaia, B.P.C., and 40 minims of chloroform, then add the aqueous solution in one lot, and mix thoroughly until a perfect emulsion results. You can flavour this with vanilla or a trace of gaultheria oil, or by substituting a little cherry laurel water for some of the water used. Soluble saccharin will give sweetness if this is desired. [*Reply to* J. S.—105/32.]

OBITUARY.

Barritt.—On August 17, Henry Barritt, Chemist and Druggist, Colchester. Aged 61. Mr. Barritt had been a member of the Pharmaceutical Society since 1869.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Bird, Branson, Butler, Clark, Cowley, Del Ellsdon, Gardner, Gibbs, Goldby, Howell, Hudson, Hulme, McVitae, Moss, Naylor, Perrédès, Raimes, Russell, Saul, Smith and Young.

STROPHANTHUS NICHOLSONI—A NEW SPECIES.

BY E. M. HOLMES, F.L.S.,
Curator of the Museums of the Pharmaceutical Society.

For some years past I have been endeavouring to obtain herbarium specimens in flower and fruit of the species yielding the kombe seed of commerce, and the "white woolly" *Strophanthus* seeds imported from the same district, but hitherto without success. Dr. T. G. Nicholson, who has lately returned from Central Africa, kindly promised to endeavour to obtain specimens, and has brought back flowers and fruit of a *Strophanthus*, the seeds of which appear to be identical with those of the "white woolly" *Strophanthus*. The plant proves to be a new species hitherto undescribed. Dr. Nicholson has given me the following description of the plant:—It is a small bush or shrub about 3 or 4 feet high, having the habit of growth of the flowering currant (*Ribes sanguineum*, Pursh.), but the main branches curve slightly outwards, and the slender twigs are patent at an obtuse angle.

It grows in alluvial plains at the base of granite hills, intersected by quartz veins. These plains are at an altitude of about 2200 feet above sea-level. The ground is sodden from the middle of November until the beginning of April. It is sparsely covered with bush, and there is very little shade where the *Strophanthus* grows. The temperature averages about 105° F. in the sun and 50° F. in the night. The specimens in flower were gathered at the end of October. There are the pods of the previous year opening on the bush at the same time that the flowers are in blossom, and in December the flowers are over and the seeds scattered. At the time the plant flowers there are no leaves formed or they are only very slightly developed.

STROPHANTHUS NICHOLSONI, N.SP.

(*a*) Leafy twig with leaves undeveloped; (*b*) leafless inflorescence; (*c*) unopened flower; (*d*) calyx; (*e*) corolla with the tails removed; (*f*) anthers; (*g*) seed.
(*a*, *b*, *c*, *g*) About two-thirds natural size; (*d*, *e*, *f*) enlarged.

The general colour of the flowers is of a pink hue with a tinge of dusky fawn. The throat of the corolla is yellow with dark purple lines and spots. The thread-like corolla segments or "streamers" are of a pinkish purple. The whole corolla in withering fades to yellow, but does not readily fall off. The fruit is of a purplish plum colour, and marked with linear oval lenticels some of which are nearly 1 C.m. long. The district in which he found the plant extends from Lusengasia in the Senga country in a south-west direction to the Loangwa river.

The Ozimba natives would not admit that they used it as an arrow poison, but stated that it was so used by the Chipéta people. The plant is most nearly allied to *S. schuchardti*, Pax., and may be characterised by the following description:—

Strophanthus nicholsoni, n.sp.—Frutex dumosus, ramis griseo-fuscis, vetustis glabris, novellis dense tomentosis; folia (juniora solum visa, ad 1 Cm. longa), brevissime petiolata, crassa, ovata, basi cordata, obtusa, utraque facie velutina, grisea, nervis inconspicuis; cymæ secus ramos denudatos, ramulum abbreviatum terminantes, abortu 1-3 floræ, pedunculo calycem subæquante, bracteis *anguste linearibus*; calycis segmenta erecta, linearia, *inequalia*, acuta, duo latiora, diametro millimetrum æquantes, corollæ tubo *paulo breviora*; corolla *tota pubescens*, fauce interno tenuissime pubescente, tubo inferne cylindrico, fauce dilatato, lobis lanceolatis ad 15 Mm., in caudam elongatam 6-10 Cm., productis; faucis *squamæ tenuissime pubescentes*, parvæ, ad 2 Mm. longæ, lanceolatæ, obtusæ; antheræ sagittatæ filamentis glabris; ovarium hirsutum; fructus purpureus lenticellosus, 14-27 Cm. longus; semina 1½ Cm. longa 5 Mm. lata, dense velutina, pallide brunneo-alba, aristæ parte nuda 4½ Cm., comosa 6 Cm. longa. The main branches are about 1½ Cm. thick, with slightly swollen internodes, at a distance of about 4-7 Cm., dull purplish-brown with a glaucous surface, but strongly marked with elongated brownish, narrow lenticels. The young leafy twigs and the pedicels and bracts are densely velvety. The anthers have a projecting appendage or rib at the back near the base.

This species resembles *S. sarmentosus* in flowering before the leaves appear, but differs in its erect bushy habit, small flowers and more slender flowering branches. From *S. schuchardti* it differs in the lateral leafless inflorescence, the linear bracts and unequal calyx segments, in the latter nearly equalling the corolla tube, in the whole of the corolla being pubescent, in the much longer tails to the segments of the corolla, and in the pubescent glands. With sulphuric acid the section of the seeds gives the same rose colour as the "white woolly" *Strophanthus* seed of commerce. The velvety coating of the seeds hides the base of the awn, and, like that of the "white woolly" *Strophanthus* seeds, the hairs look white when their bases are presented to the light, and brownish-fawn colour when their apices are turned to the light. The average measurements of the seeds are the same.

The Origin of an Old Chemical Factory.

HOWARDS AND SONS.

The circumstances under which the manufacture of chemicals for pharmaceutical purposes was originally undertaken as an accessory branch of the Plough Court Pharmacy have already been briefly mentioned in the recently-published history of that establishment, and it was there stated that, so far as could be gathered from incidental references in the diary of William Allen, these manufacturing operations appear to have been commenced about the year 1795, during, or shortly before, the period when Allen was in partnership with Samuel Mildred.

Some confirmation of this inference is furnished by the interesting autobiography of Joseph Jewell, one of the principal participators in the work.

This little book of seventy-four pages contains a narrative in verse of the experiences of the author in various capacities, first as farmer's boy, ostler, shoemaker, carter and porter, until at the age of twenty-eight, about the year 1791, he entered the employ of a chemist and became a "working porter to carry burdens with content, or bang a metal mortar." Joseph Gurney Bevan was his employer. The Plough Court Pharmacy was the scene of Jewell's labours, and while thus engaged—probably in the laboratory of the establishment—Jewell describes how from seeing "two chemists fail and spoil what they were roasting," he conceived the idea that he "could make the thing which they had spoiled in making." Having obtained his master's consent that he should try his hand, he began to work the operation and "to roast away with earnest expectation" with the fortunate result of being told that his master had never seen the things so neatly finished and that he had earned his wages.

The success thus achieved was the turn in the tide of Jewell's affairs which led him on to fortune, for so much was thought of his capacity for carrying out chemical work that his master declared he should no longer remain "his plodding porter," and provided him with chemical books into which he could look when he wanted instruction. Whether the master he refers to was Joseph Gurney Bevan cannot well be ascertained, but Jewell narrates that he went on for "sixteen months" performing operations which were presumably attended with satisfactory results, for at the end of that period he shrewdly "thought the time was come to have some new relations." "His worthy master" acquiescing in that view suggested that Jewell should find a place that he "could make convenient" for the manufacture of some things which the firm then "bought ready finished." So far as dates can be ascertained from Jewell's narrative, this arrangement appears to have been made in 1795, when the Plough Court business was in the hands of Samuel Mildred, and it was carried out by starting operations at Plaistow, for Jewell records that after some time spent in searching for a suitable place, he found "a decent home, with a small yard and washing-room of twelve feet square dimensions; and there he, with his 'hands and head,' prepared mercurials, white and red, according to intention."

In this occupation Jewell appears to have been prosperous, as he mentions his marriage as having taken place shortly afterwards, and that he considered himself "settled down for life" if he continued careful.

Soon after Jewell's marriage, and when he had settled down to the "twofold plan of serving self and master," so that he "could not get on faster," a change took place in the Plough Court business, of which he says, "my master sold his trade and I had two new masters made who readily employed me." As to time, the change here referred to coincides with the retirement of Samuel Mildred in 1797 and the partnership then entered into between William Allen and Luke Howard. Working with these "two new masters," Jewell found that in consequence of their trade "being much enlarged," he was "with labour overcharged, which weakened and annoyed" him, but after a time Jewell's "young masters" thought that he had sufficiently shown himself a "progressor" to justify their proposing the construction of "a large subliming room," and generally the carrying out of the manufacturing work on a very considerably larger scale.

From Jewell's account of what then took place it may be inferred that the extension of which he speaks was the removal from Plaistow to Stratford, and that was about six or seven years after Allen and Howard became partners. He says :—

> "A spacious place they found,
> With dwelling house and building ground,
> And of the landlord took it;
> And then they bought my little trade,
> And me a humble servant made
> To go and overlook it."

At that stage of the proceedings Jewell's cautious nature appears to have been considerably alarmed at the extent to which his "young masters" went in the arrangement of the new factory, and he says: "They began to build and build, and would not to my counsel yield to make a small beginning." However, Jewell seems to have been fully sensible of the necessity of exertion on his part. Although he had only been provided with "an aide-de-camp that had not got a chemic lamp," he made the most of the man's ability to "fill a plodding station," and "made a stock of sublimate and also red precipitate to set my masters going."

Then experiments were commenced, sometimes without success, but always on a small scale so that no great loss was entailed, while there was the chance of an intelligent and observant person learning something from failure. Among the operations thus attempted the subliming of camphor and the refining of borax are especially spoken of as having proved satisfactory. Other projects followed, but Jewell complains that, with the increase of business, he had not only more men to overlook but was also hindered sometimes by their mistakes and neglect of instructions.

Jewell speaks of having been occupied in this way "for twelve long years, or rather more," when his masters agreed to part, and as the dissolution of partnership between William Allen and Luke Howard took place in 1807, this reference to the period of twelve years affords further support to the opinion that Jewell was engaged as manager of the chemical factory at Plaistow about the year 1795, while the Plough Court business was carried on by Samuel Mildred. Meanwhile Jewell had added to his store of knowledge for chemical improvement, but in his position of *employé* he was not free to use it without his master's approval.

On the dissolution of partnership between Allen and Howard, Jewell became a partner in the Stratford firm, and was then more free to put in motion his plans for improvement. He describes these as having been in the first place directed to economising the consumption of fuel, which was sometimes very wasteful. By reconstructing the furnaces he was able by the alteration to save "six fires out of ten," and by a modified setting of "the weighty iron pots" they were made to last much longer.

The invention of "hydro-calomel," for which Jewell obtained a a patent in 1807, was the next achievement, and it attracted very considerable attention at the time, besides contributing much to the growing repute of the Stratford Works. Jewell says, in regard to this process that :—

> "When some learned chemists read
> What I of my invention said,
> They thought the chemists who were dead
> Their senses had neglected."

By this improvement in the production of calomel nearly all the risk "of making men unhealthy" was removed,* and as a practical result he adds that the firm "yearly made to sell full four tons of calomel, which helped to make us wealthy." The "brilliant sublimate and sparkling red precipitate" were not less marked features of success, and the ether Jewell made "claimed nearly all the ether trade throughout the trading nation."

The success attending this last branch of the business was due to the adoption of a method of which Jewell says no one before him "knew the way to do the operation."

> "My produce proved one-fifth part more
> Than anyone obtained before
> I made my great improvement.
> And I could make in two days' time
> As much as could be made in nine
> By the old chemic movement.
> And then the acid that I took
> Would almost next to nothing look—
> One pound instead of twenty.
> And I discovered clear and plain
> That nineteen pounds were used in vain,
> And my one pound was plenty."

Among other of Jewell's productions "soda carbonate" rose high in estimation, "and was a considerable source of profit; equally successful were the "transparent camphor cakes," and the shining crystal borax "almost said that we alone well understood refining."

The last enterprise in which Jewell was engaged was the manufacture of quinine. Of this he says that when the trade began "Frenchmen got nearly all the run," and though, he adds, "they ought to have what is their own, they first the trade invented," he also began his "skill to try, and wished to rise up quite as high as any French practiser." At length, when he had succeeded in making "the thing complete," he thought "the time was fully come to yield to a successor," and then, he adds, "a young one filled my place and ran a faster quinine race than I, a slow progressor." The "young one" here referred to was John Eliot Howard, the younger son of Luke Howard, who had been at the Stratford works since 1823, and subsequently acquired a celebrity as a quinologist that is familiar to every reader of this Journal. In 1831 Jewell retired from the firm at the age of sixty-eight, wishing his successors might "never be defeated" nor ever be oppressed like him "through anxious toil and loss of rest and being salivated." He lived to a good old age, and in the preface to his autobiography published at Newbury in 1840, he says: "It is probable that a succession of men down to the end of time may in some degree benefit from what the good hand of Providence enabled me to do in simplifying some of the most pernicious chemical operations. When I first went to live at a chemist's, I think no man could have a meaner opinion of his ability to make any proficiency in the art of chemistry than I had of mine, but now I may humbly say that it is probable that no other man was ever more successful than I have been in forty years' close attention to practical chemistry."

* The essential feature of Jewell's invention consisted in bringing the vapour of calomel into contact with water vapour or steam, so that it was suddenly condensed into a very fine powder, purer, whiter, and more attenuated than that obtained by the grinding and levigation which had previously been practised. The patent was granted in the reign of George III., on November 17, 1807, to Joseph Jewell, of Stratford-le-Bow, chymist, and in the specification relating to it, No. 3081 of that year, the invention is described as "a method of preparing or reducing to an impalpable powder for medicinal use the substance commonly called or known by the name of calomel, whereby the process usually employed of levigating the same is rendered unnecessary." In the fifth edition of the 'Pharmacologia' of Dr. Paris (1822), the Patent calomel of Howard was referred to as preferable to that made according to the Pharmacopœias and affecting the system more readily, in consequence, probably, of its minute division. The French introduced into the Codex of 1818 directions for making a similar product, under the title of "murias mercurii dulcis mediante aqua subtilissime divisus, juxta methodum Josiæ Jewel," but the superiority of the preparation made in England was admitted by M. Soubeiran in papers published by him in the *Comptes rendus* and *Journal de Pharmacie* (see *Pharm. Journ.*, ii., 39, 596).

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 204.)

McLachan's test for cocaine hydrochloride. One grain of the salt is dissolved in 2 fl. ozs. of water and 2 drops of ammonia solution are added. An immediate crystalline precipitate should result.

Mark's chromo-aceto-osmic acid. Mix 7·5 parts of 2 per cent. chromic acid, 3·5 parts of water, and 1 part of glacial acetic acid. Then, to 12 parts of this mixture, add 8 parts of 1 per cent. osmic acid.

Mayer's shellac fixative. Heat powdered white shellac with crystallised carbolic acid till it dissolves, and filter the solution warm. Or, coat warm slides with a thin and even film of a moderately strong solution of brown shellac in absolute alcohol and allow to dry. The sections are arranged on the dry film and gently pressed down on it, then exposed to the vapour of ether. See Giesbrecht's method.

Maysel's Bismarck brown stain. The dye is dissolved in acetic acid, but according to Lee the solution does not give a permanent stain.

Méhu's reagent for albumin. A mixture of 1 part of phenol, 1 part of acetic acid, and 2 parts of 90 per cent. alcohol. This solution precipitates albumin in the presence of nitric acid or sodium sulphate. The best method of procedure is to add an equal volume of a saturated solution of Glauber's salt to the urine to be tested.

Melassez's solution for the preparation of Teichmann's hæmin crystals. A solution of the same specific gravity as blood (1·050-1·057), consisting of 3·75 parts of mucilage of acacia, 1·875 part of sodium sulphate, 1·03 part of sodium chloride and 100 parts of water.

Merget's test for moisture. This depends upon the use of salts which, like palladous chloride and mercurous chloride, show a different colour when moist and dry. Compare Mann's reagent.

Merget's test for the presence of mercury. A piece of gold foil upon which metallic mercury has been precipitated (*e.g.*, by means of stannous chloride from urine containing corrosive sublimate) is wrapped up first in tissue paper, and then in filter paper which has been saturated with an ammoniacal silver solution and subsequently dried. The whole is weighted down; in the presence of mercury, a brown colour will be produced in a few minutes on the inside of the filter paper. To prove the presence of mercury vapour, draw lines on filter paper by means of a glass rod moistened with an ammoniacal silver nitrate solution. These are darkened by mercury vapour.

Merkel's chromic acid and platinic chloride. Mix equal volumes of 1:400 solution of chromic acid and 1:400 solution of platinic chloride. Objects are left in this for several hours or days to harden, then washed in 50 to 70 per cent. alcohol.

Merz's test for olive oil. A portion of the oil is heated to 250° C. In the case of pure olive oil, the heated portion will appear much paler than the other.

Mesnard's reagent for identifying albumins. Glycerin containing sugar, and the fumes from concentrated hydrochloric acid.

Messinger's test for acetone. Solutions containing acetone yield iodoform when treated with iodine and caustic soda. For quantitative determinations, either the iodoform is weighed (Krämer) or the excess of iodine found by tritation (Messinger).

Metzger's reaction for cocaine. Dilute aqueous solutions of cocaine salts after acidulating with hydrochloric acid yield orange-yellow precipitates with potassium chromate.

Meyer's reaction for cod-liver oil. Pure cod-liver oil when shaken with 1/10th its volume of a mixture of nitric and sulphuric acids (1:1), is first coloured rose-red, then lemon-yellow. Other fish oils either do not show such a distinct change, or give a brownish-yellow coloration.

Meyer's salicylic vinegar. A solution of 1 part of salicylic acid in 100 parts of pale yellow pyroligneous acid (sp. gr. 1·04). For preserving various larvæ, hydræ, nematodes, etc., add 1 volume of salicylic vinegar to 10 volumes of dilute glycerin (glycerin 1 vol., water 2 vols.). For infusoria the glycerin should be more dilute, 1 to 4 of water.

Meyer's thiophene reaction. Thiophene and its homologues are coloured blue by a solution of isatin in concentrated sulphuric acid.

Mezger's reaction for cocaine. See Metzger.

* After Schneider, Altschul, Lee, Squire, Crookshank, and others.

Millian's test for linseed oil in olive oil. Mix 40·0 Gm. of olive oil with 60·0 Gm. of a 20 per cent. solution of potassium hydroxide in 70 per cent. alcohol, and heat on the water bath until the alcohol has evaporated. The resulting soap is dissolved in warm water, the fatty acids are separated out by the addition of dilute hydrochloric acid, and then dissolved in 20 C.c. of 90 per cent. alcohol. If to this solution, after heating to 90°, 2 C.c. of a 3 per cent. alcoholic silver nitrate solution be added, a brown colour will result if linseed oil be present in the olive oil.

Millian's modification of Bechi's test. See Bechi's test for cotton oil.

Millon's reagent for albumins and phenols. Dissolve mercury in an equal weight of cold fuming nitric acid (sp. gr. 1·4), gradually applying a moderate heat, and then diluting the solution obtained with two volumes of water. The reagent contains mercurous and mercuric nitrates as well as free nitric and nitrous acids. Albumins yield a brick-red precipitate with this reagent, especially after warming. Similar reactions are given by all compounds of the aromatic series that contain a single hydroxyl or methoxyl group; a second hydroxyl or a nitro group in the ring change the reaction (Nickel). Thus resorcin yields a yellow, hydroquinone an orange, pyrogallol a brown coloration. Tannin and guaiacol are coloured red, eugenol and vanillin violet. In Kintschgen-Gintl's modification of Millon's reagent, a solution of mercuric nitrate is treated with a little potassium nitrite, and the necessary quantity of nitric acid added just before using. The potassium nitrite must be freed from any carbonate it may contain by passing nitrous acid through its solution. Compare Gallois', Hoffmann's, and Plugge's reagents.

Millon's reagent for salicylic acid. A 10 per cent. solution of mercuric nitrate in dilute nitric acid. This yields an intensely red coloration with salicylic acid.

Minot's maceration method for epithelium. Macerate embryos for several days in 0·6 per cent. salt solution, containing 0·1 per cent. of thymol.

Mitrophanow's gold process for prickle-cells and intercellular canals. Wash the tail of an axolotl larva with distilled water, place for an hour in a watch-glassful of 0·25 per cent. solution of gold chloride, containing 1 drop of hydrochloric acid; wash, and reduce in a mixture of 1 part of formic acid with 6 parts of water.

Mitrophanow's maceration method for epithelium. Fix the embryo for 15 minutes in 3 per cent. nitric acid; then place for an hour in a mixture of alcohol, 1 volume, and water, 2 volumes, and finally treat with stronger alcohol for 24 hours to separate the epidermis.

Mitscherlich's reaction for phosphorus. This depends upon the luminosity of phosphorus vapour when phosphorus is distilled in the dark with a current of steam.

Mobins's macerating media. (1) Mix 1 part of sea-water with 4 to 6 parts of 0·5 per cent. solution of potassium bichromate. (2) Sea water containing 0·25 per cent. of chromic acid, 0·1 per cent. of osmic acid, and 0·1 per cent. of acetic acid. Lamellibranchiata should be macerated in (2) for several days.

Mohr's reaction for free acids, especially for hydrochloric acid in the gastric juice. The reagent is a mixture of 20 C.c. of a 10 per cent. potassium sulphocyanate solution with 5 C.c. of a 5 per cent. solution of ferric acetate. Hydrochloric acid with this reagent produces a cherry-red colour with a brownish tinge; more of the acid causes a chesnut-brown coloration. This test is also known as Rheoch's test.

Mohr's test for glucose. See Moore's test.

Moleschott's caustic potash and soda solutions. Strong solutions (35 to 50 per cent.) are applied to the tissues on slides, and the alkali neutralised by adding acetic acid before mounting. See Gage's preservative.

Moleschott and **Piso Borme's** sodium chloride and alcohol. Mix 5 volumes of 10 per cent. salt solution with 1 volume of absolute alcohol.

Molisch's reaction for carbohydrates. Shake 0·5 to 1 C.c. of the solution to be tested with 2 drops of a 15 to 20 per cent. alcoholic solution of α-naphthol or thymol. Upon the addition of a like volume of concentrated sulphuric acid, the solution is coloured violet (furfurol reaction) in the presence of carbohydrates and several other substances. Upon the addition of water, a bluish-violet precipitate is produced, which dissolves to a yellow solution in alcohol, ether, or potash lye.

Moore's anise oil imbedding process. Sections from material frozen and cut in anise oil are transferred direct into Canada balsam, without previous treatment with alcohol.

Moore's test for glucose and sugar in the urine. Upon heating glucose solutions or diabetic urine with caustic potash, a brown coloration results; after acidifying with some acid, the odour of caramel appears. This test is also known as Mohr's or Pelouze's test. Compare also Heller's test.

Moore's stain for blood. Stain for 3 minutes in an alcoholic solution of eosine (1:200), wash, and stain for 2 minutes in a 1 per cent. aqueous solution of methyl green. Red corpuscles appear red; nuclei and white corpuscles bluish green.

Morax's method. See Nicholle and Morax's method.

Mulder's test for glucose. Upon heating diabetic urine or any solution of glucose with a solution of indigo in sulphuric acid, and then carefully neutralising with sodium carbonate, the colour changes to green, then red, and finally yellow, owing to reduction of the indigo. Upon exposure to the air, the blue colour is restored. In Vogl's modification, litmus is used instead of indigo; in Neumann-Wender's test (*q.v.*) methylene blue is employed.

Mulder's xanthoprotein reaction. Upon heating any albuminous substance with concentrated nitric acid, it is partially or completely dissolved to a yellow solution. In the case of albumoses and peptones this colour is produced even in the cold. Upon supersaturating with ammonia or with fixed alkalies the colour changes to orange-yellow.

Müller's Berlin blue for injections. Precipitate a concentrated solution of Berlin blue by means of 90 per cent. alcohol. The precipitate is very finely divided, whilst the fluid is perfectly neutral and much easier to prepare than that of Beale.

Müller's test for cystin. Upon dissolving cystin (prepared from the sediment of urine) in caustic potash, diluting this solution with water, and adding sodium nitroferricyanide, a purple-violet colour is produced.

Müller's fluid for hardening. Dissolve 2 Gm. of potassium bichromate, and 1 Gm. of sodium sulphate, in 100 C.c. of water. This solution is sometimes mixed with one-third its volume of 90 per cent. alcohol, its hardening action being then much more rapid.

Müller's silver staining method. Impregnate preparations by immersion in the dark for 2 or 3 minutes in a 1 per cent. solution of silver nitrate, then add to the liquid a small quantity of 1 per cent. solution of silver iodide dissolved by the aid of a little potassium iodide. After agitation in the mixture, wash the preparations with distilled water, and expose to light for 2 days in a 1 per cent. solution of silver nitrate.

Munson's chloral hydrate solution. A 1 per cent. solution in water.

Musculus's reagent for urea (ferment-paper). Decomposing urine is filtered, the filter washed, coloured with turmeric, and preserved as test-paper. When added to solutions of urea, the attached ferment causes a splitting up of the urea, and the resulting ammonium carbonate causes the turmeric colouring matter to turn brown.

Neelsen's carbol fuchsine for identifying tubercle bacilli in the sputum. This is prepared by adding a concentrated alcoholic fuchsine solution to a 5 per cent. aqueous solution of carbolic acid (5 Gm. of crystallised carbolic acid dissolved in 100 C.c. of water and 1 Gm. of fuchsine dissolved in 10 Gm. alcohol added). Ehrlich's and Ziel's carbolfuchsine solutions have a similar composition.

Neelsen's method and solution. See Zichl-Neelsen's method and solution.

Neisser's staining method for spore-bearing bacilli. Cover-glass preparations are immersed for 20 minutes in fuchsine aniline water (concentrated alcoholic solution of fuchsine, 11 C.c.; absolute alcohol, 10 C.c.; aniline water, 100 C.c.; then heat to 80° or 90° C.; next rinse in water, alcohol, or weak acid, according to the nature of the bacilli, counterstain with aqueous solution of methylene blue, rinse in water, dry and mount in balsam). The spores are stained red and the rest of the bacilli blue.

Nessler's reagent for aldehyde. Aldehydes when treated with Nessler's ammonia reagent (*q.s.*) or with a solution of potassium mercuric iodide and baryta water, yield brownish-black precipitates, which differ from the precipitates caused by the same reagents in ammonia solutions, by being insoluble in potassium cyanide.

Nessler's reagent for ammonium salts. This is an alkaline solution of mercuric chloride and potassium iodide. With ammonia as well as with ammonium salts it causes a yellow to reddish-brown coloration or precipitate. The reagent is prepared according to various formulæ, of which the following are typical:—(1) Dissolve 50 Gm. of potassium iodide in 50 C.c. of hot water, and add con-

centrated mercuric chloride solution (20 to 25 Gm. of mercuric chloride) until a permanent precipitate appears. After filtering add 150 Gm. of potassium hydroxide dissolved in 300 C.c. of water, and dilute the whole to 1 litre. Now add 5 C.c. more of the mercuric chloride solution, allow the resulting precipitate to settle, and decant the clear liquid (Kubel). (2) Dissolve 2 Gm. of potassium iodide in 5 Gm. of water; add 4 Gm. of mercuric chloride, or so much that upon warming a little of the precipitate remains undissolved. After cooling, dilute with 20 Gm. of water, filter, and add 30 C.c. of a solution of 1 part of potassium hydroxide in 2 parts of water. (Ludwig, 'Medicin. Chemie.')

Nessler's reagent for wine pigments. A solution of 7 parts of alum and 10 parts of sodium acetate in 100 parts of water.

Nesteroffsky's gold process. Tissues impregnated with gold are treated with a drop of ammonium sulphydrate solution and the reduction finished with glycerin.

Neubauer's test for biliary acids. This is a modification of Pettenkofer's reaction. A few drops of urine are evaporated to dryness on a water bath, a drop of sugar solution (1 : 500) and a drop of concentrated sulphuric acid are added, and the whole is heated on the water bath. If biliary acids are present, a violet-red colour appears at the edge.

Neubauer's test for chloroform in the urine. A current of air is passed through the urine in question, then through a red-hot porcelain tube, and finally through a solution of silver nitrate. If chloroform be present in the urine, a precipitate of silver chloride is formed.

Neumann-Wender's alkaloid reagent. This is furfurol-sulphuric acid (5 drops of furfurol in 10 C.c. of pure concentrated sulphuric acid). See Weppen's veratrine reaction.

Neumann-Wender's test for grape sugar in the urine. Treat 1 C.c. of diluted urine (1 part of urine to 10 parts of water) with 1 C.c. each of methylene blue solution (1 : 1000) and normal potassium hydroxide solution and boiled for a minute. If the solution should be completely decolorised, sugar was present in the urine. Compare Mulder's test.

Nias's method for cleaning slides and covers. Boil with solution of washing soda, and rinse.

Nicholle and Morax's method for staining flagella. Dry the films on cover-glasses without fixing in the flame, cover with mordant, heat for about 10 seconds, and when steam rises shake the mordant off and rinse with water. Repeat this process 3 or 4 times, stain with Ziehl-Neelsen's solution, then hold over a flame once or twice for about 15 seconds, and wash.

Nickel's colour reactions of carbon compounds. Compare *Zeitsch. f. analy. Chem.*, 1889, p. 244; also see under Millon's reagent.

Nickel's test for mineral acids in the presence of organic acids. This is based on the fact that only in the presence of mineral acids is wood stained by phloroglucin. If 0·5 per cent. of hydrochloric acid be present in vinegar, upon adding phloroglucin and a piece of pine wood or wood-pulp paper, the latter is distinctly stained upon boiling the solution.

Niessing's fixing solutions. These are modifications of Hermann's mixture, which see. (1) Mix 25 volumes of 10 per cent. platinic chloride solution, 20 of 2 per cent. osmic acid, 5 of glacial acetic acid, and 50 of distilled water. (2) This is the same, except that the distilled water is replaced by saturated aqueous solution of mercuric chloride.

Nikiforow's clearing mixture for celloidin sections. Equal parts of 95 per cent. alcohol and chloroform.

Nissen's gentian violet staining process. This is the same as Bizzozero's method, except that the treatment with chromic acid is omitted.

Nissl's fuchsine stain for nerve cells. (1) Fresh material in pieces measuring 1 C.c. are hardened in a "chromic solution in 70 per cent. alcohol" for 2 days, then transfered to absolute alcohol for 5 days, and afterwards cut. Stain the sections singly in a saturated solution of fuchsine, warming in a deep watch-glass until vapours begin to be given off. Next plunge the section into absolute alcohol for 1 or 2 minutes, then place it on a slide, flood with clove oil, and when no more colour is given off, drain and mount in balsam.

Nissl's methylene blue method. Sections of fresh material hardened in 96 per cent. alcohol, are warmed to 65° or 70° C. in a watch-glass containing a solution of methylene blue, 3·75 parts, and Venice soap, 1·75 part, in distilled water, 1000 parts. When bubbles are given off place the sections in a mixture of 10 parts of aniline oil, with 90 parts of 96 per cent. alcohol until colour is no longer given off. Then dry on a slide with filter paper, clear with cajeput oil, again dry, and finally treat with a few drops of benzin, and mount in benzin colophonium.

Nivière and **Hubert's** test for fluorine in wine. Render the wine slightly alkaline with ammonium carbonate and add calcium chloride to precipitate any fluorides present as calcium fluoride. After heating the incinerated residues with silicic and sulphuric acids, fluorine is identified in the usual manner as silicium fluoride.

Noll's corrosion method. Pieces of sponge are treated with eau de Javelle until all soft parts are dissolved, then cautiously treated with acetic acid to remove all precipitated matter; after passing through successive alcohols and through clove oil, mount in balsam.

Noll's salicylic vinegar and gum medium. Mix equal volumes of Meyer's salicylic vinegar (2) and Farrant's medium. This mixture never becomes turbid and does not dry up. It serves well for delicate Crustacea and their larva, also for hardened and stained preparations of Hydroids, small Medusæ and other Cœlenterates.

Noll's reagent. A solution of sodium hypochlorite.

Nylander's reagent for glucose. Dissolve 2 Gm. of bismuth subnitrate and 4 Gm. of Rochelle salt in 100 Gm. of an 8 per cent. solution of caustic soda. To 10 parts of the solution to be tested (diabetic urine) add 1 part of the reagent, and boil. A darkening of the liquid due to reduction of the bismuth salt indicates glucose. This solution is also known as Almén's solution.

(To be continued.)

NOTES AND FORMULÆ.

(Specially abstracted for the Pharmaceutical Journal.)

DETERMINATION OF URIC ACID.—In the Goulstonian lecture recently delivered by Dr. Luff, he stated that of all the published methods for this purpose, that of Gowland Hopkins is by far the most reliable. It consists in saturating the urine with powdered ammonium chloride, allowing to stand for two hours with occasional stirring, and then filtering. The precipitated ammonium urate is then washed three or four times with saturated ammonium chloride solution, washed off the filter with a jet of hot water, and heated just to boiling with excess of hydrochloric acid. The beaker and contents are allowed to stand in the cold for two hours. When the uric acid separates completely, it is collected and washed with cold distilled water, a correction of 1 milligramme for every 15 C.c. of filtrate should be added to the result. The uric acid is washed off the filter, warmed with sodium carbonate until dissolved, then transferred to a flask and mixed with 20 C.c. pure H_2SO_4. The mixture is titrated warm with $\frac{N}{20}K_2Mn_2O_8$ solution, 1 C.c. of which = 0·00375 gramme uric acid. —*B.M.J.*, 1, 97/771.

DRINKING WATER FREED FROM BACTERIA BY BROMINE WATER.—Schumburg has thoroughly gone into all known methods of purifying drinking water, and finds that bromine is the only disinfectant which can be removed after serving its purpose, without spoiling the appearance and taste of the water. The quantity of bromine used is very small; 1 kilogramme is sufficient to sterilise 16,000 litres of water. The author uses the bromine in the following solution:—Water, 100; potassium bromide, 20; bromine, 20. 0·2 C.c. of this solution is sufficient to sterilise in five minutes 1 litre of water from the river Spree. The calcium salts or ammonia of very impure river or surface water use up some of the bromine before it has had time to develop its disinfectant properties. In such cases enough must be added to cause a slight yellow coloration of the water, which should last at least half a minute. The 0·2 C.c. of bromine solution may be removed by adding an equal quantity of 9 per cent. ammonia. —*Pharm. Zeitg.*, xlii., 174.

THE FIRST FLÜCKIGER MEDALLIST.

EDWARD MORELL HOLMES, F.L.S.

DANIEL HANBURY'S distinguished co-worker in the department of pharmacography — Dr. Friedrich August Flückiger—died at Berne on December 11, 1894, and a Flückiger Memorial Fund was started early in the following year. After much deliberation, the Committee responsible for the application of the Fund decided to perpetuate the memory of the deceased professor in two ways—first, by awarding a gold medal for distinguished services in the promotion of pharmaceutical research, and second, by making grants in aid of research or for kindred purposes, or by giving prizes. The idea of striking a Flückiger Medal was doubtless suggested by the fact that the Hanbury Memorial had taken the same form, the first recipient of the Hanbury Medal having been Flückiger himself. But, whereas the Hanbury Medal is presented once in every two years, it was agreed that the Flückiger Medal should be awarded at longer intervals. Five years was the period ultimately decided upon, and the present year—1897—was fixed by the Committee as the date of the first award. The German and Swiss Pharmaceutical Associations (Apotheker-Verein) are alternately to serve as the means of communication between the trustees of the Fund and the recipients of the medal, and at the meeting of the German Apotheker-Verein at Strasburg last week, the President — Herr Frölich—announced that it had been decided to award the first medal to Mr. E. M. Holmes, Curator of the Pharmaceutical Society's Museums.

E. M. Holmes.

The compliment is a great one, but it is nevertheless well-deserved, as everyone who has had occasion to avail himself of Mr. Holmes' phenomenal stock of knowledge concerning medicinal plants and drugs must needs confess. Familiarity with the results of his labours may have blinded some British pharmacists to his undoubted ability, inexhaustible patience, and enormous capacity for continuous hard work, but his German and Swiss fellow-workers appear to have had no difficulty in appraising the outcome of his life-work at its true worth. The secret of his success is doubtless that, having received a pharmaceutical training, and experienced both the ups and downs of a pharmacist's life, he has thrown himself heart and soul into the task of applying his favourite subject—botany—to the advancement of pharmacy, and continually seeking by that means to confer fresh benefits upon the pharmacist. Outsiders who become connected with the craft, after entering upon a career the success of which can in no degree benefit pharmacy, have no true sympathy with its hopes and cares; they approach its problems in a cold-blooded and calculating manner, vastly differing from the sense of personal interest that imbues those who have passed through the ranks. Edward Morell Holmes is of the latter, and a living proof of the justice of these remarks.

He was born at Wendover, in Buckinghamshire, a little village at the foot of the Chiltern Hills, on January 29, 1843, so that he is now in his fifty-fifth year. His father, who yet survives, is a congregational minister, of Huguenot origin, and a connection of the family to which belonged the grammarian J. D. Morell. Young Holmes received his scholastic education at Boston (Lincs.), and Wimborne (Dorset), and even during his early years manifested a great fondness for flowers. His natural inclination would have led him to become a professional horticulturist, but Holmes senior thought otherwise, and at the age of fourteen the future authority on pharmacography was apprenticed to a pharmacist in Cheyne Walk, Chelsea. That he studied, and studied hard, during his apprenticeship it is needless to say, and botany ever being uppermost in his thoughts, in 1863 we find him carrying off the Pharmaceutical Society's bronze medal for an herbarium collected during the preceding twelve months. He had previously (1860), been awarded certificates in chemistry and pharmacy, botany and materia medica, at the Society's School of Pharmacy, and in due course he passed both the Minor and Major examinations and became registered as a pharmaceutical chemist.

As an assistant, Mr. Holmes gained experience at Plymouth and in London, but after receiving his diploma as a pharmaceutical

chemist and returning for a short time to his former employer at Plymouth, he commenced business there on his own account. But commerce had no charms for him, and the time which he devoted to the study of mosses, lichens, and algæ soon began to encroach sadly upon the hours which were presumably set apart for business purposes, pure and simple. Midnight would find him searching for rare specimens with a dark lantern, and daybreak often saw him many miles from home, but contented so long as his search had not been in vain. Having gone far towards exhausting the botany of the district, Mr. Holmes gave up his pharmacy and made his appearance in London once more. There, after gaining some further experience in the wholesale drug trade, he became a candidate for the post of Curator of the Pharmaceutical Society's Museum, and he was appointed to that position in 1872, so that he has now occupied it continuously during a period of twenty-five years. His work as an investigator during that quarter of a century has been wide in its scope and fertile in results. Details regarding his investigations are unnecessary here, but it may be stated that he has published more than two hundred papers on botany and pharmacography, about one hundred and thirty of which have appeared originally in the *Pharmaceutical Journal*. Much of what he has done is considered of but secondary importance because it has consisted in correcting the mistakes of others, especially in regard to the classification of medicinal plants and the botanical origin of drugs. But such work is, in reality, of the highest importance and no less valuable in its outcome than much original work.

Mr. Holmes is a born teacher, though his methods might not always commend themselves to many who have adopted teaching as a profession to the frequent distress of students, and on Professor Bentley's retirement from the chair of botany and materia medica the Curator added for a time the teaching of the latter subject to his other duties. He introduced the American or comparative method of teaching materia medica, and established a class of practical histology and a practical revision class, features which have been still further elaborated with great advantage by his successor. But the attempt to combine two important offices, without the assistance of experienced understudies in each case, proved unsatisfactory, and Mr. Holmes was the first to realise that his divided allegiance lost much of its effect. The older condition of things was therefore reverted to, and henceforth the Museums and all they contain occupied the Curator's undivided attention. Not that this implies care and arrangement of the specimens alone. An enormous correspondence must be maintained with members of the Society, botanists, and pharmacognosists at home and abroad, who seek information or assistance, which is always willingly and cheerfully given. The Curator also acts as the main check upon the introduction of spurious drugs into Great Britain, innumerable attempts to place such upon the market having been foiled by prompt reference to him on the part of wholesale druggists and others.

Nor does Mr. Holmes' day's work end when he leaves the "Square." The remaining hours of daylight are devoted to the care of the numerous medicinal plants under cultivation in the wonderful garden attached to the pleasant house at Sevenoaks, known to many pharmacists, whilst early morning finds the subject of this memoir enthusiastically engaged in hunting for specimens of one kind or another. It is even rumoured that the limits of those excursions before breakfast are at times extended greatly by the naturalist resorting to the use of a tricycle. Be this as it may, his botanical knowledge increases daily, and as a successful collector of marine algæ he has probably no equal in Britain, having personally added a very large proportion of the three hundred and fifty new British species discovered during the last twenty-five years. The meaning of this will be evident when it is stated that not more than four hundred British species were known when Mr. Holmes commenced work in this direction. He has issued in the form of fasciculi no less than one hundred and eighty of the new species, and these have been subscribed for by the leading botanical museums in this country. The number of readers of the *Pharmaceutical Journal* who are indebted to him in his capacity of plant referee is legion, and the frequency with which representatives of other papers wait upon him at the "Square" tells its own tale. As regards distinctions and public positions, Mr. Holmes is a Fellow of the Linnean Society and has served on the Council of that body; he is also a referee for the Pharmacopœia Committee of the General Medical Council, a member of the Royal Botanic Societies of London and Edinburgh, a member of the Council of the Museums Association, an honorary member of the Philadelphia and New York Colleges of Pharmacy, and of the Haarlem Society for the Advancement of Industries. Above all, however, he is a botanist in the best and most complete sense of the word, being neither a mere species-monger nor cutter of sections, and his knowledge of materia medica can only be described as encyclopædic. As a friend he is always faithful, and as a man his character is beyond reproach. May he survive this latest distinction many happy and useful years!

List of Mr. Holmes's published works in Botany.

In the 'Transactions of the Plymouth Institution.'

Mosses of Devon and Cornwall' E. M. Holmes and F. Brent, 1868-1869, p. 305-335.

Scale Mosses and Liverworts of Devon and Cornwall, 1868-1869, p. 337-345.

Lichens of Devon and Cornwall, 1868-1869, p. 347-375.

In the 'Transactions and Proceedings of the Botanical Society of Edinburgh.'

Phacelocarpus epipolæus, vol. xx., p. 79, pl. i.

In the 'Journal of the Linnean Society.'

On *Codiolum gregarium*, vol. xviii, p. 132.

Cinchona ledgeriana, vol. xxi., p. 374-380.

New Marine algæ from Japan, vol. xxxi., p. 148-260, pl. vii.-xii.

In the 'Journal of Botany.'

On the Occurrence of *Dicranum flagellare* in Britain, 1874, p. 225, and t. 149.

Cryptogamic Flora of Kent: Musci, 1877, p. 11, 50, 81, 108, 174, 199, 232.—Hepaticæ, 1878, p. 43.—Lichens, 1878, p. 117, 209, 329, 373.

Physcia intricata, 1873, p. 206.

Rare British Plants, 1880, p. 374.

Hypnum imponens, 1881, p. 116.

The Distribution of *Hypnum salebrosum* in Britain, 1880, p. 84.

Kentish Cryptogams, 1881, p. 374.

Chemical Tests for Lichens, 1882, 115.

Zygodon forsteri in Essex, 1882, 337.

Rhodymenia nicæensis, 1883, p. 289, t. 240.

Algæ Britannicæ rariores exsicc. (fasc. i.-ix., 1883-1897), 1883, p. 90.

Two New British Ectocarpi, 1887, p. 161, tab. 274.

Marine Algæ of Devon, 1890, p. 147.

New Marine Algæ, 1896, p. 349.

Eriophorum gracile, 1893, p. 249.

In 'Grevillea.'

New British Marine Algæ, vol. ii., p. 1-3, 175, pl. xi., xii.; vol. x., p. 110; vol. xi., p. 140.

Bryological Notes, vol. ii., p. 159.

On *Tortula brevirostris*, Hook. and Grev., vol. ii., p. 169, 171, and pl. xxiii.

Lichenological Notes, vol. iii., p. 91.

Enteromorpha rhacodes, vol. xxii., p. 89, 1894.

Vaucheria coronata, vol. xxii., p 91.

In the 'Annals of Botany.'

Revised List of the British Marine Algæ (in collaboration with Mr. E.-A.-L. Batters, B.A., LL.B.), vol. v., p. 63, 518.

New Marine Algæ, pl. xviii., vol. p. 335-342.

The Young Collector's Handbook of Fungi, London, 1886.

Holmes' 'Botanical Note Book,' or Practical Guide to Botany, London, 1878.

List of Mr. Holmes's published works in Pharmacography.

In the 'Encyclopædia Britannica.'

Gelseminum (vol. x., p. 135, 136); Gentian (x., 159); Herbarium (xi., 715); Hop (xii., 155); Horsetail (xi., 318); Houseleek (xii., 317); India Rubber (xii., 835-839); Ipecacuanha (xiii., 210); Jaborandi (xiii., 529); Jalap (xiii., 546); Kamala (xiii., 831); Kino (xiv., 91); Kousso (xiv., 145); Lavender (xiv., 352); Lemon (xiv., 437-439); Lentil (xiv., 447); Mallow (xv., 335); Manna (xv., 447); Mastich (xv., 621); Mint (xvi., 491); Myrrh (xvii., 121-122); Nutmeg (xxii., 666); Nux Vomica (xvii., 687); Opium (xvii., 787-794); Opodeldoc (xvii., 794); Pepper (xviii., 516-517); Peppermint (xviii., 517-518); Pharmacopœia (xviii., 730-732); Quassia (xx., 160); Quinine (xx., 184-186); Rhubarb (xx., 529-530); Salep (xxi., 211); Sandalwood (xxi., 255); Sarsaparilla (xxi., 313-314); Scammony (xxi., 365); Senna (xxi., 664); Squill (xxii., 437); Strophanthus (xxii., 608); Sumbul (xxii., 641); Taraxacum (xxiii., 61); Turmeric (xxiii., 662); Valerian (xxiv., 40); Vanilla (xxiv., 66-67).

In the 'Pharmaceutical Journal,' Third Series.

Materia Medica of the United States Pharmacopœia, vol. iii., p. 1009, 1029, and vol. iv., p. 123, 162, 201.

Materia Medica Notes, vol. iv., p. 810 (false cascarilla, arnica, and belladonna).

Vegetable Poisons and their Antidotes, vol. iv., p. 769, 993, 1013, et vol. v., p. 201.

Botanical Source of Jaborandi, vol. v., p. 581, 641.

Brazilian Drugs, vol. v., p. 905, 985.

Identity of Goa Powder with Araroba, vol. v., p. 801.

Note on a Spurious Senna, vol. v., p. 623.

A Second Kind of Jaborandi, vol. v., p. 781.

Morocco Drugs, Dr. A. Leared and E. M. Holmes (identification and description of drugs by E. M. Holmes), vol. v., p. 521.

Botanical Source of Damiana, vol. vi., p. 581.

Gelseminum sempervirens, vol. vi., p. 481, 521, 561, 601.

Notes on some American Medicinal Plants, vol. vi., p. 781 (*Eriodictyon californicum* and Raiz del Indico).

Materia Medica, etc., of India Museum at South Kensington (unsigned), vol. vi., p. 61, 101, 181, 241, 381, 422.

Adulteration of Aconite Root, vol. vii., p. 749 (with *Imperatoria ostruthium*).

Cultivation of Medicinal Plants at Banbury, vol. vii., p. 1017.

Boa-tam-paijang, vol. viii., p. 784.

Cultivation of Medicinal Plants at Hitchin, vol. viii., p. 301.

Grindelia robusta, vol. viii., p. 787.

Duboisia myoporoides, vol. viii., p. 705.

Medicinal Plants of Liberia, vol. viii., p. 563.

Notes on Casual Drugs, vol. viii., p. 362 (Tamarisk Galls, Boomah Nuts, False Buchu, and *Calophyllum inophyllum*.)

Rheum officinale, vol. viii., p. 181.

Report on the Materia Medica of the Paris Exhibition, 1878, vol. ix., p. 21, 41, 82, 101.

An Adulteration of Senega, vol. ix., p. 410 (*Asclepias vincetoxicum*.)

Guaycuru Root, vol. ix., p. 466.

Further Notes on Liberian Drugs, vol. ix., p. 853.

Myrtus chekan, vol. ix., p. 653.

A New Calabar Bean, vol. ix., p. 913.

Shea Butter (*Bassia parkii*), vol. ix., p. 818.

Botanical Source of Araroba, vol. ix., p. 872.

Botanical Source of Damiana, vol. x., p. 439.

Japanese Belladonna, vol. x., p. 789.

Japanese Drugs, vol. x., p. 3, 21, 101, 201, 261.

Botanical Source of Tonga, vol. x., p. 889.

Jafferabad Aloes, vol. xi., p. 733.

Use of Saffron in the Pharmacopœia, vol. xi., p. 450.

Star Anise, vol. xi., p. 489.

The Varieties of Linseed in English Commerce, vol. xii., p. 61, 137.

The Cultivation of Medicinal Plants in Lincolnshire, vol. xii., p. 237.

The kind of Cinchona that should be used in Pharmacy, vol. xii., p. 368.

False Belladonna Root, vol. xii., p. 741 (*Medicago sativa*).

Hedyosmum nutans and *Critonia dalea*, vol. xii., p. 581.

Aconitum napellus and other Species, vol. xiii., p. 234.

The Japanese Peppermint (Menthol Plant), vol. xiii., p. 381.

Native Remedies used in Madagascar, vol. xiii., p. 121, 201.

The Sale of Worthless and Spurious Drugs, vol. xiii., p. 462.

Essence of Limes from Trinidad, vol. xiv., p. 1005.

Vegetable Tallow from Singapore, vol. xiv., p. 401, 481.

The Trees yielding Benzoin, vol. xiv., p. 354.

Turtle Oil from the Seychelles and Jamaica, vol. xv., p. 573.

Batoum Tea, vol. xv., p. 573.

Report on the International Forestry Exhibition at Edinburgh, 1884, vol. xv., 201, 222, 266 (and *Nature*, August 7, 1884, p. 337).

Medicinal Plants used by the Cree Indians, vol. xv., p. 302.

Ta-fung-tsze, or Lukrabo Seed, vol. xv., p. 41.

Notes on Some Japanese Oils, vol. xv., p. 636 (Brassica, Camellia, and Aleurites).

Ergot of Diss, vol. xvi., p. 684.

The Cultivation of Medicinal Plants at Brighton, vol. xvi., p. 125.

Japanese Maltine, vol. xvi., p. 701.

Oil of Perilla, vol. xvi., p. 702.

Oil of Sandalwood, vol. xvi., p. 819.

Rhatany, vol. xvi., p. 878.

Species of Strophanthus, vol. xvi., p. 778.

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Drugs at the Colonial and Ind. Exhibition, vol. xvi., p. 1045, 1067; vol. xvii., pp. 4, 41, 101, 141, 205, 225, 245, 305, 325, 405 (unsigned).

Bahama Sponges, vol. xvii., p. 761.

Cuban and Florida sponges, vol. xvii., p. 990.

THE FIRST FLÜCKIGER MEDAL.

AWARDED TO EDWARD MORELL HOLMES, 1897.

False Strophanthus seed, vol. xvii., p. 903.
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Botanical Source of Hamama, vol. xviii., p. 151, 252.
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Recent Donations to the Museum, vol. xx., p. 581, 658 (Oils of Rosemary and Lavender, *Kraussia coriacea*, and Chinese Cassia).
Scopola carniolica, vol. xx., p. 468.
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Recent Donations to the Museum, vol. xxi., p. 518 (Dragon's Blood, Cubebs, and Benzoin).
Strophanthus hispidus, vol. xxi., p. 233.
Tu-Chung Bark, vol. xxi., p. 738.
The Arrow Poison of the Pigmies, vol. xxi., p. 920.
False Pellitory Root, vol. xxii., p. 405.
Geography and Materia Medica, vol. xxii., p. 770.
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An Astringent Gum from Mashonaland, vol. xxiii., p. 585.
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Medicinal Plants of the Riviera, vol. xxiii., p. 485.
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Ceará Jaborandi, vol. xxiv., p. 1065 (*Pilocarpus trachylophus.*)
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Eucalyptus Oil, vol. xxv., p. 501.
Some Medicinal Products from the Straits Settlements, vol. xxv., p. 1095.

In the 'Pharmaceutical Journal,' 4th Series.

On the Bark and Leaves of *Drimys granatensis*, vol. i. p., 54.
On False White Horehound, vol. i., p. 501.
On a New Variety of Jaborandi, vol. i., p. 501 (*Pilocarpus spicatus*).
Kuro Moji Oil, vol. i., p. 501.
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Note on Dilem and Patchouli, vol. ii., p. 222.
A Spurious Maranham Jaborandi, vol. iii., p. 2 (*Swartzia decipiens*).
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Oxalic Acid or Saltpetre, vol. iii., p. 59.
Spurious Bloodroot, vol. iii., p. 21.
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Alkanet Root, vol. v., p. 61.
Cactus grandiflorus, Linn., vol. v., p. 165.
Strophanthus nicholsoni—A New Species, vol. v , p. 209.

The Flückiger Medal.

The following is a translation of the letter in which Herr Frölich, President of the German Pharmaceutical Association, has intimated to Mr. Holmes the award of the first Flückiger medal:—

Council of the German Pharmaceutical Association,
Strasburg, Alsace, August 24, 1897.

To the Curator of the Museums of the Pharmaceutical Society of Great Britain,
Mr. Edward Morell Holmes, London.

Honoured Sir,—On the proposition of the trustees of the Flückiger Memorial Fund, the German Pharmaceutical Association has decided to confer on you the medal struck as a memorial of the deceased master in pharmacognosy, in recognition of your eminent services in the cause of botanical and pharmacognostical science. This decision has been announced here to-day at a general meeting of the Association, and on me falls the honoured duty of intimating the fact to you, and of presenting to you the medal.

To my extreme regret circumstances do not permit me to hand the medal to you personally. I have therefore gladly availed myself of Dr. Paul's presence here to take advantage of his kindness and ask him to be so good as to transmit the medal to you.

It affords me peculiar pleasure, at the same time, to express in the name of the Association which I represent my most cordial good wishes at this distinction, which bears witness that your professional colleagues of two great countries are imbued with a feeling of admiration for you and for your successful labours in the service of applied science.

Receive the assurance of my most distinguished esteem, with which I have the honour to remain

Yours sincerely,
Froelich,
President of the German Pharmaceutical Association.

SELECTED FORMULÆ FOR PERFUMES.*

Bouquet.—Extracts of violet, 900 grammes; tubéreuse, 500 grammes; rose, 800 grammes; tincture of musk, 120 grammes; tincture of ambergris, 20 grammes; oil of bergamot, 7 grammes; oil of lemons, 2 grammes; oil of neroli, 4 grammes.

Magnolia.—Extracts of jasmine, 375 grammes; rose, 750 grammes; orange, 750 grammes; tubéreuse, 190 grammes; tincture of tonka, 300 grammes; tincture of vanilla, 25 grammes; tincture of musk, 50 grammes; oil of lemons, 25 grammes; oil of bergamot, 2 grammes; oil of neroli, 2 grammes; oil of geranium (Afr.), 1 gramme; genuine bitter almond oil, 5 grammes.

Jockey Club.—Extracts of jonquille, 2500 grammes; jasmine, 300 grammes; violet, 200 grammes; rose, 200 grammes; tonka tincture, 1500 grammes; benzoin tincture, 300 grammes; musk tincture, 200 grammes; geranium oil (Afr.), 60 grammes; oil of bergamot, 20 grammes.

Heliotrope.—Extracts of rose, 4 kilos.; cassia, 2 kilos.; jasmine, 2 kilos.; jonquille, 1½ kilo.; tincture of tonka, 1550 grammes; tincture of vanilla, 350 grammes; tincture of musk, 10 grammes; tincture of civet, 15 grammes; genuine bitter almond oil, 2 grammes; oil of angelica, 2 grammes; oil of cloves, 2 grammes; oil of geranium (Afr.), 2 grammes.

Mignonette.—Extracts of mignonette, 5 kilos.; violet, 3½ kilos.; rose, 3 kilos.; jasmine, 2½ kilos.; cassia, 300 grammes; orange, 500 grammes; jonquille, 600 grammes; oil of bergamot, 115 grammes; oil of cinnamon, 1 gramme; oil of geranium (Afr.), 2 grammes; oil of orris (liquid), 10 grammes; oil of basilicum, 2 drops; oil of sandalwood, 2 drops; ylang-ylang oil, 5 drops; tincture of musk, 15 grammes.

Syringa.—Tonka tincture, 2½ kilos.; vanilla tincture, 2½ kilos.; musk tincture, 2½ kilos.; ylang-ylang tincture, 2 kilos.; opoponax tincture, 2 kilos.; heliotropine tincture, 2 kilos.; oil of rose, 2 grammes; neroli oil, 2 grammes; patchouli oil, 1 gramme.

Violet.—Violet extract, 5 k.; jasmine extract, 20 grammes; rose extract, 10 grammes; jonquille extract, 30 grammes; tincture of orris, 50 grammes; tincture of cinnamon, 30 grammes; tincture of musk, 2 grammes; tincture of ambrette, 20 grammes; tincture of vanilla, 2 grammes; jasmine water, 200 grammes.

New-mown Hay.—Rose extract 2000 grammes; cassia extract, 600 grammes; jasmine extract, 450 grammes; jonquille extract, 300 grammes; tincture of tonka, 1500 grammes; tincture of musk, 5 grammes; anise oil, 3 grammes; geranium oil, 5 grammes; oil of peppermint (Mitcham), 2 grammes; basilicum oil, 2 grammes; patchouli oil, 1 gramme; cumarin, 20 grammes.

* Abstracted from the *Pharmaceutische Post.*

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Manganesii Oxidum Nigrum.—If pure, manganese dioxide dissolves entirely in hydrochloric acid, but the commercial article, consisting of the ground mineral pyrolusite, always contains more or less felspar, quartz, etc., which leave a siliceous residue. Manganese forms a number of different oxides, MnO, Mn_3O_4, Mn_2O , MnO_2, MnO_3, Mn_2O_7. When a metal forms several oxides, it is found that the lowest ones are basic oxides, while the higher are acid-forming oxides, *i.e.*, anhydrides. Thus, corresponding to MnO and Mn_2O_3 we have such stable salts as $MnCl_2$ and $MnCl_3$, while the salts corresponding to MnO_2 are not stable and are easily reduced to salts corresponding to the lower oxides. The chloride corresponding to MnO_2 would be $MnCl_4$, and this is obtained in solution when MnO_2 is dissolved in *cold* hydrochloric acid,

$$MnO_2 + 4HCl = MnCl_4 + 2H_2O.$$

On the application of heat this breaks up, forming the lower oxide and free chlorine—

$$MnCl_4 = MnCl_2 + Cl_2.$$

The basic character of MnO_2 is therefore slight. On the other hand, it exhibits weak acid-forming properties, since we have a manganite of calcium, $CaMnO_3(CaO,MnO_2)$, which is met with in the Weldon process for the recovery of spent manganese. The two higher oxides, MnO_3 and Mn_2O_7, are not known in the free state. They form, however, manganic $H_2MnO_4(H_2O,MnO_3)$ and permanganic acid, $H_2Mn_2O_8(H_2O,Mn_2O_7)$, or $HMnO_4$. Compare oxides of chromium and lead.

Marmor Album.—A very pure form of lime is prepared by strongly heating marble. A still purer lime may be similarly obtained from calc-spar, another form of calcium carbonate sometimes called Iceland spar.

Opium.—The following is an explanation of the official assay process:—Trituration with lime and water decomposes the meconate of morphine in the opium, insoluble calcium meconate being formed, while the morphine is set free. The free alkaloid morphine is practically insoluble in water but easily soluble in the lime water produced by the excess of lime employed. 1400 grain measures of water having been triturated with 140 grains of opium, the mixture is filtered and 1040 grain measures of the filtrate collected. The residue and fluid remaining in the filter paper when this quantity has passed through are not required for the rest of the process. Neglecting the odd 40 it will be seen that the quantity of filtrate collected represents $\frac{1000}{1400} = \frac{10}{14}$ of the water added. Admitting now that the morphine and other soluble constituents of the opium are uniformly distributed throughout the triturated mixture it is obvious that $\frac{1}{14}$ of the fluid will represent the soluble matter in $\frac{1}{14}$ of the opium used, *i.e.*, $\frac{1}{14}$ of 140 = 100 grains. To exhaust entirely 100 grains of opium would require repeated treatment with a considerable quantity of water which would have to be removed by evaporation before the subsequent operations could be carried out. There are two objections to this method. First, the time consumed in the evaporation of the liquor; second, the loss of alkaloid by decomposition of the alkaloid during evaporation. The method of triturating a substance to be assayed with a carefully measured quantity of menstruum and then filtering off an aliquot part of the fluid is therefore frequently adopted on account of the greater accuracy and saving of time accomplished. The 40-grain measures over the 1000 collected in the present case is to allow for the increase in bulk produced in the fluid by the soluble matter of the 100 grains of opium. To this filtrate are now added some alcohol and ether (the object of which will be presently explained), and then ammonium chloride. Remembering that the morphine is kept in solution by the calcium hydrate, it will easily be seen why morphine is now precipitated. For the ammonium chloride reacts with the calcium hydrate,

$$Ca2HO + 2NH_4Cl = CaCl_2 + 2NH_4HO$$

and calcium hydrate is replaced by ammonium hydrate, in which morphine is insoluble. The alcohol is previously added because the morphine separates from dilute alcohol in a more crystalline condition than from water, hence it is more easily collected and washed than if it were more or less amorphous. The ether is added to remove narcotine, another opium alkaloid, which is extracted by the water from the opium with the morphine, and also precipitated with it on the addition of ammonium chloride. Narcotine is easily soluble in ether, while morphine is insoluble. The ethereal layer is therefore decanted and rejected, after filtration, to retain a few crystals of morphine, which are almost invariably mechanically decanted with it. The aqueous fluid containing the precipitated morphine is then filtered through two counter-balanced filter papers and washed with a limited quantity of water to remove the bulk of the mother liquor. It is impracticable to remove the *whole* of this without losing an appreciable quantity of morphine, which is slightly soluble in water. The effect of this mother liquor, retained by the filter paper, on the weight of the morphine is therefore eliminated by putting the outer filter paper on the pan of the balance with the weights. The two dried papers will be practically equal in weight, since they were equally saturated with fluid before drying.

Ovi Albumen.—White of egg contains about 12 per cent. of proteids, chiefly albumin, whilst a globulin occurs in smaller quantity. The variety of proteid known as albumins (or sometimes native albumin) is soluble in distilled water, while globulins are insoluble in pure water, but soluble in saline solutions. Besides the proteids, white of egg contains about one-half per cent. of inorganic salts, with traces of sugar, fats, lecithin, and cholesterin. When heated to about 70° C. the proteids undergo the physical change known as coagulation, becoming insoluble in water or saline solutions, although undergoing no change in percentage chemical composition. In this condition white of egg is employed for testing the digestive power of pepsin, since coagulated white of egg is easily obtainable and is fairly constant in composition. The completion of its digestion can also be easily observed.

Ovi Vitellus.—Yolk of egg is also rich in proteids. It contains also a yellow colouring matter soluble in ether, a nucleo-albumin, and more fat than the white of egg.

FLOWERS OF SEPTEMBER.

The following plants, including several species mentioned last month, may still be found in bloom:—*Achillea millefolium*, *Anthemis nobilis*, *Artemisia absinthium*, *Artemisia vulgaris*, *Borago officinalis*, *Cichorium intybus*, *Colchicum autumnale*, *Eupatorium cannabinum*, *Fœniculum capillaceum*, *Gentiana campestris*, *Humulus lupulus*, *Inula conyza*, *Lactuca virosa*, *Lycopus europæus*, *Mentha piperita*, *M. pulegium*, *Saponaria officinalis*, *Tanacetum vulgare*, and *Verbascum thapsus*. The beautiful scarlet and white fungus, *Amanita muscaria*, may be looked for under birch trees. Several medicinal plants are now in fruit, including *Atropa belladonna*, *Bryonia dioica*, *Datura stramonium*, *Nigella sativa*, *Physalis alkekengi*, *Solanum dulcamara*, *S. nigrum*, *Tamus communis*. A few rare or local British plants also flower this month, viz., *Artemisia campestris*, *Cyperus longus*, *Linosyris vulgaris*, *Lobelia urens*, *Pulicaria vulgaris*, *Samolus valerandi*, *Spiranthes autumnalis*, *Urtica pilulifera*, *Xanthium spinosum*. In botanical gardens the following may be looked for:—*Cassia tora*, *Convolvulus scammonia*, *Ecballium elaterium*, *Gentiana kurroo*, *Ipomœa purga*, *Liatris spicata*, *Lobelia syphilitica*, *Mentha sativa*, *Monarda didyma* and *M. punctata*, *Peganum harmala*, and *Phytolacca decandra*.

Those specially worthy of examination are as follow:—*Artemisia* and *Anthemis*, in which pappus is absent; *Humulus lupulus*, in which the bracts of the strobile are formed from the stipules as well as from the leaves ('Pharmacographia' [2], p. 552); *Lycopus europæus*, which has only two perfect stamens; *Verbascum thapsus*, which has five stamens, three of which are shorter, and have reniform anthers and woolly filaments, whilst the other two are larger with oblique, oblong-reniform anthers, and glabrous filaments; *Tanacetum vulgare*, in which pappus is absent. The fruits of belladonna, although resembling a berry externally, are superior, and have axile placentation, and are therefore not strictly berries, but berry-like or baccate. The fruits of *Bryonia dioica* and *Tamus communis*, although alike in colour, have very different seeds, a knowledge of which may prove useful in cases of poisoning. The fruits of *Nigella* are capsular, the carpels being more or less united in different species, and have a separable endocarp. In *Physalis* the calyx is accrescent and coloured. In *Phytolacca* there are six segments to the calyx. In *Samolus* the ring of stamens, alternate with the corolla lobe, absent in most Primulaceæ, is present in the form of scales.

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THE BRITISH MEDICAL ASSOCIATION.

From the abstract of the address delivered by Dr. Roddick, as President of the British Medical Association, at the meeting now being held in Montreal, it may be inferred that in Canada the value of district organisation and of further federal co-operation between local associations is recognised as distinctly as it was in the address of Dr. Woodcock, to which reference was made in this Journal some weeks ago. After describing the various objects of the British Medical Association, and tracing the stages by which it has arrived at its present position, Dr. Roddick paid especial tribute to the skill and energy displayed by Mr. Ernest Hart as Editor of the *British Medical Journal*, and by Mr. Fowke as General Secretary, through whose joint labours the Association has become the largest and most influential guild in the world, and is enabled year by year to accomplish an increasing amount of good. With a membership exceeding seventeen thousand, distributed over every part of the British Empire, it may well be said that no combination of circumstances could be more productive of power to deal with questions affecting the general welfare of medical practitioners, and to promote the interests of their calling. But natural as that view appears to be, the writer of a leading article in the *Times* of last Wednesday considers its plausibility to be delusive and, in direct opposition to Dr. Roddick's eulogium of the power and influence of the British Medical Association, he declares that in truth the absence of such power and influence is one of the most remarkable characteristics of that organisation. Notwithstanding the great and obvious advantages of a large membership, a useful and profitable journal, and considerable accumulated wealth, it is asserted to be impossible to point to anything done by the Association, either for the benefit of the medical profession or for that of mankind, that is at all adequate to the apparent possibilities of the case. The opinion thus expressed appears, however, to relate more to the want of united effort in exercising the power of the Association than to be a denial of its existence, and if that be the case the defect would result more from the apathy of individual members and the want of activity among the local branches. In such an organisation the capability of the executive officials to act on behalf of the body they represent must always depend upon the stimulus transmitted to them by the members at large. Without such initiative it may well happen that what the *Times* writer calls "the parent association" will do little beyond routine work, but engage in perfunctory discussion, and thus merely reflect the condition of the inert mass of members who, by failing to supply motive force, prove their incapacity for self-government. Under such conditions it is natural that there should be much dissatisfaction in the ranks, and probably that may also be justified by defects of constitution. But complaints as to the existing state of things are chiefly to be regarded as demonstrating neglect on the part of the rank and file of the members, with whom rests the power of action for effecting reform.

THE TRANSMISSION OF LIGHT THROUGH SPACE.

The generally accepted theory of the transmission of light through space is based, as is probably known to all our readers, on the vibration of that hypothetical medium called "ether," of the existence of which there is absolutely no proof, though the theory is accepted as being the simplest way of explaining the phenomena of light. But the results of experiments recently made by Francke L. Woodward, U.S.A., will, if confirmed, deal a heavy blow at the "luminiferous ether" theory. Woodward's experiments consisted in passing a beam of light from a limelight lantern through an exhausted glass bulb. This was covered with black paper, in which three circular openings were cut, two at opposite ends of a diameter, the third at one end of a diameter at right angles to the first. On viewing the interior of the bulb through the third opening the beam of light was almost imperceptible in crossing the vacuum. This, of course, is not to be wondered at, for it is an old lecture experiment to pass a beam of light through an iron tube which has been heated to redness so as to destroy all floating particles, and the light is absolutely invisible until some body, such as an ivory ball, is raised into the path of the beam, when it instantly becomes visible.

The curious point about the experiment was that the light, after passing through the vacuum, was only one-twentieth of that entering, and the more perfect the vacuum the less was the intensity of the light issuing from the second opening. Now, it seems but reasonable to suppose that had that *ignis fatuus*, the perfect vacuum, been obtained, there would be absolutely no light issuing from the bulb. But, according to the "luminiferous ether" theory, no matter how perfect the vacuum, the space must still be full of ether, and if light is due to vibratory motion of the ether particles, the light issuing from the bulb must still be of exactly the same intensity as that entering it. But in this experiment it was not; what then is the explanation? When a Crookes tube, excited by a powerful Ruhmkorff coil, was focussed on the vacuum, Woodward found that the light issuing from the tube was almost of the same intensity as that entering, and when the experiment was repeated with tubes of different exhaustion it was found that the intensity of the emergent beam was inversely as the degree of exhaustion, except when the Röntgen rays were focussed on the vacuum tube. This looks very much as though Tesla's theory—that the X rays are a stream of material particles capable of passing through glass—were true, and further, that light can only be transmitted when material particles are present as well as "ether."

The natural conclusion to draw from these experiments is that light is not transmitted through space, that is from the

sun to our atmosphere, in the same form as we know it, and this therefore may lead to considerable change in our theories regarding light, should the experiments be confirmed. It may be pointed out that the now most generally accepted theory as to the formation of comets' tails is that they are cathodic streams such as were found by CROOKES to be formed when an obstacle is placed in the main cathodic stream. Again, BIRKELAND has shown that the most satisfactory explanation of the formation of the aurora borealis is that it consists of cathodic streams in the upper regions of the air, controlled by terrestrial magnetism. In the face of the experiments just detailed we may soon be forced to the conclusion that the sun and other illuminants are nothing more nor less than, as it were, huge Crookes tubes emitting cathodic rays, and that these become evident to us as light.

CALCUTTA BOTANIC GARDEN.

THE latest annual report of the Royal Botanic Garden, Calcutta, by the Superintendent, Brigade Surgeon Lieut.-Col. GEORGE KING, LL.D., F.R.S., C.I.E, shows that the Garden has well maintained during the year under review its distinguished place among modern botanical institutions. The Government of India has shown its appreciation of the value and extent of the work already accomplished by Dr. KING, and in hand, in the illimitable field of Indian botany, by sanctioning a second extension of the period of Dr. KING'S tenure of office beyond the time at which he would ordinarily have retired. The publication of the *Annals of the Garden*, great volumes in royal quarto, well known and greatly valued among botanical leaders, has now reached the seventh year, and contains a monograph on Indian bamboos, by Mr. J. SYKES GAMBLE, Director of the Forest School, Dehra Dun. The bamboos, owing chiefly to the infrequency of their flowering, have hitherto been little understood, and the different species very imperfectly recognised. In this volume each species is illustrated by an excellent lithograph drawn by a trained native draughtsman, with careful analyses of the parts of the flower by the author. The eighth volume of the *Annals* (on the orchids of Sikkim, we understand) is now in preparation by Dr. KING. The contributions during the year to the *Journal of the Asiatic Society of Bengal*, the *Records of the Botanical Survey of India*, and other publications have been voluminous, and have included Numbers xi. to xiv. of *Noviciæ Indicæ*, including two new species of *Lagotis*, and a description of a new genus of Orchidaceæ; further additional Convolvulaceæ, some additional Solanaceæ, by Surgeon-Major PRAIN, Curator of the Herbarium, and, in conjunction with Dr. KING, a paper on *Croftia*, a new genus of Scitamineæ, named in honour of Sir ALFRED CROFT, K.C.S.I., late Director of Public Instruction in India. Dr. PRAIN has also prepared a "Supplementary Report on Ganja." The ninth part of Dr. KING'S 'Materials for a Flora of the Malayan Peninsula' occupied about 250 pages of the last number of the Asiatic Society's *Journal*. Dr. KING pays a graceful tribute to the devoted services of his deputy, Dr. PRAIN, particularly in his successful researches in economic botanic work. The Herbarium collection was increased during the year by 13,989 specimens, while 12,197 carefully named specimens of Indian plants were distributed to most of the great botanical institutions of Europe, Asia, and America. The issue of living plants and seeds amounted to 54,874, and the plants received amounted to 17,981.

ANNOTATIONS.

THE STUDENTS' NUMBER of the *Pharmaceutical Journal* will be published next week, and the secretaries of educational institutions who have not yet sent particulars of classes and special courses of instruction for pharmaceutical students are requested to do so at once. Full information will be given in that number concerning all educational matters connected with pharmacy, so that those who think of entering the profession, those who are now in a state of pupilage, and last, but not least, those who are about to enter upon a college course, may be enabled to make the necessary arrangements with a minimum of trouble.

THE AUSTRIAN APOTHEKER-VEREIN will this year hold its thirty-sixth yearly general meeting at Lemberg, commencing on September 5, with a reception of members in the evening. On the following day the business proceedings will be opened at 9 a.m., and reports will be presented by the Council and by the Treasurer, Dr. August Schlosser. Further reports will be presented on the work of the pharmaceutical school and of the chemical laboratory by the Director, Dr. Gustav Schacherl, on the work of the establishment for examination of food articles by Dr. M. Mansfeld, and on the work of the bacteriological laboratory by Dr. Josef Schrank. Various other subjects are to be discussed at this and the following sittings on Tuesday. The control of the practice of pharmacy, and the work done in connection therewith by the Austrian association of pharmacists, will be introduced by Dr. Othmar Zeidler, of Vienna. The examination of food for detection of adulteration will be discussed by Herr Anton J. Sicha, in reference to the extension of pharmaceutical courses to fit pharmacists for that work. Dr. Joh. Rucker, of Lemberg, will introduce the subject of admitting women to practise pharmacy.

DR. ROBERT GRÜNER, of Vienna, will open discussions on the protective registration of names for medicinal articles, and on the importation of such articles into Austria. Some other matters of specially local interest will also be brought forward and then, before the close of the meeting, opportunity will be given for the members to raise discussions on any subject they desire to bring forward. The usual provision has been made for convivial meetings and festival dinners. After visiting the town park on Wednesday the members will proceed to Cracow, and on Thursday visit the palace, cathedral and national museum in that town. In the afternoon there will be an excursion to the famous salt mines of Wieliczka, with a farewell gathering in the evening after attending the theatre. This programme holds out considerable prospect of pleasure and profit for those who will be present at the meeting, and we much regret that other engagements preclude the possibility of accepting the friendly invitation received for the occasion from Dr. Robert Grüner, the President of the Verein, and Herr Sicha, the Secretary.

THE FLÜCKIGER MEDAL, of which a full-sized representation appears at page 216, is a very fine specimen of the designer's art, the severe simplicity of the outlines in nowise detracting from its appearance. The medal will be formally presented to Mr. Holmes at an early date, and meanwhile we have pleasure in voicing the gratification with which his colleagues and friends view his receipt of this signal mark of honour.

THE OPPOSITION OF THE GROCERS, or of some of them, to the P.A.T.A. scheme appears now to have vanished, and appreciative references to the work of the Association are appearing in the organs of the grocery trade. The *Grocers' Review* thinks the

notion has now been exploded that other tradesmen joining the Association were likely to be led and unduly influenced by, and on behalf of, chemists. Grocers generally, it is alleged, are beginning to see that whether the chemists began the movement or not, and whether the chemists have so far obtained a very strong hold upon the organisation or not, the grocery trade has nothing to lose by cordial co-operation with their fellow-tradesmen. Moreover, it is observed, it is only necessary to look back upon what has taken place within the past few months, to become imbued with the belief that members of the grocery trade are rapidly coming to the conclusion that this crusade against excessive cutting in proprietary articles is one which deserves support, and out of which great benefit may be expected to be obtained. This is the view which has impressed the *Review* from the beginning. The much larger scheme of trying to regulate prices generally was not one which it could view with a favourable eye as being either desirable or practicable, but the attempt to put a check on cutting in proprietary articles seems to it to have everything in its favour. As interpreted by the *Review*, the scheme is not an endeavour to cripple the individual trader in the conduct of his business, or to interfere unduly with the management of his own concerns, but its whole scope and trend is really to give him greater freedom, in so far as his business cares and worries will be circumscribed "by the omission from the list of competition of articles which he can well afford to deal in at certain fixed prices, so that he will be left more free to give his attention to legitimate lines of business in which he must always be entirely at liberty to conduct his affairs, and to regulate his prices according to his own business aptitude." The provision in the programme of the Association for the regulation of trade concerns by separate sections is one which is regarded as removing the last objection that could be raised to the project which Mr. Glyn-Jones has advocated with such skill and marked success.

The Vagaries of Book Compilers rival those of individuals who write the replies to correspondents for popular weekly prints, and as a rule one can only wonder how it should be possible to distort facts to the extent that is apparent in some instances. For example, a correspondent sends a copy of an amusingly inaccurate paragraph in a new edition of an everyday book for ladies. Castor oil is the subject of the paragraph in question, which states that "this very safe and common aperient is an oily substance secreted by the beaver (?)" The oil is also said to be obtained "both from America and Russia, but that imported from the latter country is esteemed the best." This should be news to students of pharmacography. The sapient compiler of the same book states with regard to the sitz bath that "it is tonic and derivative (*sic*), strengthening the back, relieving the head, stimulating the digestive organs, increasing the appetite, removing congestion from the internal viscera, and producing a variety of other good effects. Taken in health or in chronic disease for the purposes named, should be taken cold for twenty minutes, with the person covered with blanket." After this there should be no doubt as to the virtues of the sitz bath, but whether any reader of the book is likely to prove willing to undergo martyrdom by sitting in cold water for twenty minutes, even though covered with a blanket, is quite another question.

Professors of Foreign Languages are threatened with extinction, says the *Daily Telegraph*, as an ingenious gentleman claims to have discovered a means of preserving what he calls "the concentrated essence of accent." On putting a shilling in the slot marked with the language he wishes to acquire, and pulling out a drawer, the student obtains a sixpenny grammar and a sixpenny box of the "concentrated essence of accent." The purchaser reads the first and inhales the second, and his mastery of the foreign tongue is then complete. Needless to say, it is reported that the invention is to be syndicated shortly. A more practicable means of receiving assistance in the study of foreign languages is offered by the phonograph, and at one London school experiments in this direction are now being made. In fact, the matter is understood to be so far advanced that it may be possible to hire language phonographs in the course of a month or two.

The Registrar-General's Report of deaths that occurred in Scotland during 1895, shows that poisons caused eighty-four accidental deaths (males 55, females 29), besides which there were twenty-seven cases of suicide by poison. Aconite liniment taken accidentally caused the death of three persons; carbolic acid, three; chloral hydrate, one only; chloroform, sixteen; cocaine, one; corrosive sublimate, one; laburnum seeds, one; laudanum, eight; morphine, three; opium, nine; and phosphorus, two. Suicide was effected by means of arsenic in one case; potassium binoxalate in one; carbolic acid, five; chloroform, one; hydrochloric acid, one; hydrocyanic acid, two; laudanum, six; opium, three; oxalic acid, one; and strychnine three. In all, twenty-one males and six females terminated their existence by the aid of poison, laudanum and carbolic acid heading the list. The cases attributed to chloroform were probably those of patients undergoing operation, and leaving them out of the question, narcotics were responsible for most deaths, both accidental and otherwise, whilst carbolic acid comes second in each instance.

The Free Sale of Carbolic Acid has been attacked by another coroner—Mr. F. Llewellyn-Jones, Deputy Coroner for Flintshire—who is reported as having stated at a recent inquest that he quite agreed with the Coroner for Liverpool in his condemnation of the free sale of the poison. No doubt, he said, it is a good disinfectant, but there are other disinfectants quite as effective, and with the advantage of being harmless. At present there is no restriction upon the sale of carbolic acid, he continued, though it is high time there should be, as the frequency with which it is used by persons desiring to terminate their existence is appalling, and the instances of its being taken by misadventure are many. In conclusion, he said he should quite approve of a rider to whatever verdict the jury found, in favour of restricting the facilities for procuring carbolic acid. The jury having found that deceased had died from the effects of carbolic acid, the foreman stated that the jury fully agreed with the remarks of the Coroner, and thought that the facilities for obtaining carbolic acid should not be so great.

Mr. Arthur S. Hill, one of the oldest members of the Pharmaceutical Society, is the subject of a lengthy notice in the *City Press*, where he is referred to as "a nonagenarian Salter." Mr. Hill is, as a matter of fact, ninety-five years old, and yet takes a keen interest in the affairs of the Salters' Company, of which he is the "Father." In his time Mr. Hill has been associated with many, if not all, of the forward movements designed to benefit pharmacy. His membership of the Pharmaceutical Society dates from 1842, though, according to the *City Press*, he was amongst the little knot of men who assembled in April, 1841, at the Crown and Anchor, in the Strand, to discuss preliminaries and establish the Society, and ought in that case to be regarded as a Founder. Another movement with which Mr. Hill was associated was the Druggists' Club, an organisation that was set on foot in order to combat a move made by produce importers to abolish the allowances made for tare, dust, draft, etc. His reminiscences of his early days are exceedingly interesting, and everyone will join in wishing him a continuance of the health and remarkable vigour he now enjoys

The British Association for the Advancement of Science.

MEETING AT TORONTO.

THE Toronto meeting of the British Association opened on Wednesday, August 18, and ended a week later, its success having been very great, as well from a scientific as from a social point of view. As our Toronto correspondent shows (p. 227), the reception given to the members by the Canadians has been quite as enthusiastic as in 1884, if not more so, the Jubilee celebrations having reflected themselves somewhat in this gathering for the diffusion of knowledge. According to *Science*, an American publication, the Montreal meeting gave a wonderful impulse to science throughout America, the result being that in the thirteen years which have elapsed since the meeting took place, America has come to the front as a nation which fosters scientific work, and a country which contributes a very large share to the world's wealth of natural knowledge. In like manner, the Toronto meeting may be expected to produce more than fleeting results. It is stated that about twelve hundred members and associates attended the meeting at Toronto, about four hundred being from Great Britain. At a meeting of the General Committee on August 18, the annual report of the Council for presentation to the Association was read. This stated that the Council had nominated Sir Donald Smith, Mr. A. S. Hardy, Premier of Ontario, and the Mayor of Toronto as Vice-Presidents of the Association, and expressed regret at the decision of Mr. Vernon Harcourt to retire from the General Secretaryship of the Association. A warm tribute was paid to him for the invaluable services he has rendered in that capacity during the past fourteen years, and Professor Roberts-Austen was recommended for appointment as his successor. Mention was made of the fact that the Imperial Government, at the request of the Association, has appointed a committee to report upon the desirability of establishing a National Physical Laboratory, and the report stated further that the trustees of the British Museum have under consideration the Association's suggestion for the establishment of a Bureau of Ethnology of Greater Britain in connection with the Museum. These topics were also dealt with in an effective manner by Sir John Evans, in his presidential address, which has already appeared in the Journal (*ante*, p. 167). The sectional work began on Thursday morning, August 19, when the presidents of most of the sections delivered their addresses.

CHEMICAL SECTION.

In the Chemical Section, Professor Ramsay took as his subject an undiscovered gas. He referred to Döbereiner's suggestion that certain elements can be arranged in groups of three, and pointed out that, to fall in with this arrangement it is requisite that another element should exist intermediate between helium and argon, with an atomic weight of twenty and a density of ten. When working on argon, Rayleigh and Ramsay at first thought it might consist of three gases of identical atomic weights, and it was even suggested that those gases might, with patriotic bias, be named Anglium, Scotium, and Hibernium. But this idea was was not realised, and after helium had been discovered special search was made for a third indifferent element.

The lecturer observed that it appeared as if there should be an undiscovered element between helium and argon, with an atomic weight 16 units higher than that of helium, and 20 units lower than that of argon, namely, 20. And if this unknown element, like helium and argon, should prove to consist of monatomic molecules, then its density should be half its atomic weight, 10. And pushing the analogy still farther, it is to be expected that this element should be as indifferent to union with other elements as the two allied elements. Mr. Morris Travers indefatigably aided Professor Ramsay in a search for this unknown gas, and in referring to this search the Professor remarked, "There is a proverb about looking for a needle in a haystack; modern science, with the aid of suitable magnetic appliances, would, if the reward were sufficient, make short work of that proverbial needle. But here is a supposed unknown gas, endowed no doubt with negative properties, and the whole world to find it in. Still, the attempt had to be made. We first directed our attention to the sources of helium—minerals. Almost every mineral which we could obtain was heated in a vacuum, and the gas which was evolved examined." The results were interesting. Most minerals give off gas when heated, and the gas contains, as a rule, a considerable amount of hydrogen, mixed with carbonic acid, questionable traces of nitrogen and carbonic oxide. Many of the minerals, in addition, gave helium, which proved to be widely distributed, though only in minute proportion. One mineral—malacone—gave appreciable quantities of argon; and it is noteworthy that argon was not found except in it (and, curiously, in much larger amount than helium), and in a specimen of meteoric iron. Other specimens of meteoric iron were examined, but were found to contain mainly hydrogen, with no trace of either argon or helium. It is probable that the sources of meteorites might be traced in this manner, and that each could be relegated to its particular swarm. Among the minerals examined was one to which attention had been directed by Professor Lockyer, named eliasite, from which he said that he had extracted a gas in which he had observed spectrum lines foreign to helium. He had furnished the investigators with a specimen of this mineral, which is exceedingly rare, but the sample which they tested contained nothing but undoubted helium. During a trip to Iceland in 1895, Professor Ramsay collected some gas from the boiling springs there; it consisted, for the most part, of air, but contained somewhat more argon than is usually dissolved when air is shaken with water. In the spring of 1896 Mr. Travers and he made a trip to the Pyrenees to collect gas from the mineral springs of Cauterets, to which their attention had been directed by Dr. Bouchard, who pointed out that those gases are rich in helium. They examined a number of samples from the various springs, and confirmed Dr. Bouchard's results, but there was no sign of any unknown lines in the spectrum of these gases. Their quest was, therefore, in vain. The missing element not having been found, therefore, Professor Ramsay had perforce to content himself with describing the methods of procedure followed in the vain search he chronicled, and facts observed by the way.

Thus, he referred to the difficulty experienced in fixing the position of argon in the periodic scheme of the elements, and asked whether some circumstance may not modify those combining proportions we term "atomic weights." Are they true constants of nature, unchangeable and once for all determined, or are they constant merely so long as other circumstances, a change in which would modify them, remain unchanged? It is known that energy manifests itself under different forms, and that one form of energy is quantitatively convertible into another form, without loss. It is also known that each form of energy is expressible as the product of two factors, one of which has been termed the "intensity factor," and the other the "capacity factor." Professor Ostwald, in the last edition of his 'Allgemeine Chemie,' classifies some of these forms of energy as follows:—

Kinetic	energy is the product of		Mass into the square of velocity.
Linear	,,	,,	Length into force
Surface	,,	,,	Surface into surface tension.
Volume	,,	,,	Volume into pressure.
Heat	,,	,,	Heat capacity (entropy) into temperature.
Electrical	,,	,,	Electric capacity into potential.
Chemical	,,	,,	"Atomic weight" into affinity.

In each statement of factors the "capacity factor" is placed first, and the "intensity-factor" second. In considering the "capacity factors," it is noticeable that they may be divided into two classes. The two first kinds of energy, kinetic and linear, are independent of the nature of the material which is subject to the energy. A mass of lead offers as much resistance to a given force, or, in other words, possesses as great inertia as an equal mass of hydrogen. A mass of iridium, the densest solid, counterbalances

an equal mass of lithium, the lightest known solid. On the other hand, surface energy deals with molecules, and not with masses. So does volume energy. The volume energy of two grammes of hydrogen, contained in a vessel of one litre capacity, is equal to that of thirty-two grammes of oxygen at the same temperature, and contained in a vessel of equal size. Equal masses of tin and lead have not equal capacity for heat; but 119 grammes of tin has the same capacity as 207 grammes of lead, that is, equal atomic masses have the same heat capacity. The quantity of electricity conveyed through an electrolyte under equal difference of potential is proportional, not to the mass of the dissolved body, but to its equivalent, that is, to some simple fraction of its atomic weight. And the capacity factor of chemical energy is the atomic weight of the substance subjected to the energy. It is seen, therefore, that while mass or inertia are important adjuncts of kinetic and linear energies, all other kinds of energy are connected with atomic weights, either directly or indirectly. Such considerations draw attention to the fact that quantity of matter need not necessarily be measured by its inertia, or by gravitational attraction. "In fact, the word 'mass' has two totally distinct significations. Because we adopt the convention to measure quantity of matter by its mass, the word 'mass' has come to denote 'quantity of matter.' But it is open to anyone to measure a quantity of matter by any other of its energy factors. I may, if I choose, state that those quantities of matter which possess equal capacities for heat are equal; or that 'equal numbers of atoms' represent equal quantities of matter. Indeed, we regard the value of material as due rather to what it can do, than to its mass; and we buy food, in the main, on an atomic, or perhaps a molecular basis, according to its content of albumin. And most articles depend for their value on the amount of food required by the producer or the manufacturer. The various forms of energy may therefore be classified as those which can be referred to an 'atomic' factor, and those which possess a 'mass' factor. The former are in the majority. And the periodic law is the bridge between them; as yet, an imperfect connection. For the atomic factors, arranged in the order of their masses, display only a partial regularity. It is undoubtedly one of the main problems of physics and chemistry to solve this mystery. What the solution will be is beyond my power of prophecy; whether it is to be found in the influence of some circumstance on the atomic weights, hitherto regarded as among the most certain 'constants of Nature'; or whether it will turn out that mass and gravitational attraction are influenced by temperature, or by electrical charge, I cannot tell. But that some means will ultimately be found of reconciling these apparent discrepancies, I firmly believe. Such a reconciliation is necessary, whatever view be taken of the nature of the universe and of its mode of action; whatever units we may choose to regard as fundamental among those which lie at our disposal."

BOTANICAL SECTION.

Professor H. Marshall Ward commenced his address to the Botanical Section by an appropriate reference to the influence on the progress of botanical science of Kew, "the principal centre of systematic botany," and he ventured to prophesy that a marked feature of the period we live in will be the great advances made in our knowledge of the uses of plants. The information acquired by travellers exploring new countries, by orchid-collectors, prospectors for new fibres or india-rubber, or resulting from the experiences of planters, foresters, and observant people living abroad, has a value in money, he observed, but it has also a value to science, for the facts collected, the specimens brought home, the processes observed, the results of analyses, the suggestions gathered—in short, the puzzles propounded by these wanderers—all stimulate research, and so have a value not to be expressed in terms of money. The two react mutually, and he is convinced that the stimulus of the questions asked by commerce of botanical science has had, and is having, an important effect in promoting its advance. The best proof to be given of the converse—that botany is really useful to commerce—is afforded by the ever-increasing demands for answers to the questions of the practical man. At the risk of touching the sensibilities of those who maintain that a university should regard only the purely academical aspects of a science, he discussed some cases where the reciprocal influences of applied, or useful, and purely academic or useless botany—useless because no use has yet been made of it, as someone has wittily put it—have resulted in gain to both. In doing this, he stated his conviction that no scientific man should be guided or restricted in his investigations by any considerations whatever as to the commercial or money value of his results; to patent a method of cultivating a bacillus, to keep secret the composition of a nutritive medium, to withhold any evidence, is anti-scientific, for by the nature of the case it is calculated to prevent improvement, *i.e.*, to impede progress. It is not implied that there is anything intrinsically wrong in protecting a discovery; all that is urged is that it is opposed to the scientific spirit.

But the fact that a scientific discovery is found to have a commercial value also—for instance, Wehmer's discovery that the mould fungus, *Citryomyces*, will convert 50 per cent. of the sugar in a saccharine solution to the commercially valuable citric acid; or Matruchot's success in germinating the spores of the mushroom, and in sending pure cultures of that valuable agaric into the market—is no argument against the scientific value of the research. There are in agriculture, forestry, and commerce generally, innumerable and important questions for solution, the investigation of which will need all the powers of careful observation, industrious recording, and thoughtful deduction of which a scientific man is capable. But while the lecturer regarded these and similar problems as worthy the attention of botanists, and he recognised frankly their commercial importance, he carefully and distinctly warned his hearers against supposing that their solution should be attempted simply because they have a commercial value. It is because they are so full of promise as scientific problems, that he thinks it no valid argument against their importance to theoretical science that they have been suggested in practice. In all these matters it seems to him we should recognise that practical men are doing us a service in setting questions, because they set them definitely. "In the attempt to solve these problems we may be sure science will gain, and if commerce gains also, so much the better for commerce, and indirectly for us. But that is not the same thing as directly interesting ourselves in the commercial value of the answer. This is not our function, and our advice and researches are the more valuable to commerce the less we are concerned with it." The remainder, by far the greater portion, of Professor Marshall Ward's address, resolved itself into an interesting review of advances in our knowledge of the Fungi made during the last thirty years.

GEOLOGICAL SECTION.

The Geological Section was presided over by Dr. G. M. Dawson, who stated that the nature and relations of the more ancient rocks of North America are problems particularly Canadian, for these rocks in their typical and most easily read development either constitute or border upon the continental Protaxis of the North. The questions involved are, however, at the same time, perhaps more intimately connected with a certain class of world-wide geological phenomena than any of those relating to later formations, in which a greater degree of differentiation occurred as time advanced. A reasonably satisfactory classification of the crystalline rocks beneath those designated as Palæozoic was first worked out in the Canadian region by Logan and his colleagues, a classification of which the validity was soon after generally recognised. The greatest known connected area of such rocks is embraced within the borders of Canada, and the further understanding of the origin and character of these rocks is likely to depend very largely upon work now in progress, or remaining to be accomplished there. Although reference was chiefly made to the distinctively pre-Cambrian rocks of Canada, and more particularly to the crystalline schists, others were alluded to in regard to the systematic position of which differences of opinion exist.

ZOOLOGICAL SECTION.

Professor Miall told the zoologists that animals are studied too much as dead things. "We name them, arrange them according to our notions of their likeness or unlikeness, and record their distribution. Then perhaps we are satisfied, forgetting that we could do as much with minerals or remarkable boulders. Of late years we have attempted something more; we now teach every student of zoology to dissect animals and to attend to their development." This is, he believes, a solid and lasting improvement; we owe it largely to Huxley, though it is but a revival of the method of Döllinger, who may be judged by the eminence of his pupils and by the direct testimony of Baer to have been one of the very greatest of biological teachers. But the animals set before the young zoologist are all dead; it is much if they are not pickled

as well. When he studies their development he works chiefly or altogether upon continuous sections, embryos mounted in balsam, and wax models. He is rarely encouraged to observe live tadpoles or third-day chicks with beating hearts. "As for what Gilbert White calls the life and conversation of animals, how they defend themselves, feed, and make love, this is commonly passed over as a matter of curious but not very important information; it is not reputed scientific, or at least not eminently scientific." We ought to know more of life, of the modes of growth of individuals and races, of the causes of decay and extinction, of the adaptation and living organisms to their surroundings. Hence the necessity of studying animals.

That the study of life can be made truly scientific is proved by the scientific career of Charles Darwin, and young naturalists were urged to study animals alive and under natural conditions. "To pop everything into alcohol and make out the names at home is the method of the collector, but life-histories are not studied in this way. It is often indispensable to isolate an animal, and for this purpose a very small habitation is sometimes to be preferred. The tea-cup aquarium, for instance, is often better than the tank. But we must also watch an animal's behaviour under altogether natural circumstances, and this is one among many reasons for choosing our subject from the animals which are locally common." Slowness in entering into controversies was recommended, as after they have been hotly pursued for some time, it generally turns out that the disputants have been using words in different senses. Discussion is excellent, controversy usually barren, though not always so; the Darwinian controversy was heated, and nevertheless eminently productive; all turns upon the temper of the men concerned and the solidity of the question at issue. As a hint to young students, it was remarked that perhaps no one ever carried through a serious bit of work without in some stage or other longing to drop it. "There comes a time when the first impulse is spent, and difficulties appear which escaped notice at first. Then most men lose hope. That is the time to show that we are a little better than most men. I remember as a young man drawing much comfort from the advice of a colleague, now an eminent chemist, to whom I had explained my difficulties and fears. All that he said was, 'Keep at it,' and I found that nothing more was wanted." The value of association was also emphasised by the speaker. "It is good that two men should look at every doubtful structure and criticise every interpretation It is often good that two talents should enter into partnership, such as a talent for description and a talent for drawing. It is often good that an experienced investigator should choose the subject and direct the course of work, and that he should be helped by a junior, who can work, but cannot guide. It seems to me that friendly criticism before publication is often a means of preventing avoidable mistakes. I am sorry that there should be any kind of prejudice against co-operation, or that it should be taken to be a sign of weakness. There are, I believe, very few men who are so strong as not to be the better for help. One difficulty would be removed if known authors were more generous in acknowledging the help of their assistants. They ought not to be slow to admit a real helper to such honour as there may be in joint-authorship."

Among the most important helps to the student of life-histories were mentioned the zoological stations now maintained by most of the great nations. The parent of all these, the great zoological station at Naples, celebrated its twenty-fifth anniversary last April, so that the whole movement belongs to our own generation. The English-speaking nations, it was pointed out, have taken their fair share of the splendid work done at Naples, and it is pleasant to remember that Darwin subscribed to the first fund, while the British Association, the University of Cambridge, and the Smithsonian Institution have maintained their own tables at the station. The material support thus given is small when compared with the subsidies of the German Government, and not worth mention beside the heroic sacrifices of the Director, Dr. Anton Dohrn, but as proofs of lively interest in a purely scientific enterprise they have their value. Marine stations have now multiplied greatly and fresh-water biological stations are also growing in number. "Forel set an excellent example by his investigation of the physical and biological phenomena of the Lake of Geneva. Dr. Anton Fritsch, of Prag, followed with his moveable station. There is a well-equipped station at Plön, among the lakes of Holstein, and a small one on the Müggelsee, near Berlin. The active station of Illinois is known to me only by the excellent publications which it has begun to issue. France, Switzerland, Sweden, and Finland all have their fresh-water biological stations, and I hope that England will not long remain indifferent to so promising a sphere of investigation."

MATHEMATICAL AND PHYSICAL SECTION.

In this Important Section Professor Forsyth pleaded, in his address, for an increased acquaintance with the higher branches of mathematics by engineers and other practical men. The unrestricted cultivation of pure mathematics, he claimed, is desirable in itself and for its own sake. The practical man regards the subject as a machine which is to provide him with tables, or with the simplest formulæ and the most direct rules, whenever tables cannot be calculated. "Results, not methods, are his wants; it is sufficient for him that an authoritative statement as to a result shall be made; all else is ignored. And for what is beyond, in the shape of work that does nothing to meet his special wants, or of the processes that have led to the results he uses, he cares little or nothing. In fact, he would regard mathematics as a collection of formulæ and an aggregate of processes to grind out numerical results; whatever else there is in it may be vain and is useless. In his view it is to be the drudge of the practical sciences." Professor Forsyth recognises that it is an advantage that labour should be saved and time economised, but he does not consider that mathematical science has thus fulfilled its highest purpose, and he claims a higher regard for the whole of it, not merely for a part, however useful and interesting that part may be. It seems to him a necessity that an engineer should now possess a mathematical skill and knowledge in some directions which, not so very long since, could not freely be found among the professional mathematicians themselves. And as this change is gradually effected, perhaps the practical man will gradually change his estimate of the scope of mathematical science. Natural philosophers were also mildly attacked for attempting to make mathematics the handmaid, if not the drudge, of the sciences. The demand was said to require examination, and to be deserving of respectful consideration, as there is no question of giving or withholding help in furthering, in every possible fashion and with every possible facility, the progress of natural philosophy. There is no room for difference upon that matter, but the difference arises when the opinion is expressed or the advice is tendered that the activity of mathematicians and all their investigations should be consciously limited, and directed solely and supremely, to the assistance and the furtherance of natural philosophy. One group of physicists, adopting a distinctly aggressive attitude in imposing limits so as to secure prudence in the pursuit of pure mathematics, regard the subject as useful solely for arriving at results connected with one or other of the branches of natural philosophy; they entertain an honest dislike, not merely to investigations that do not lead to such results, but to the desirability of carrying out such investigations; and some of them have used highly flavoured rhetoric in expressing their dislike. It was suggested that it would be easy, but unconvincing, to suggest that, with due modifications in statement, they might find themselves faced with the necessity of defending some of their own researches against attacks as honestly delivered by men absorbed in purely practical work. But such a suggestion is no reply, for it does not in the least touch the question at issue; and Professor Forsyth prefers to meet their contention with a direct negative.

ANTHROPOLOGICAL SECTION.

In the Section on Anthropology Sir William Turner contrasted man's form and appearance with those of other vertebrate creatures, and showed how the most striking distinction is the capability possessed by the former of assuming the exact attitude. It was shown how the instinctive acts in man are under the influence of the reason and intelligence. The association centres or areas in the three tiers of convolutions in the frontal lobe and elsewhere, probably constitute the mechanism through which man is enabled to control his animal instincts, in so far as they are dependent on motion and sensation, and it is suggested that it will now be a matter for scientific inquiry to determine, as far as the anatomical conditions will permit, the proportion which the association centres bear to the other centres both in mammals and in man; the period of development of the association fibres, in comparison with that of the motor and sensory fibres in different animals; and, if possible, to obtain a comparison in these respects between the brains of savages and those of men of a high order of

intelligence. An animal is guided by its instincts, through which it provides for its individual wants, and fulfils its place in nature. In man, on the other hand, the instinctive acts are under the influence of the reason and intelligenee, and it is possible that the association centres, with the intermediate association fibres which connect them with the sensory and motor centres, may be the mechanism through which man is enabled to control his animal instincts, so far as they are dependent on motion and sensation. "The higher we ascend in the scale of humanity, the more perfect does this control become, and the more do the instincts, emotions, passions and appetites become subordinated to the self-conscious principle which regulates our judgments and beliefs." In conclusion, the capability of erecting the trunk; the power of extending and fixing the hip and knee joints when standing; the stability of the foot; the range and variety of movement of the joints of the upper limb; the balancing of the head on the summit of the spine; the mass and weight of the brain, and the perfection of it internal mechanism, were referred to as being distinctively human characters. "They are the factors eoneerned in adapting the body of man, under the guidance of reason, intelligence, thc sense of responsibility and power of self-control, for the discharge of varied and important duties in relation to himself, his Maker, his fellows, the animal world, and the earth on which he lives."

PHYSIOLOGICAL SECTION.

Professor Michael Foster, in addressing the physiological section, rejected the idea of attempting to tell what has been the history of the science to which a section is devoted during the brief interval which has elapsed since the section last met; to try and catch physiology, or any other science, as it rushes through the brief period of some twelve months secmed to him not unlike photographing the flying bullet without adequate apparatus; the result could only be either a blurred or a delusive image. But he touched, in an attractive manner, upon the events of the thirteen years which have slipped by since the meeting at Montreal in 1884. These thirteen years of increased opportunity, he pointed out, have been thirteen years of increased fruitfulness, and during that period physiology has been prosperous, so that the outlook is bright; but, as every cloud has its silver lining, so shadow follows all sunshine, success brings danger, and something bitter rises up amid the sweet of prosperity. The development to which Professor Foster referred, he described as an outcome of the progressive activity of the age, and the dominant note of that activity is heard in the word "commercial." Noblemen and noblewomen open shop, he pointed out, and everyone, low as well as high, presses forward towards large or quick profits. The very influences which have made devotion to scientific inquiry a possible means of livelihood, and so fostered scientific investigation, are creating a new danger. The path of the professor was in old times narrow and straight, and only the few who had a real call cared to tread it; nowadays therc is some fear lest it become so broad and so easy as to tempt those who are in no way fitted for it. There is an increasing risk of men undertåking a research, not because a question is erying out to them to be answered, but in the hope that the publication of their results may win for them a lucrative post. "There is, morcover, an even greater evil ahead. The man who lights on a new scientific method holds thc key of a chamber in which much gold may be stored up, and strong is the temptation for him to keep the new knowledge to himself until he has filled his fill, while all the time his brother-inquirers are wandering about in the dark through lack of that which he possesses. Such a selfish withholding of new scientific truth is beginning to be not rare in some branches of knowledge. May it never come near us!" After dwelling on the labours of the past dozen years, Professor Foster said that, fruitful as they have been we may rightly consider them as but the earnest of that which is to come. Physiology deals with many kinds of being, and with many things in each. "But, somewhat as man, in one aspect a tiny fragment of the world, still more of the universe, in another aspect looms so great as to overshadow everything else, so the nervous system, seen from one point of view, is no more than a mere part of the whole organism, but, seen from another point of view, seems by its importance to swallow up all the rest. As man is apt to look upon all other things as mainly subserving his interests and purposes, so the physiologist, but with more justice, may regard all the rest of the body as mainly subserving the welfare of the nervous system; and, as man was created last, so our natural knowledge of the working of that nervous system has been the latest in its growth." But we are witnessing a growth which promises to be as rapid as it has seemed to be delayed, and little spirit of prophecy is needed to foretell that in the not very distant future the teacher of physiology will hurry over the themes on which he now dwells so long, in order that he may have time to expound the most important of all the truths which he has to tell, those which have to do with the manifold workings of the brain. To conclude, it was observed that physiologists are sorely tempted towards self-righteousness, for they enjoy that blessedness which comes when men revile and persecute and say all manner of evil against one falsely. In the mother-country the hands of physiologists are tied by an Act which was defined by one of the highest legal authorities as a "penal" Act; and though difficulties may have awakened activity, science suffers from the action of the State. In this respect at least, England offers an example "to be shunned alike by her offspring aud her fellows."

GEOGRAPHICAL SECTION.

It has been Customary for presidents of this section to try to define the field of geography, and on occasions, in somewhat too apologetic language, to justify its existence as a section of a scientific association. Mr. J. Scott Keltie, however, does not think this is any longer necessary, as even in England and America, during the last thirteen years, geography has done work enough to prove that she has a mission which no other department of research can fulfil. Geography was briefly defined as the science of the topographieal distribution of the great features of the earth's surface and of all that its sustains—mineral, vegetable, and animal, including man himself. In fact, man is the ultimate term in the geographical problem, the final object of which is to investigate the correlation between humanity and its geographical environment. There is a prevalent belief that geographers have nothing more to learn in Europe, that that old continent has been thoroughly explored. It is true that nearly every country in Europe has been or is being, trigonomctrically surveyed. Except some parts of the Balkan Peninsula and North of Russia, the topography of the continent has been accurately mapped on scales and by methods sufficient at least for the purposes of the geographer. Yet there are districts in the Balkan Peninsula—for example, Albania—which are as vaguely known as Central Africa. But it is a delusion to think that because a country has been fully mapped the occupation of the geographer is gone. It is only when a region at large is adequately mapped that the work of geographical research begins. The student, with a satisfactory map of a definite district as his guide, will find on the spot abundant occupation in working out its geographical details, the changes which have taken place in its topography, and the bearing of its varied features upon its history, its inhabitants, its industries. This kind of work has been in progress in Germany for over ten years under the auspices of the Central Commission for the Scientific Geography (Landeskunde) of Germany, with its seat at Stuttgart. Under the collective title of 'Forschungen zur Deutschen Landes- und Volkskunde,' a long series of monographs by specialists has been published, dealing in minute detail with one or more aspects of a limited district. Asia, Africa, America, and Australia also offer innumerable problems to geographers, and to crown all, the North and South Polar districts are yet practically untouched.

As an example of what may be done by a single individual to elucidate the present and past relations between land and sea, reference was made to an able paper in the *Geographical Journal* of May, 1897, by Mr. T. P. Gulliver, a pupil of Professor Davis, of Harvard, one of the foremost of scientific geographers. Mr. Gulliver has made a special study on the spot, and with the help of good topographical and geological maps, of Dungeness Foreland on the south-east coast of Kent. He works out with great care the history of the changing coast-line here, and in connection with that the origin and ehanges of the English Channel. This is the kind of work that well-trained geographieal students were advised to undertake. It is work to be encouraged, not only for the results to be obtained, but as one species of practical geographical training in the field, and as a reply to those who maintain that geography is mere book work, and has no problems to solve. Professor Davis himself has given an example of similar practical work in his elaborate paper on 'The Development of Certain English Rivers' in the *Geographical Journal* for February, 1895 (vol. v., p. 127), and in many other publications. Finally attention was directed to the wide and

vastly interesting field presented by what the Germans call Anthropogeography, dealing with the interrelations between humanity and its geographical environment. Geography is the physical basis of history; it is, indeed, the physical basis of all human activity, and from that standpoint the field for geographical research is unbounded. At this somewhat critical epoch very much yet remains to be done, many important lines of inquiry are open to the geographical student, and the possibilities of the science are, like those of other departments of research, inexhaustible.

ECONOMIC SCIENCE AND STATISTICS SECTION.

Professor E. C. K. Gonner said that in the selection of a subject, he had been influenced by the wish to choose one which is not only of present importance, but such that it might provide occasion for the discussion of the advance which economic study has made, and of the methods whereby that advance has been achieved. He thought the position of the Labour Question in modern thought and it economic treatment was a matter well worth attention from these various points of view, its consideration cannot fail to throw light on the connection which exists between the economic growth of a country and the main developments of economics as a study. The Labour Question therefore became the Professor's theme, and he approached it in such a way as to emphasise the necessity of a universal study of economic science. He referred to the immense importance of sound economic knowledge, as the danger of that which is unsound, coupled with the fact that all legislation and every person must have and will proceed on some economic theory, emphasises the need of stimulating economic research and economic teaching. Other sciences are needed by those training for particular professions; this, it was urged, is needed by all those who, either by action, word, or vote, have a part in the direction of the destinies of a country. It has been suggested with cheap cynicism that differences among economists disprove the utility and need of the study, but what a pitiable confusion between the spheres of physical and social science?" The majority of men are none the worse in their daily life for a general ignorance of chemistry or biology, but in the case of economics matters are far otherwise. An average citizen can do and does without a knowledge of theories of chemistry; but some economic theory he will have and some basis for economic action he has or assumes that he has." The only point at issue was said to be whether the citizen should form his opinions after study or in ignorance. Though they may differ on many points of detail and method, economists at any rate are thought to agree in the belief that study is a better preliminary for economic action than neglect. Knowledge must be sought by the study both of economic method and of economic facts. The Labour Question was held to illustrate very vividly the great advance made in economic knowledge of recent years, a review of its course serving to reassure those who are tempted in moments of depression to believe that the want of adequate recognition of the study is in some way or other a symptom of its backwardness or failing vitality. The reverse is true, it is contended, and it is the living character of economics which leads to the demand that its importance should be duly recognised. The advance has been remarkable, but though the spirit which animates inquiry is as vigorous in the field of economics as anywhere else, it must be remembered that in economics, as elsewhere, the attainment to anything approaching a perfected theory is very far distant, for a complete theory implies not only full knowledge of facts, but their correct treatment. "How distant such a goal is the hardest worker in the field knows best of all, for the circumstances of his inquiries teach him how slow progress is, and how great the continent into which his enthusiasm as a pioneer has enabled him to penetrate some little distance. A few generalisations which may endure, a somewhat mixed mass of material, a brief influence, constitute the work of the foremost." And yet, observed the lecturer, in the history of any science there come times when things move more rapidly than is their wont, as when waters chafing in a narrow passage suddenly burst down all obstacles, and establish themselves once and for ever in a wider channel. It is possible, and seems even probable, that some such moment of advance is before economics. "Materials have been accumulated with singular diligence, critical sagacity has discriminated and classified, and some great constructive advance seems not far distant. The atmosphere of economic thought is instinct with expectation. With a new realisation of the economic elements and motives of society, in the light of some conception perhaps little taken into account as yet, we shall stand nearer to the problem one part of which we strive to unravel—the forces which govern action and constitute society."

MECHANICAL SCIENCE SECTION.

In this Section, Mr. G. F. Deacon claimed that, with no reserve in the minds of reasonable men, the old fallacy of a discord between theory and practice has been swept away. For centuries that fallacy held apart, as it were, the oxygen and the nitrogen of that atmosphere in which alone the new life could exist. It limited the philosopher who examined the laws of nature almost entirely to the study of phenomena external to the earth on which he dwelt, and it stamped the practical man as a lower being, the possessor of certain necessary knowledge, having no relation to the studies of the schoolmen, and which it would be beneath their dignity to pursue. And notwithstanding the great names which have stood out in opposition to these views, the popular idea of discord between theory and practice took long to die, and only within the Victorian Age has the complete truth been generally recognised, that if one fails to account for the result of any physical combination, the cause is to be found not in any discord with theory, but in the fact that the observer has failed to discover the whole of the theory. English-speaking people alone, among civilised nations, use this word *theory* with unpardonable looseness—as almost synonymous in effect with *hypothesis*, and the result is fruitful of error. "Until the truth of any hypothesis is placed beyond all manner of doubt it is not, and should never be called, the theory." Turning next to practical matters, the lecturer suggested that a proper subject for consideration is to be found in any unnecessary waste of energy which may occur in the process of mental development of the men who are to succeed present-day engineers and inventors in the great work to which they devote their lives. Obviously it is to the interests of their calling, and consequently of the nation at large, that such waste should be reduced to a minimum. There may be waste of potential, as well as of actual energy, and if they fail to expend energy on certain subjects because their time is occupied with others which are less useful, it is waste of energy only differing in degree from its expenditure on useless subjects. There is assuredly no lack of potential energy in the coming race. In spite of any training, whether well or ill directed, a large proportion will become actual and useful energy; but guidance and direction being given, the mode of that guidance and direction should be the one best calculated to secure the highest possible proportion of useful effect. Some remarks on opportunities afforded to workers are worthy of application in many quarters It was pointed out that if we look back at the greatest names among the engineers and inventors of the latter part of the eighteenth century and the first half of this, we find that the majority were brought up in pursuits quite distinct from the work of their after lives, and by which they have become so familiar to us. There were scarcely any means whatever, beyond the original thought and dogged perseverance of the worker, by which those men could attain the knowledge they used with such effect. Men of no less exceptional parts are among us now, but the whole environment of their early work has changed. We have given to the exceptional man a starting-point of knowledge which, wisely used, lifts him as high above our heads as of old, but we have given to the average man a comparatively easy means of attaining the same knowledge. We cannot ensure the wise use of that knowledge, but we can at least endeavour to impart it in such a manner that the sense of right proportion shall be acquired and maintained. "We have made it more difficult to distinguish between the exceptional and the commonplace—between the gold and the silver, if not between the silver and the brass; let us be careful, so far as early guidance can control it, that the knowledge imparted to the average mind gives to that mind a fair start concerning the relations, undivided and indivisible, between true theory and sound practice."

Influence of Chemical Reagents and of Light on Germination.—Dr. A. J. J. Vandervelde finds that all chemical reagents used (salts of potassium, sodium, ammonium, barium, strontium, iron, copper) have a prejudicial effect on the germination of seeds. Nitrates are more injurious than chlorides, sulphates less injurious than either. Salts of barium and strontium are less prejudicial than those of calcium. Potassium chromate and bichromate and ferric sulphate are especially poisonous. Light appears to exercise no influence on the germination of seeds.—*Bot. Centralblatt*, lxix., 1897, p. 337.

CANADIAN NOTES.

(From our Toronto Correspondent.)

The Meeting of the British Association has caused considerable excitement in Toronto. The arrangements were very complete and everything was in shape for the opening, which took place on August 18. Interesting and important as the meetings of this Association always are, that of 1897 has fulfilled the promise to rank equal with any of its predecessors. For the second time in its sixty-seven years of existence the Association has met without the boundaries of the British Islands, and on both occasions Canada has had the honour of entertaining the distinguished visitors. Thirteen years ago the Montreal meeting was the first innovation, and so happily successful was the experiment that the second visit of the Association was decided on without any misgivings. This time it was Toronto's happy privilege to welcome the savants to whom science owes so much. They have been welcomed with characteristic cordiality, and with that unstinted hospitality which is proverbial of the queen city and its people. As a convention city its reputation is established; great and important would be the gathering that would cause a breakdown in its entertaining organisation. The American Epworth League recently marshalled its forces and invaded our borders with a host equal to one-seventh its entire population, yet its coming and going caused scarcely a ripple on the surface of our municipal or domestic life.

The American Association held its annual meeting in Detroit this year, and, its transactions ended, most of the members in attendance came east to take part in the deliberations of the British scientists. The foresight shown in arranging the date of the American meeting so that it should precede that of the British Congress insured a large attendance of American savants, which greatly conduced to the success of the event, as well as to the profit and enjoyment which is likely to follow. Many of the members of the British Association have been in our midst for some time, either renewing the acquaintance of their Canadian *confrères* or visiting various points of interest on the Continent. It is opportune that we should have as our guests the great men of the Empire this Jubilee year; it will be another potent influence in fostering the growth of the imperial idea which has taken deep root in the hearts of the people of this Dominion. The majority of the men who compose this Association are your own people, and their names are household words in the British scientific world, consequently they need no word of introduction from me.

PARLIAMENT BUILDINGS, TORONTO.

TORONTO UNIVERSITY.

The Committee of Management had arranged a formal reception for the members on their arrival. This was on the programme for Tuesday, but on account of the speed of the "Parisian" which conveyed the distinguished party across the "herring pond," it had to be brought forward a day. Among the social functions of the week, the most important was a reception by his Excellency the Governor-General, Lord Aberdeen, and Lady Aberdeen. This took place in the Parliament buildings, which had been kindly placed at the disposal of his Excellency for the occasion by the Local Government. The meetings of the different sections of the Association were held in the University buildings, those which could not be accommodated in the main building finding room in the various colleges scattered throughout the Park.

The Firm of Hooper and Co., Toronto, has recently been called upon to defend a charge of violation of the Ontario Licence Act by selling "Vin Mariana." Under the Act as amended last session of the legislature, druggists are prohibited from selling not only liquor in any quantities, but also "any mixture containing liquors mixed with any other drug or medicine in packages of not more than one pint

at any one time," except in a prescription of a regularly qualified physician. The reading of this clause is clear and definite, and without doubt includes such preparations as Coca Wine, Beef Wine and Iron, Quinine Wine, etc. The "Vin Mariana" people are defending the action through Messrs. Hooper and Co. One of the counts in the defence is the instructions issued to inspectors by the Licence Department "that it was not the intention of the Act to interfere with the sale of well-known proprietary articles." Magistrate Kingsford's decision is awaited with considerable interest by the pharmacists of the province.

The Council of the Ontario College of Pharmacy held its first semi-annual session since the election beginning August 3. Mr. Henry Walters, of Ottowa, was elected President, and Mr. W. A. Karn, of Woodstock, Vice-President. The financial statement of the registrar-treasurer was most satisfactory, showing a reduction of the debt on the college building of $5000 during the last year. Before the expiration of the present Council term the balance of indebtedness will be entirely wiped out, and we will then be in the enviable position of possessing one of the finest and best equipped colleges on the American Continent.

The Anti-Cutting Campaign is still on as vigorous as ever. With a change of forces employed, however, the strenuous efforts put forth for the past two years by the wholesale jobbers and retailers combined have been ineffectual to curtail the evil, and so determinedly hostile are the retailers becoming to all patent medicines that the manufacturers have been at last aroused to the seriousness of the situation, and are engaged in devising a plan that will offer some hope of success in accomplishing the desired object. The result of their two months' efforts will be presented to the wholesale and retail branches of the trade at their next general meetings to be held during the first week of September. In explanation I might say that the cutting evil is confined to the province of Ontario. The other provinces of the Dominion being as yet unaffected, except as they suffer from the "Mail Order Department" of the big stores in Toronto.

Dr. T. D. Reed, Dean of the Montreal College of Pharmacy, has been called to the Commission of the Peace for the district of Montreal. The Commission was gazetted July 24, 1897.

LETTERS TO THE EDITOR.

Formulæ, Methods, and Reactions.

Sir,—I am pleased to see that the *Pharmaceutical Journal* is making itself more and more useful to the general body of pharmacists as a trade paper and as a reference journal, while at the same time not losing its scientific character. The present series of notes on reactions, formulæ, etc., known under special names, is of great value in giving one in a concise form a quantity of information which often entails considerable labour in ascertaining from books of reference. The methods, reagents, reactions, etc., now known under special names, are so numerous that it is hopeless to keep pace with them, and it is even difficult to find mention of many of them in the ordinary books of reference accessible to pharmacists. The notes will be of greater service if subsequently republished in book form.

Liverpool, August 26, 1897. R. C. Cowley.

The Proprietary Articles Trade Association.

Sir,—Some time ago I ventured to seek information through the columns of the *Pharmaceutical Journal* as to the benefit the P.A.T.A. hoped to confer upon the retail chemist. Periodically I receive a copy of the *Anti-Cutting Record*, which informs me that a certain food or pill (of which I never heard before) has been added to the protected list; there are also some very nice specches which no doubt reflect very great credit upon the speakers, but I am still left in ignorance. To me, it seems the only immediate effect of the action of the P.A.T.A. is to bring into undesirable prominence, through other trade journals than our own, a branch of the chemist's business which has hitherto, particularly in small towns, formed a large portion of his turnover, and which he has managed to make, either directly or indirectly, fairly lucrative. Of the class of trade, the turnover, and general conditions under which the chemist in small towns conducts his business the promoters of the P.A.T.A. evidently know little, or the aim and objects of the Association would hardly arouse their enthusiasm. In towns too small to attract any of the large stores the great opponent in trade to the chemist is the grocer. He sells quinine wine, cod-liver oil, glycerin, etc., etc., but until recently the majority of grocers have been under the impression that the patent medicine trade required some special knowledge, or, at any rate, that it was not worth while troubling about. Now certain chemists have formed an association and are endeavouring to teach them that this is not so, and that not only is it an easy thing for a grocer to sell proprietary articles, but they have pledged themselves to use strenuous endeavours to secure for him a good profit for doing so, and the grocer, that "hard-headed business man" of whom we have heard so much lately, has fallen in with the proposal. I am not surprised. If the P.A.T.A. does not achieve that rapid favour and prominence which it covets, why not advertise, something after this style? "Shop-keeping made easy, safe profits, no previous knowledge of the trade required." Manufacturers have been assured that protected profits would tend to lessen substitution. This is hardly feasible, when in a few years nearly every grocer will take out a P.M. licence as a regular feature of his business; and if, as Mr. Glyn-Jones remarked the other day, the grocer turns over as many pounds in a week as the chemist does shillings, substitution would appear to be among the chief means left to the chemist of turning into account that training and qualification which have been so expensive to acquire. To give a man 10 per cent. extra profit on certain articles and then take away 50 per cent. of his sales seems rather a doubtful way of convincing him that you are working entirely for his benefit. If, as has been admitted, the raising of the minimum price of an advertised article a penny or twopence would not lower the sale, why have the manufacturers of some of the most popular proprietaries raised the wholesale price 6*d.* or 1*s.* per doz. on joining the P.A.T.A.? I should like to suggest to Mr. Glyn-Jones that he should use his persuasive eloquence to induce every manufacturer of a pill or potion to mix into it a harmless quantity of some scheduled poison, or cause to be placed in every tablet of scented soap the one-millionth part of a grain of arsenic, and then work to give us protected profits. The P.A.T.A. may possibly for a short time benefit a few chemists in large towns who are immediate sufferers from the competition of co-operative trading, but any coercive measure to check competition must of necessity check enterprise, and unless the drug business in England could be turned into a Government monopoly, the futility of such an undertaking is very apparent. I am afraid that in future this enterprise will attack the chemist in a much more vulnerable part than through the sale of proprietary medicines.

August 30, 1897. F. H. S. (108/19).

[Several Letters and Answers to Queries are held over.]

OBITUARY.

Ordish.—On August 12, Thomas Ordish, Chemist and Druggist, Derby. Aged 45.

Woodcock.—On August 16, Joseph Woodcock, Pharmaceutical Chemist, Leicester. Aged 67. Mr. Woodcock had been a member of the Pharmaceutical Society since 1852.

Rooker.—On August 17, Thomas Fletcher Rooker, Chemist and Druggist, Brierley Hill (Staffs.). Aged 65.

Matthews.—On August 23, Theophilus Matthews, Chemist and Druggist, Cambridge Road, London. Aged 73.

Pick.—On August 23, William Pick, Chemist and Druggist, Leeds. Aged 27.

Foxcroft.—On August 24, Elijah Foxcroft, Chemist and Druggist, Skipton (Yorks.). Aged 69.

Stiling.—On August 25, at 4, Courtenay Street, Newton Abbot, Arthur Cecil, the dearly-loved child of John and E. Stiling.

Ault.—On August 26, John Ault, Chemist and Druggist, Usk (Mon.). Aged 64. Mr. Ault had been a member of the Pharmaceutical Society since 1871.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Bevan, Colley, Cope, Cowley, Donald, Fraser, Gibbs, Gostling, Harries, Heap, Hogg, Holt, Kent, Kirkby, Marshall, McCartney, Meats, Newsholme, Reynolds, Seupham, Stiling, Umney, Wall, Wilson.

BOTANY AS A BUSINESS INVESTMENT.

BY E. M. HOLMES, F.L.S.

The keen competition of the present day is gradually narrowing the circle of articles which can be sold by the chemist only, for other trades with more capital can sell many of the articles sold by the chemist at a lower price. But in those which require a knowledge of science and of the art of pharmacy, he can, if he will, still find a chance of a livelihood, since in these he has fewer competitors. The writer does not propose here to refer to the sciences of chemistry, electricity, or physics, or to the art of pharmacy, but to point out to those about to enter the craft as apprentices, how to turn to the best advantage their opportunities during apprenticeship, with the view of acquiring botanical knowledge which shall be of pecuniary value to them when in business on their own account, and which may accordingly be looked upon as a good investment.

Unfortunately the majority of apprentices regard botany as a dry subject, to be studied only as a means of passing the examinations which bar their entrance into the craft, and to be relegated to the time, at the close of their apprenticeship, when they shal enter a course of study in a school of pharmacy.

To such I would point out that the time (from October to the end of June) now given to a course of lectures in a school of pharmacy is insufficient to obtain a good practical knowledge of the subjects treated of, and that there are difficulties attending the effort to compress into a limited time the rapidly increasing knowledge of those subjects, which the apprentice does not realise. In the first place the lectures on botany and materia medica are taken concurrently, and consequently botanical terms must be used in the lectures on vegetable materia medica which the student has not yet had explained to him in the botanical lectures. He is thus not in a position to intelligently keep pace with his work. In the second place, if the brain has not previously been trained to work regularly during apprenticeship, the power of apprehending and remembering all that has to be learned is much lessened.

It is advantageous, therefore, during apprenticeship to turn leisure hours to account in order to acquire gradually: (1) a knowledge of all the indigenous medicinal plants within reach, as well as of any wild or cultivated plants known to be poisonous. The conditions of growth, such as soil, shade, moisture, altitude, time of flowering should be noticed, and every organ of the plants described, the distinctive characters being underlined. A knowledge of the parts or organs of plants will thus be obtained which would render it possible to follow intelligently lectures on materia medica, and a habit of careful observation will be cultivated that will facilitate all future work. A knowledge of our indigenous plants would prove very useful in the midland counties, where a large trade is done in herbs by uneducated people, but which should be largely, if not entirely, in the hands of those who have botanical knowledge. These plants are not easily met with in or near very large towns or cities, but those who are apprenticed in the country have exceptional opportunities of becoming acquainted with them.

(2) An elementary knowledge of histology. To use a microscope properly, and to cut sections of plants for examination, and to learn how to apply chemical reagents to distinguish the different tissues, requires time. The apprentice should therefore endeavour to obtain this knowledge before attending a school of pharmacy. He will then have the more leisure to learn there in detail the structure of the more important drugs. In every case plants used in medicine should be chosen in preference to others to work upon (*Pharm. Journ.* [3], xvii., p. 236). Having, then, thus increased as far as possible the time available during the nine months to be devoted to study at a school of pharmacy, the student should endeavour at that school to learn how to recognise the characteristic features of the drugs, whether in the crude state or in powder, and to acquaint himself with all the qualities of drugs enumerated in wholesale drug lists, for it is such knowledge that will enable him to compete in business with unprincipled dealers, or with grocers or stores who have not a scientific acquaintance with the subject.

Such knowledge also will help him in cases of analysis where an analyst without such experience would be at a loss, and in toxicological or legal cases, in which a histological knowledge of the structure of poisonous drugs would enable him to give an expert's opinion.

But there are other branches of botany which have of late years assumed considerable importance, and which, although not forming at present an item in the examinations, are well worthy of the attention of pharmacists. Of these bacteriology is one, which has already been turned to account by some advanced pharmacists in the examination, on behalf of medical men, of sputa for *Bacillus tuberculosis*. Similarly, examination of hair for the ringworm fungus might form an additional source of income, since busy medical practitioners would in many cases willingly hand over such work to competent pharmacists. The field of bacteriology is one well worth exploiting for business purposes. A knowledge of the life history of ferments of the yeast class and of the conditions of their development and of their microscopical characters might also be turned to account, since most of the large breweries are now employing chemists who possess this information.

A knowledge also of the unorganised ferments of the diastase group and of their properties offers a promising field. These few instances may serve to indicate that there are possible applications of botanical science which the pharmacist might find worthy of his attention in these days, when the portion of the trade which does not require special scientific knowledge is gradually drifting away from him. To the pharmacist such knowledge will be of much more practical use than a wide acquaintance with phyllotaxis, the alternation of generations, the reproduction of cryptogams, apospory, the Schwendenerian theory, the ascent of the sap, and other subjects in which students are examined, but which they forget as soon as possible after examination, and perhaps with good reason, since the acquisition of new facts in regard to them is rendering new views necessary in many cases, and in others the knowledge has no practical application in business.

THE NATURE AND PURPOSE OF THE BRITISH PHARMACOPŒIA.*

BY C. O. HAWTHORNE, M.B.,

Fellow (by Examination) of the Faculty of Physicians and Surgeons; Lecturer on Materia Medica and Therapeutics, Queen Margaret College, University of Glasgow; Assistant Physician to the Western Infirmary; Clinical Assistant to the Professor of Medicine, University of Glasgow.

In the course of the practical demonstrations which we commence to-day, you will find that frequent reference will be made to the British Pharmacopœia as a volume to the commands of which it is our duty to pay strict attention. And at a still more advanced period of your studies, and even when you enter on the larger field of practice, the same somewhat mysterious authority will, at least in certain of your relationships, assert itself. It is therefore well for you at the outset to understand what exactly the Pharmacopœia is, and how in certain departments of medical work it comes to have supreme authority and command.

As the word Pharmacopœia suggests to you, it is a book which

* A lecture delivered in Queen Margaret College as an introduction to the course of Practical Pharmacy, Summer Session, 1897.

deals with the preparation and composition of medicines, and its authority arises from the fact that it is issued by the General Medical Council in compliance with directions given to the Council in certain Acts of Parliament. Here, upon the cover of the book, is the advertisement of its legal and official character in the form of the royal arms, and the phrase "By Authority." At first sight it seems rather curious that the legislature should concern itself to secure the production of a book dealing with the composition of medicines. There, is, however, a very good reason for such action on the part of the legislature, and that reason is the safety and welfare of the public. As you know, members of the public not infrequently purchase medicines for themselves, and it is part of the daily habit of the country for patients to receive from physicians written directions for medicines in the form of prescriptions, and to get these medicines prepared or dispensed by presenting the prescription to a pharmacist or dispenser. Now manifestly it is for the public safety and welfare that, in all these transactions, the same name shall always mean one and the same substance, of one and the same standard of strength. If every druggist or pharmacist may make (say) tincture of opium of any strength he individually thinks proper, the name "tincture of opium" may mean different things in different shops, and a dose which from one source may be beneficial, from a second may be useless, and from a third fatal. In exactly the same way, in the absence of authority, the exact composition and strength of a medicine dispensed from a physician's prescription might vary according to the pharmacist who dispensed it. Neither the physician who wrote the prescription, nor the patient who received it, could be sure that the pharmacist who dispensed it would understand its terms in the sense in which the physician employed them. Such confusion and uncertainty would be most prejudical to the public interest. It therefore becomes necessary to remove all chance of such confusion by providing some authoritative voice to define the exact meaning to be attached to the names of medicines, so that the same name shall in every part of the kingdom and to every person mean one and the same substance.

The one authoritative voice to which all must listen is the law of the land. Hence it is under the sanction and authority of the law that the Pharmacopœia is issued as a "uniform standard and guide whereby the nature and composition of substances used in medicine may be ascertaincd and determined." The position, in short, is this. It is in the public interest that medicines which bear the same name shall be of the same composition and strength. Such uniformity can be secured only by providing an official and imperative definition which everyone must accept, and to which everyone must conform. Hence the existence of the Pharmacopœia, and the compulsory force given to its directions by legal enactment.

We find, then, in the Pharmacopœia the names of those medicines which, in the judgment of the General Medical Council, require authoritative recognition in the public interest. And each name is provided with an exact definition, so that there can be no mistake as to its meaning. Take for example this medicine, viz., poppy capsules. It is named in the official list, and its official definition is, "the nearly ripe dried capsules of *Papaver somniferum*." This is the sense in which the Pharmacopœia uses the term "poppy capsules," and hence, when that term appears in a physician's prescription, every pharmacist in the kingdom is compelled to apply to it one and the same meaning, viz., that expressed in the Pharmacopœia.

But it is necessary for the Pharmacopœia to go further. It may not be possible for every dispenser to cultivate for himself the poppy capsules he requires, and it certainly is not possible for him to obtain at first hand many of the official remedies, as these come from all parts of the world. Therefore, he must depend largely for his supplies upon British and foreign merchants. Now, if the Pharmacopœia only provides names and definitions of medicines, the pharmacist may be deceived in some of his purchases. Some substance may be sold to him under the pharmacopœial name, and yet not be what it professes to be. He may in all innocence use this in the preparation of medicines, which will then not be of the nature and quality desired by the physician and patient. The medicines will masquerade in the official dress without corresponding to the official definition. Thus the purpose of the Pharmacopœia to secure uniformity in the practical interpretation of the names of medicines will be defeated. Against this result the Pharmacopœia provides by attending to the name and definition of each remedy a description of its physical characters. The pharmacist can therefore compare the medicines he dispenses with the official descriptions. Thus he is placed in a position to detect any attempted act of substitution or adulteration, and to have a personal knowledge that each substance which he uses under an official name is actually the substance named, defined, and described in the Pharmacopœia. This position is incumbent on the pharmacist. If he supplies under an official name a substance not corresponding to the official definition, it is no excuse for him to plead that he purchased it as genuine. It is his duty to compare the medicines he deals in with the official descriptions, and only to use those which, by their correspondence with these decriptions, he can personally guarantee to be genuine.

But it is obvious that a mere description of physical characters will not in all cases be sufficient to enable the pharmacist to determine the genuineness and purity of his medicines. For example, two substances may have physical characters practically identical. Thus the crystalline form of zinc sulphate is the same as that of magnesium sulphate, and the iodide of potassium is not by its physical appearances easily distinguished from the bromide. In these and other cases, therefore, an official description limited to the physical characters of the substances would not put the pharmacist in a position to guarantee the genuineness and purity of the medicines he supplies. Similarly in the case of such a substance as distilled water, a mere contemplation of its physical characters will not lead to the detection of impurities, such as lead, carbonic acid gas, or mineral salts, even though these should be present in considerable amounts. Hence, in these and numerous other cases, the Pharmacopœia not only provides a description of the physical characters of the medicines, but, in addition, enumerates chemical tests, by the application of which to any particular specimen the genuineness or otherwise of this may be determined. It is not, however, merely for medicines of inorganic origin that chemical tests are necessary. Thus there are numerous medicines of organic origin which depend for their medicinal value on the presence of definite chemical principles, and these are quite capable of quantitative estimation. Cinchona bark, for example, is, roughly speaking, valuable as a remedy because of the presence in it of quinine, and the medicinal activity of any specimen of the bark will therefore depend upon the amount of quinine the specimen contains. Now, in physical characters, a specimen of cinchona bark poor in quinine may closely resemble a specimen of bark rich in quinine; and, therefore, unless the Pharmacopœia in describing cinchona bark gives the details of a quantitative test by which the percentage of quinine may be estimated, one pharmacist may be supplying and using a bark of considerable medicinal efficacy, whilst another may be using a bark which has little or none. Hence the tinctures, infusions, and other preparations of cinchona, supplied or dispensed by the one man, will have quite a different strength from the similarly named preparations dispensed by the other. In short, the main object of the Pharmacopœia will be defeated. The same name will not always mean the same medicine of one and the same strength. But when in the Pharmacopœia cinchona bark is not only named and defined and its physical characters described, but in addition, an official standard of its value in quinine is stated, and a test is provided by which it can be determined whether a specimen of the bark does or does not come up to that standard, it is manifest that the official meaning of cinchona bark is made very precise and definite. In the official sense, it is not merely the bark of a particular tree, but a bark having a certain definite quinine value. The introduction into the Pharmacopœia, therefore, of a quantitative chemical test in connection with the description of cinchona bark, compels every pharmacist to use cinchona bark of one and the same quinine value, and hence the medicinal strength of the tinctures and other preparations of cinchona is the same by whatever pharmacist they are prepared. The same remarks apply to opium and many other remedies. Two pieces of opium, as far as their physical characters are concerned, may display no appreciable difference. Yet one may contain 10 per cent. of the active principle, morphine, and another only 5 per cent. If the Pharmacopœia only provided a description of the physical characters of opium, the pharmacist might use one or other of these two, and the strength of (say) the tincture of opium which he supplied would vary accordingly. The name tincture of opium would therefore not always mean the same substance of one and the same strength.

(*To be continued.*)

HOW TO BECOME A PHARMACIST.

IN GREAT BRITAIN.

BRIEFLY, the conditions of registration as a chemist and druggist in Great Britain are that the candidate must be of the full age of twenty-one years, he must have been engaged for at least three years in the translation and dispensing of prescriptions, he must have passed a simple scholastic examination in Latin, English, and arithmetic; also the Minor or qualifying examination, which tests his knowledge of chemistry, physics, botany, materia medica, prescription-reading, dispensing, practical pharmacy, and the poison regulations. To secure full qualification as a pharmaceutical chemist, he will be required subsequently to pass the Major examination, the subjects of which are advanced chemistry, physics, botany, and materia medica.

The first step in any properly arranged course of technical education should always be to show proof of satisfactory school training. This, the would-be pharmacist should do by passing one of the scholastic examinations specified in the list on page 233. Preference should, in all cases, be given to the Matriculation Examination of the University of London, as passing this serves as a stepping stone to all the learned professions and puts the pharmaceutical student upon the highest level. His knowledge of the various subjects will be much more thorough than if he merely passes the Preliminary or First examination of the Pharmaceutical Society, and his subsequent studies considerably lightened.

Next in order comes the period of pupilage. This need not exceed three years, but the student will lose little if he should be apprenticed for a longer period, so long as the indentures include a clause permitting him to attend day classes during the last year. Apprenticeship in a good all-round business is strongly recommended, as under such circumstances the peculiar value of the pharmaceutical training is better brought out than is otherwise possible. As soon as apprenticeship is entered upon a copy of the pamphlet 'Advice to Students' should be obtained from the Secretary of the Pharmaceutical Society, 17, Bloomsbury Square, London, W.C., who will send it free on application. This pamphlet contains detailed information as to the best way of studying chemistry, botany, materia medica, and pharmacy during apprenticeship.

The book that should most engage the student's attention from the outset of his career is the British Pharmacopœia. A very large proportion of it will probably be worse than Greek to him at first, but nothing but good can result from comparing drugs, chemicals, and galenical preparations with the official descriptions, committing doses to memory, and learning any of the thousand and one facts that must be known sooner or later. The practical study of chemistry should also be commenced during his first year, and the mysteries of prescription Latin will serve to fill up odd moments.

During the second year the student's knowledge of chemistry may be applied in the interpretation of passages in the Pharmacopœia that were not clear when first attacked. Attfield's 'Chemistry' and the "Explanatory Notes on the B.P.," now appearing in these pages, will be found the best guides in this direction. Botany should be studied practically in the fields and lanes, with Holmes' 'Botanical Note-Book' and John's 'Flowers of the Field' as constant companions. This might be followed by a course of lectures on botany, accompanied by practical work. Chemistry, however, should receive the lion's share of attention, and the B.P. constitute the student's chief text-book.

Materia medica and practical pharmacy may be attacked systematically the third year, though numerous facts bearing on both subjects should have been already accumulated. It will also be found advantageous to begin preparation for the Jacob Bell Scholarships examination. The subjects of this—Latin, French or German, English, arithmetic, chemistry, pharmacy, and botany—should by this time all be more or less familiar to the student, and the mere attempt to win one of the scolarships will result in incalculable benefit to the candidate, whether he be successful or not.

The next step will probably be to take a college course in preparation for the qualifying examination. Particulars of the various institutions where suitable courses are conducted will be found at page 248, *et seq.* Nine months is none too long a period to devote to preparation for the Minor, and that over, six or nine months more should be spared for further study, prior to entering for the Major examination. Whilst the Minor qualification confers the title of "chemist and druggist" and is all that is legally necessary to practise pharmacy without let or hindrance, passing the higher examination gives the right to the title "pharmaceutical chemist," entitles the successful candidate to be elected to full membership of the Pharmaceutical Society, and exempts him from all jury service. Finally, it may be noted that registration in Great Britain practically entitles chemists and druggists or pharmaceutical chemists to practise pharmacy anywhere in the British Empire except Ireland. Certain formalities are necessary in most cases outside Great Britain, but no further examination has to be passed as a rule. Detailed particulars regarding the British examinations will be found at page 233, *et seq.*

The Cost of a Pharmaceutical Education.

To every youthful aspirant to the title of "Pharmaceutical Chemist," or, more often, to his parents or guardians, the question of the pecuniary outlay that will be necessary to attain a full qualification will be a matter of the first consideration. To furnish information on this important point the matter has been considered in the light of the personal experience of several pharmacists, with the result that will be seen below. It is not claimed that the curriculum cannot, under exceptional circumstances, be followed at a lower outlay than is here stated, as it is well known that this is often done, and done satisfactorily. On the other hand, in many, perhaps in the majority of cases, the sums stated are considerably exceeded. In the present scheme the only extravagances countenanced is in regard to books.

The importance of passing the First examination or its equivalent while yet at school has already been urged. The standard of this entrance to the calling is such that it may be readily passed by any intelligent schoolboy. If this step be not taken previous to apprenticeship, the requisite rudimentary educational work will become of necessity more irksome as the months roll on, and at the same time will occupy valuable hours that might be more profitably spent in acquiring the groundwork of scientific subjects.

The initial cost in his carecr will therefore be the "premium" which will be required by the would-be apprentice's master. Probably no step in the young pharmacist's life requires greater

circumspection than this pupilage or apprenticeship. When the duties and obligations are properly carried out by the contracting parties on both sides, the apprentice will learn more, and his receptive mind will receive more lasting impressions than at any other period of his career. A pharmacist who takes an apprentice into his business virtually has the power of training him into a good, an indifferent, or a bad pharmacist. It is to be regretted that the tendency prevails to look upon the agreement or indenture as a "mere matter of legal form," but this is not at all the light in which the matter should be regarded. No one should take a lad's premium unless he has the opportunity, the capability, and the intention of teaching his pupil the rudiments of his art and business. It is to ill-directed apprenticeships that much of the indifference and lack of interest in the craft displayed among the junior members can be attributed; and also, to a still greater degree, the large number of failures at the examinations. If we trace the careers of those who figure in the prize lists of the schools, or who have in after life become prominent pharmacists, it will be found that one man has often trained several of these brilliant students or successful business men. The principal who "turns out" his apprentices well trained and well equipped for their future career, confers a benefit not only on his individual pupils, but also on the pharmaceutical body as a whole. Such tuition and supervision for a period of three years cannot, however, be had for nothing, and at the least will cost £80 to £100. Then the cost of clothing and pocket money, as well as of a few elementary books, must be considered. To this may be added the fees of some Science Classes in elementary chemistry, botany, and physics, which should, if possible, be attended during the apprenticeship period. This will come to at least another £50.

Presuming that the student has passed through his pupilage, and is about to enter the pharmaceutical curriculum, the cost may be set down approximately as follows:—

Fees for School, Lectures, etc.

	£	s.	d.
Elementary Course	30	0	0
Advanced ,,	18	0	0
Books (at least)	8	0	0
Examination Fees, Minor	5	5	0
,, ,, Major	3	3	0
Apparatus	2	0	0
Maintenance for 62 weeks at 30s.	93	0	0
Clothing and incidental expenses	15	0	0
	174	8	0
Premium for 3 years' pupilage	100	0	0
Clothing and incidental expenses for 3 years' pupilage	50		0
Total cost of pharmaceutical training	324	8	0

It will thus be seen that even supposing the student be successful at each examination at the first attempt, and of course it is assumed that he will be, the total cost of a pharmaceutical training will be considerably over £300, and is most likely to reach fully £350. The above scheme of cost is intended to give a fair average, obviously it may be modified in many directions. Thus the premium for apprenticeship may be much lower than here estimated. Again, two students may arrange to live together to their mutual pecuniary and intellectual advantage. If they are of about equal ability, not only will their expenses be materially lessened, but they will greatly aid each other in their studies. It is not advised that more than two men should read together systematically, experience showing that in this, as in other affairs, "two are company and three none."

The Student's Library.

At the outset it may be stated that the student is advised to be extravagant to the utmost limits of his purse in the purchase of books, as he will find that saving in this direction is not true economy. In every case only the latest edition of a work should be obtained, for so rapid is the advance of the various sciences which affect pharmacy in its many ramifications, that even these are often behind the times, and the most recent information can only be obtained in the current pages of periodical pharmaceutical literature. Again, he is advised not to limit to any one author his reading in a subject. No greater fallacy exists than to presume that a student can acquire even a passable (we use the term without reference to the examinations) knowledge in any subject who relies too implicitly on one author, however eminent, as his guide to knowledge. Those who pin their faith to one text-book and rely solely on one manual, acquire, at the best, but a limited knowledge; they are, as it were, bigoted, biassed, and pedantic, and are apt to unduly exaggerate the importance of their author and of their own knowledge of the subject. This frame of mind is particularly noticeable in the younger, more successful, and less experienced students; it disappears when further experience teaches them the extremely small value that really appertains to this kind of learning. Then, at last, the distinction between learning and knowledge will dawn upon them. General reading will to a great extent obviate this narrowing of the intellectual horizon and leave the student more open-minded.

Yet at the same time the student is not advised to become a too discursive reader. Rather let him train his faculties of condensing and selecting. He should, too, practise the habit of note-making, and take copious classified memoranda on one subject from different authors. Nor should he neglect to read intelligently the current literature of his calling and also those journals which treat of subjects entering into it. A couple of hours spent in this last-named reading every week will be by no means time wasted, and many an item of interest will thus be gleaned which will probably prove of service at some future time. Also he will do well to have the past volumes of the Journal bound, as in that form they are more useful for reference.

In the course of reading it will be found that a definite time should be set aside for each subject, allowing naturally a longer period for those matters in which the greatest deficiency is felt to exist. Never let the period of study be prolonged after the interest begins to flag; with an industrious healthy mind the first sign that the brain has, for the time, had enough work, is this disinclination for further mental exertion. The attention may then be turned to some less exacting subject, or study may be entirely discontinued. Reading "against the grain" is generally valueless.

Selection of Books.—In almost all departments of the subjects of which the student is required to have a knowledge there is an ample supply of text-books at his disposal. An exception exists in works on pharmacy. In England there is not, unfortunately, one single work that can claim to be a text-book on the subject. In all the other sciences the supply is, fortunately, ample and the quality excellent.

Botany.—The introductory work may be taken with Scott's 'Introduction to Practical Botany,' aided by Holmes' 'Botanical Note-book." After this general reading should be grounded on Green's 'Manual of Botany.' For histological work Bower's 'Practical Botany' may be followed by Strasburger's 'Handbook of Practical Botany.' The student should procure a microscope of his own and work practically at this most interesting portion of the subject. Field botany will form a pleasant study for the open months of the year. For this Bentham's 'Handbook of the British Flora' is a standard work, and may be usefully supplemented with Hayward's 'Botanists' Pocket Book,' which should be carried in the pocket on every excursion.

Materia Medica.—As an introductory work, Muter's 'Key to the Organic Materia Medica' may be taken, and a collection of specimens such as Southall's 'Students' Cabinet' obtained. For general reading Maisch's 'Organic Materia Medica' will be preferable, and as a work of reference Flückiger and Hanbury's 'Pharmacographia' is the standard, although the chemical notes therein are out of date.

Chemistry.—For practical work the commencing learner will probably start with the familiar Attfield's 'Chemistry.' The more advanced student may supplement this with Muter's 'Short Manual of Analytical Chemistry,' and the little handbook of Pearmain and Moore, 'Analysis of Foods and Drugs,' contains many useful and recent processes well abstracted and put together. Organic chemistry will require either Remsen's 'Organic Chemistry,' or Bernthsen's work of the same name. Perkin and Kipping's 'Organic Chemistry' is also a valuable work. Tilden's 'Chemical Philosophy' should be carefully perused; a useful practice in chemical calculations will be found in Lupton's 'Chemical Arithmetic.'

Physics.—Everett's 'Physics' and Woodward's 'Physical Arithmetic' may be extended by an ultimate selection of articles from Ganot's 'Physics.' The last is a standard work, which will serve as a reference in after days. 'Electricity and Magnetism,' by T. Dunman, is an excellent little work on these special subjects.

Pharmacy.—The initial point in all reading should be the Pharmacopœia. It is a good plan to have this work rebound, interleaved with pages of notepaper, and to use these for notes on the subjects on the corresponding pages of the letterpress. In this way the student's B.P. will prove the most useful of all his notebooks. The notes which appear in the "Students' Page" of the *Pharmaceutical Journal* will be found of great service if abstracted in this way. As has already been stated, there is unfortunately no one work on pharmacy which embraces the whole art in a form suitable for students. Squire's 'Companion to the B.P.' is a most valuable and reliable work, which will always be of service to the pharmacist, both during his student days and afterwards. Martindale's 'Extra Pharmacopœia' is also a useful little work of reference, and Cripps' 'Galenic Pharmacy' will be found serviceable. Remington's 'Practical Pharmacy' should be used for reference, and Proctor's 'Lectures on Practical Pharmacy' should be read through.

Pharmaceutical Latin should require but little attention from the educated pupil fresh from school. To keep his knowledge fresh, and to acquire a good vocabulary of technical words, a Latin edition of the 'P. L. 1851' should be occasionally looked at, and Ince's 'Latin Grammar of Pharmacy' be obtained. 'Selecta e Prescriptis' has an old-world flavour, and its prescriptions an almost mediæval sound, yet they afford useful practice for the pharmaceutical neophyte.

It is not necessary that the student should procure the whole of the works recommended at once, although he will, in the course of his studies, find them all of service. During his apprenticeship he should take elementary botany during the spring and summer, chemistry and physics in the winter, and if possible, attend elementary classes, such as those of the Science and Art Department. The B.P. should be used as the guide in the choice of subjects in reading. Books are now so cheap and excellent that a really good working library can be gradually accumulated by any student who sets his mind upon acquiring one. Once collected these books will be found serviceable for reference in the ordinary course of business after the curriculum has been completed, and when the successful candidate has gained the long looked-for goal of qualification.

ROYAL COLLEGE OF SURGEONS OF ENGLAND
20 SEP 97
LIBRARY

Particulars of Examinations, Prizes, and Scholarships.

FIRST EXAMINATION.

(For Registration as Apprentices or Students.)

Fee Two Guineas.

This examination will be held, at the following centres at 11 o'clock, on the second Tuesdays in January, April, July, and October :—

Aberdeen	Carnarvon	Lancaster	Nottingham
Birmingham	Cheltenham	Leeds	Oxford
Brighton	Darlington	Lincoln	Penzance
Bristol	Dundee	Liverpool	Peterborough
Cambridge	Edinburgh	London	Plymouth
Canterbury	Exeter	Manchester	Sheffield
Cardiff	Glasgow	Newcastle	Shrewsbury
Carlisle	Hull	Northampton	Southampton
Carmarthen	Inverness	Norwich	York

Also at the following centres in July only :—

Jersey ; Guernsey ; Isle of Man (Douglas) ; Orkney (Kirkwall).

Candidates must give notice to the Registrar in London, on a printed form of application, which can only be obtained from him, and pay the fee not less than fourteen days prior to that on which the examination is to be held. Each candidate must at the time of entry state at which of the centres he desires to present himself.

The examination is wholly in writing, and comprises the following

SUBJECTS.

Latin.—Grammar ; translation of simple sentences from English into Latin. Translation into English from Cæsar, 'De Bello Gallico,' Book I., or Virgil, 'Æneid, Book I. [In each examination paper passages from both of these authors will be given, but a candidate is required to translate from one author only.]

Arithmetic.—Numeration ; the first four rules—simple and compound ; reduction ; vulgar and decimal fractions ; simple and compound proportion ; a thorough knowledge of the British and metrical systems of weights and measures ; percentages and stocks. [In each examination paper a question will be given involving a knowledge of the metrical system, which every candidate will be required to attempt.]

English.—Grammar and composition. [In awarding marks, spelling and the quality of the handwriting are taken into account.]

TIME ALLOWED.

Latin, 11 a.m. to 12.30 p.m. ; arithmetic, 12.30 p.m. to 2 p.m. ; English, 3 p.m. to 4.30 p.m.

Special Notice.—Each certificate must be forwarded to the Registrar with the fee of two guineas for the approval of the Board of Examiners, and must have been so approved by the Board of Examiners before the candidate will be eligible to enter his name for the Minor examination.

The Boards of Examiners are empowered to accept in lieu of the First examination of the Society a certificate of having passed at one examination all the compulsory subjects of any one of the following examinations, provided Latin, Arithmetic, and English were included in the subjects of the examination for which the certificate was granted :—

University of Oxford.

Junior or senior local examinations.
Responsions.
Moderations.
Examination for a degree in arts.

University of Cambridge.

Junior or senior local examinations.
Higher local examinations.
Previous examination.
Examination for a degree in arts.

University of Durham.

Junior or senior local examinations.
Registration examination for medical students.
Examination for students at the end of their first year.
Examination for a degree in arts or science.

University of London.

Matriculation examination.
Preliminary scientific (M.B.) examination.
Examination for a degree in arts or science.

Victoria University.

Entrance examination in arts of the faculty of medicine.
Preliminary examination.

University of Edinburgh.

Junior or senior local examinations.
Preliminary examination for graduation in science or medicine and surgery.
Examination for a degree in arts or science.

University of Aberdeen.

Junior or senior local examinations.
Preliminary examination for graduation in medicine or surgery.
Examination for a degree in arts.

University of Glasgow.

Junior or senior local examinations.
Preliminary examination for graduation in medicine or surgery.
Examination for a degree in arts.

University of St. Andrew's.

Junior or senior local examinations.
Preliminary examination for graduation in medicine or surgery.
Examination for a degree in arts.

University of Dublin.

Public entrance examinations.
Examination for a degree in arts.

Royal University of Ireland.

Matriculation.
First university examination.
Second university examination.
Examination for a degree in arts.

Queen's University in Ireland.

Local examinations for men and women.
Entrance or matriculation examination.
Previous examination for B.A. degree.
Examination for a Degree in Arts.

Oxford and Cambridge Schools' Examination Board.

Certificate.

Royal College of Surgeons of England.

Preliminary examination for the membership or for the fellowship.

Royal Colleges of Physicians and Surgeons of Edinburgh.

Preliminary examination in general education, conducted by a board appointed by these two colleges combined.

Faculty of Physicians and Surgeons of Glasgow.

Preliminary examination in general education.

Royal Colleges of Physicians and Surgeons in Ireland.

Preliminary examination.

Apothecaries' Hall of Ireland.

Preliminary examination in general education.

Intermediate Education Board for Ireland.

Certificates.

Owens College.

Junior students' general examination.

College of Preceptors.

Examination for a first or second class certificate.

Incorporated Law Society.

Preliminary examination in general knowledge.

University of the Cape of Good Hope.

Matriculation examination.

Scotch Education Department.

The honours and first grade leaving certificates are accepted, provided the certificates in English, Latin, and arithmetic are all obtained at any one annual examination.

MAJOR AND MINOR EXAMINATIONS.

The Boards of Examiners in London and in Edinburgh meet in January, April, July, and October.

The written and practical portions of the examinations precede the oral portions.

INSTRUCTIONS TO CANDIDATES.

Each candidate must give notice and pay the fee to the Registrar in London on or before the fifteenth day of the month immediately preceding that in which the Boards meet, and he will receive due notice of the date on which he will be required to present himself for examination.

When giving notice (for the first time), a candidate for the Minor examination must have attained the full age of twenty-one years, and must have been registered as having passed the First examination. He will at the same time be required to produce a registrar's certificate of birth, and a certified declaration that for three years he has been registered and employed as an apprentice or student, or has otherwise for three years been practically engaged in the translation and dispensing of prescriptions.

The printed form on which this declaration is to be made can only be obtained from the Registrar in London.

The attention of candidates who desire to submit, for the approval of the Boards of Examiners, the certificates of other examining bodies in lieu of the First examination, is specially directed to the regulation that those certificates must have been approved by the Boards of Examiners before such candidates will be eligible to enter their names for the Minor examination.

MODIFIED EXAMINATION.

Persons entitled to enter for the Modified examination, and desirous of so doing, should apply to the Registrar for particulars. No person is eligible for this examination who did not register for the same on or before December 31, 1869.

Special Notice.—Each candidate must state, at the time of giving notice to the Registrar, Mr. Richard Bremridge, 17, Bloomsbury Square, London, W.C., whether he desires to be examined in London or in Edinburgh.

MINOR EXAMINATION.

For Registration under the Pharmacy Act, 1868, *as Chemists and Druggists.*

Fee Five Guineas.

The Council of the Pharmaceutical Society recommends that all candidates, before presenting themselves for examination, should receive a systematic course of instruction occupying a period of not less than six months; and that such period of study should include at least 60 lectures in chemistry, 18 hours' work in each week in practical chemistry 45 lectures and demonstrations in botany, and 25 lectures and demonstrations in materia medica.

The following are the subjects of examination:—

CHEMISTRY AND PHYSICS.

The candidate will be expected to possess an elementary knowledge of the following subjects:—

(α) The law of the conservation of energy; the law of gravitation; the balance; specific gravity; atmospheric pressure; the barometer, air-pump, and siphon; the law of Boyle; temperature; thermometer; the law of Charles; the law of gaseous diffusion; V. Meyer's method for determining vapour densities.

(β) The chief characteristics of chemical action, the distinction of elements and compounds; the laws of chemical combination by weight and volume; the hypothesis of Avogadro; atomic weight and molecular weight; chemical formulæ and nomenclature; valency; the distinction between metals and non-metals.

(γ) The general characters of the non-metals; the chief methods of preparation and the typical reactions of the following non-metallic elements and compounds:—Hydrogen, oxygen, ozone, water, peroxide of hydrogen; chlorine, bromine, and iodine, and their compounds with hydrogen and oxygen; fluorine, hydrofluoric acid; nitrogen, ammonia, the oxides of nitrogen, nitrous acid, nitric acid; sulphur, sulphuretted hydrogen, sulphurous and sulphuric anhydrides and acids, thiosulphuric acid; phosphorus, phosphine, the oxides and oxy-acids of phosphorus, the chlorides of phosphorus; silicon, silica, fluoride of silicon, silicofluoric acid; boron, boric acid. The usual impuriteis in those of the above-named substances that are included in the British Pharmacopœia.

(δ) The general characters and classifications of the metals, and the general methods of forming oxides and salts; the sources, the usual methods of extracting, and the chief properties of the undermentioned metals, and the principal modes of preparation, properties, adulterations, and contaminations of such of their compounds as are described in the British Pharmacopœia,—potassium, sodium, ammonium, lithium, barium, calcium, magnesium, zinc, aluminum, iron, chromium, manganese, arsenium, antimony, tin, copper, bismuth, lead, silver, mercury, gold, and platinum.

(ε) Carbon, its oxides, cyanogen, hydrocyanic acid, cyanide of potassium, ferrocyanide and ferricyanide of potassium, oxalic acid. The chief methods of preparing marsh gas, ethylene, alcohol, aldehyde, acetic acid, acetate of ethyl, spirit of nitrous ether, nitrite of amyl, hydrate of chloral, chloroform, iodoform, ether; the principal properties, reactions, and mutual relations of these compounds. The candidate will also be expected to possess a general knowledge of the methods of estimating carbon, hydrogen, oxygen, and nitrogen in organic compounds, and of obtaining molecular formulæ.

Note.—Candidates will be expected to solve simple problems relating to the weight and volume, under different conditions of temperature and pressure, of elements and compounds, concerned in chemical reactions.

CHEMISTRY.—Practical Examination.

To determine the specific gravity of liquids and solids, to be familiar with the general construction and use of the thermometer and barometer.

To recognise by chemical tests the more important non-metallic elements and compounds, as well as the metals and salts indicated in the foregoing list; to detect the chief impurities in those that are included in the British Pharmacopœia; to recognise by their physical properties those which possess well-defined characteristics.

To identify by chemical tests the organic compounds before enumerated, and, in addition, tartaric and citric acids, starch, cane sugar, grape sugar, salicin, quinine, morphine, and strychnine; and to detect the impurities in such as are included in the British Pharmacopœia.

To perform those volumetric determinations which are described in the British Pharmacopœia.

To be familiar with the construction and use of the balance, and to have a practical knowledge of the British and metric systems of weights and measures.

To quantitatively determine the total alkaloids in cinchona bark, and in the tincture and extract of nux vomica, and the morphine in opium.

The candidate will further be expected to have a practical

acquaintance with the methods of preparing the more important inorganic substances, including the non-metals and their compounds, and such metallic compounds as are included in the British Pharmacopœia, and also the following organic compounds :—Ether, chloroform, spirit of nitrous ether, nitrite of amyl, acetate of ethyl, and hydrocyanic acid, so that he may be able to explain to the examiner the operations involved in their preparation, and, if called upon, to perform the operations or certain stages of them himself.

BOTANY.

The candidate will be required to recognise any of the plants specified in the list appended to this schedule ; to refer any flowers that may be shown to him to their class and sub-class ; to possess a general knowledge of the internal structure of stems, leaves, and roots, and their parts, and of the elementary tissues of which they are composed ; to describe a cell, its structure and usual contents ; to explain the thickening of cell-walls, and to describe the manner in which cells are combined to form tissues. To distinguish between roots and stems, and to name such important modifications of either as present distinguishing characteristics. To name correctly such leaf shapes as are shown, and to recognise appendages or any important modifications of the leaf. To have a practical knowledge of the various arrangements of leaves or flowers in the bud, and of the different kinds of phyllotaxis and of inflorescence ; to understand the principles of branching, and the different kinds of branch systems. To possess a general knowledge of the processes of reproduction of plants and to describe those of phanerogams and ferns. To name and describe the arrangements of the parts of the flower, the number, position, and shape of the floral envelopes and of the organs of reproduction ; to name and describe the different kinds of fruits, and the various modes of dehiscence and kinds of placentation. To have a general knowledge of the physiology of plants, and to describe the functions of the roots, stems, and leaves. To be acquainted with the materials which form the food of plants, and to understand the part played by starch, sugar, and aleurone grains in the life of the plant. To recognise, by means of the microscope, sections of stems of dicotyledonous, monocotyledonous, and cryptogamic plants ; spiral, reticulated, and scalariform vessels ; as well as the simpler structures, such as stomata, pollen grains and hairs.

List of Plants for Recognition.

Aconitum napellus
Papaver rhœas
,, somniferum
Brassica alba
Cochleria armoracia
Althæa officinalis
Ruta graveolens
Cytisus scoparius
Rosa canina
Bryonia dioica.
Æthusa cynapium
Conium maculatum
Fœniculum capillaccum
Œnanthe crocata
Valeriana officinalis
Achillea millefolium
Anthemis nobilis
Matricaria chamomilla
Taraxacum officinale
Menyanthes trifoliata
Borago officinalis
Atropa belladonna
Daturia stramonium
Hyoscyamus niger
Solanum dulcamara
Digitalis purpurea
Lavandula vera
Mentha piperita
Mentha viridis
,, pulegium
Rosmarinus officinalis
Daphne laureola
,, mezereum
Juniperus sabina
Taxus baccata
Colchicum autumnale
Arum maculatum
Avena sativa
Hordeum vulgaro
Triticum sativum
Aspidium filix-mas.

MATERIA MEDICA.

The candidate is required to recognise specimens of any crude drug mentioned in the British Pharmacopœia or in the annexed list, and to describe their methods of production and their characteristics so far as may be necessary to detect adulteration or substitution. He must be familiar with their geographical sources, the botanical and zoological names of the plants and animals yielding them, the natural orders to which they belong, and the localities from which they are obtained. The candidate will be required to name their chief active constituents and also the official preparations into which they enter.

Roots.

Althea officinalis
Inula helenium
Alkanna tinctoria
Bryonia alba et dioica

Rhizomes, etc.

Helleborus niger
Sanguinaria canadensis
Iris florentina
Allium sativum
Veratrum album
Acorus calamus
Agropyron (Triticum) repens

Barks.

Berberis vulgaris
Cinnamodendron corticosum
Simaruba amara
Erythrophlæum guineense
Quillaia saponaria
Prunus serotina
Ulmus campestris
Ulmus fulva
Cinnamomum cassia
Coto

Herbs.

Grindelia squarrosa et robusta
Tussilago farfara
Spigelia marilandica
Marrubium vulgare
Solanum dulcamara
Euphorbia pilulifera
Convallaria majalis

Flowers.

Calendula officinalis
Pyrethrum cinerariæfolium, etc.
Arnica montana

Fruits.

Punica granatum
Cuminium cyminium
Capsicum annuum
Laurus nobilis
Piper longum
Vanilla planifolia

Seeds.

Paullinia sorbilis (Guarana)
Trigonella fœnum-græcum
Dipteryx odorata
Pyrus cydonia
Strychnos amara
Hyoscyamus niger
Amomum melegueta
Areca catechu

Hairs.

Mucuna pruriens

Juices, etc.

Acacia catechu
Lactuca virosa (Lactucarium)
Aloe spicata, etc.
Curare (Woorari)

Gum-Resins.

Boswellia carterii, etc.
Euphorbia resinifera

Oleo-Resins.

Pistacia terebinthus

Resins.

Callitris quadrivalvis
Pinites succinifer
Calamus draco

Cryptogamic Substances.

Lycopodium clavatum, etc.
Fucus vesiculosus
Chondrus crispus

Animal Substances.

Spongia officinalis
Coccus lacca
Mylabris cichorii
Sepia officinalis
Castor fiber.

PRESCRIPTIONS.

The candidate is required to read without abbreviation autograph prescriptions ; translate them into English ; understand the grammatical construction of the Latin ; and render a literal as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, and have a general knowledge of Posology. To calculate percentages and other quantities occurring in prescriptions ; also to render in good Latin ordinary prescriptions written in English.

PRACTICAL DISPENSING.

To weigh, measure, and compare medicines ; write the directions in concise language in a *neat and distinct* hand ; to finish and properly direct each package.

[*In awarding marks in this subject the time taken by the candidate in doing the work is taken into account.*]

PHARMACY.

The candidate will be required to possess a general knowledge of the following branches :—

(α) Operations requiring the use of heat. Evaporation, with particular refcrence to the preparation of extracts and inspissated juices ; special characters and modes of preparing the various classes of extracts ; influence of surface temperature and pressure upon the rate of evaporation ; water, steam, and sand baths ; distillation, ordinary, fractional, and destructive ; distinctive characters and objects of each ; official preparations illustrating the various kinds of distillation, apparatus employed, the retort and receiver, still and worm, Liebig's condenser, principles on which they are constructed and used. Sublimation, its objects and applications in pharmacy ; official products of sublimation, calcination and fusion. Desiccation, temperature best suited for drying particular drugs, loss in drying vegetable drugs, forms of drying ovens, principles on which they are constructed and used.

(β) Disintegration of solid substances : cutting, bruising and pulverisation ; apparatus employed, principles indicating which is to be adopted in particular instances ; methods for controlling the degree of comminution, sieves and sifting, trituration, levigation, elutriation, granulation, including methods for producing certain chemicals, as fine powders, small crystals, scales, etc. Solution : its nature, solvent power of various menstrua, influences of (*a*) temperature ; (*b*) state of division of the substance to be dissolved ; (*c*) time ; (*d*) position of the substance in the menstruum ; lixiviation, infusion, digestion and decoction ; maceration, percolation and displacement, principles on which the successful performance of these processes depend ; form and materials for percolators and other vessels employed. Filtration, objects and methods, filtering media, means of expediting filtration ; dialysis : its application in pharmacy, construction and use of the dialyser. Expression, methods of obtaining the juices from plants ; recovery of the residual liquids from tincture marcs, etc., screw, hydraulic and other presses. The principles involved in the dispensing of medicines, particularly with reference to the best excipients and methods for forming pill masses, the preparation and nature of emulsions, the most suitable emulsifying agents, and the best means of suspending insoluble substances in liquids.

(γ) The candidate will also be required to show a practical knowledge of the processes, and understand the principles of the processes by which the official preparations belonging to the following classes are made, viz., collodions, confections, decoctions, dilute acids, extracts (solid and liquid), glycerins, infusions, juices, liniments, lotions, mixtures, ointments, pill masses, plasters, powders (simple and compound), solutions, spirits, suppositories,

syrups, tinctures, vinegars, waters and wines. He must be able to conduct such of the operations, or parts of them, as may be required by the examiner. A knowledge of the proportion of active ingredient or crude material in official preparations containing aconite, antimony, arsenic, belladonna, Calabar bean, cantharides, hydrate of chloral, chloroform, caustic potash and soda, colchicum, digitalis, elaterinum, ergot, iodine, iodoform, ipecacuanha, lead, mercury, nux vomica, opium, phosphorus, scammony, stramonium squill, alkaloids and alkaloidal salts.

POISON REGULATIONS.

Candidates will be required to enumerate the poisons contained in Schedule A of the Pharmacy Act, 1868, and those since added thereto, in pursuance of the provision contained in Section 2 of that Act, viz. :—

(*a*) Poisons within Part I. of the Schedule.
(*b*) Poisons within Part II. of the Schedule.

They will be required to describe minutely the conditions required upon the sale, by retail, of poisons, both in Part I. and Part II. of Schedule A ; and to write the proper entry required, according to Schedule F of the Act, for the sale of a poison coming within Part I. of Schedule A. They will also be required to state the conditions imposed on the sale of scheduled poisons by wholesale and for export ; and upon the sale of a scheduled poison when forming an ingredient in a medicine dispensed.

A knowledge of the conditions imposed on the sale of arsenic by the Arsenic Act will also be required.

Candidates must not take into the examination rooms or laboratories any books or any notes or memoranda, whether written or in print.

MAJOR EXAMINATION.

For registration as pharmaceutical chemists under the Pharmacy Act, 1852. Pharmaceutical chemists are exempt in England and Wales from service on all juries and inquests, under the Jurics Act, 1862.

Fee Three Guineas.

The examination in the respective subjects may be oral, practical, or in writing.

CHEMISTRY AND PHYSICS.

In addition to the subjects indicated by the Schedule for the Minor examination, the candidate will be expected to possess a knowledge of the most important facts connected with—

1. The physical constitution of the three states of matter ; liquefaction of gases, critical point ; the diffusion of gases and liquids, dialysis ; methods for determining vapour densities, solution.

2. The dynamical theory of heat ; heat and temperature ; sources, development and propagation of heat ; radiation, diathermancy and athermancy, separation of heat from light ; latent heat ; boiling point, distillation ; freezing mixtures ; specific heat ; calorimeters ; relation of specific heat to atomic weight ; thermometers, the air thermometer ; methods of determining exceedingly high and low temperatures.

3. The undulatory theory of light ; reflection ; refraction ; propagation of light, the photometer ; mirrors and lenses, the microscope ; decomposition of white light by a prism ; the spectroscope, spectrum analysis ; double refraction ; polarisation, the polariscope ; influence of light in promoting chemical change, the principles of the ordinary photographic processes.

4. The methods of producing magnetism ; magnetic induction. Sources of electricity, frictional electricity ; the electroscope ; electric induction ; electric machines ; the Leyden jar ; voltaic electricity ; the principal forms of voltaic batteries ; the galvanometer ; chemical effects of current ; electrolysis ; measurement of current, Ohm's law ; voltameter ; secondary currents, secondary batteries ; thermo-electricity, the thermopile ; production of heat and light from electricity ; electromotors ; dynamo-machines.

5. The history of the atomic theory ; the hypothesis of Avogadro ; the methods by which the standard atomic weights have been determined ; dissociation ; specific volume ; the periodic law.

6. Classification of carbon compounds ; rational formulæ ; isomerism. The characteristics and constitution of the chief typical organic compounds. The constitution, sources, methods of preparation, properties, reactions and mutual relations of the following organic compounds : Cyanogen derivatives.—Urea, cyanuric acid, uric acid. Hydrocarbons.—The principal members of the paraffin, olefine, acetylene and benzene series ; their chief haloid and nitro-derivatives. Theory of isomerism in paraffin and benzene series. Paraffin derivatives. Distinction of primary, secondary, and tertiary alcohols ; the chief primary monohydric alcohols ; glycol ; glycerin (glycerol) ; mannite ; acetaldehyde, chloral ; chloral hydrate ; acetone ; ether ; the principal acids of the acetic series ; oleic acid ; glycollic and lactic acids ; oxalic, succinic, malic, tartaric, racemic and citric acids ; ethylamine ; acetamide ; glycocine ; cane sugar ; grape sugar ; milk sugar ; maltose ; starch and cellulose. Benzene derivatives.—Phenol sulphonic acid ; phenol ; resorcin (resorcinol) ; aniline ; benzaldehyde ; salicylaldehyde ; benzoic acid ; salicylic acid. The principal properties of the terpenes and camphors, essential oils, resins. The characteristics of naphthalene and its derivatives. The processes of alcoholic, acetic, lactic and ammonic fermentation. The properties and decomposition products of the principal glucosides, alkaloids, and other substances of definite chemical composition in the British Pharmacopœia.

CHEMISTRY.—Practical Examination.

The candidate will be expected to be able—

To analyse mixtures containing three metallic salts ; to estimate the nitrogen in organic compounds by the soda-lime process ; to determine melting and boiling points. To perform the operations (or certain stages of them) necessary for the preparation of cyanogen, artificial urea, ethyl chloride, iodoform, ethylene, ethylene dibromide, acetaldehyde, formic acid, oxalic acid, nitrobenzene, aniline, benzoic acid, the nitrophenols. To recognise by their chemical reactions, and to determine, where necessary, by the Pharmacopœial gravimetric or volumetric methods, the strength and purity of the most important of the inorganic and organic compounds (including crude drugs and galenical preparations) described in the British Pharmacopœia. To detect and separate the most important alkaloids, alkaloidal salts and glucosides, and to separate in the pure state morphine from opium and strychnine from nux vomica.

In the practical portion of the Major examination standard works of reference are provided for the use of candidates, at the discretion of the examiner. No other books or memoranda are allowed.

BOTANY.

In addition to what is required for the Minor, the candidate is expected to possess an intimate acquaintance with the parts of the flower, fruit and seed ; to describe the structure and development of the pollen and of the ovule, and to trace the steps by which the latter is transformed into the seed. To have an intimate knowledge of the structure of cells, whether isolated or in combination ; to form tissues ; of the contents of cells in their various stages of development ; and a general knowledge of the origin of gums, acids, and mineral and other secretions of plants. To be familiar with the composition of the cell wall, its chemical nature, properties and reactions ; with the changes it undergoes in the formation of wood, cork, and mucilage, and in the processes of thickening and cuticularisation. To possess a knowledge of the general principles of classification, the system of Linnæus, and of the natural system founded upon that of De Candolle. To be able to distinguish practically the natural orders included in the Schedule appended below, and such of the leading genera of each of these orders as are therein specified ; also to refer to their respective orders or genera such specimens included in the Schedule as may be shown to him. To possess a general knowledge of the method of reproduction in cryptogams, and to describe that of mosses ; to be familiar with the development of the spores in these plants, and to be able to compare the different organs with the corresponding organs in phanerogams ; to possess a knowledge of the alternation of generations in the cryptogams, and the modifications under which this is represented in the phanerogams. To have a practical acquaintance with the use of the microscope, and by means of it to recognise the various tissues found in the plant, the reproductive organs of cryptogams and phanerogams, and the more important cell contents.

Schedule.

Ranunculaceæ	Violaceæ	Rosaceæ	Umbelliferæ
Anemone	Viola	Prunus	Eryngium
Helleborus	Malvaceæ	Spiræa	Cicuta
Aconitum	Malva	Potentilla	Carum
Papaveraceæ	Rutaceæ	Rosa	Œnanthe
Papaver	Ruta	Pyrus	Fœniculum
Chelidonium	Leguminosæ		Daucus
Cruciferæ	Lathyrus	Cucurbitaceæ	Conium
Brassica	Mimosa	Ecbalium	Coriandrum
Cochlearia	Cercis	Bryonia	Dipsaceæ

Compositæ	Atropa	Polygonaceæ	Coniferæ
Tussilago	Hyoscyamus	Polygonum	Juniperus
Inula	Datura	Rumex	Pinus
Matricaria		Euphorbiaceæ	Orchidaceæ
Anthemis	Scrophulariaceæ	Euphorbia	Amaryllidaceæ
Cichorium	Verbascum	Buxus	Iridaceæ
Lactuca	Scrophularia	Cupuliferæ	Iris
Gentianaceæ	Digitalis	Fagus	Crocus
Erythræa	Labiatæ	Quercus	Liliaceæ
Menyanthes	Mentha	Corylus	Convallaria
Convolvulaceæ	Origanum	Salicaceæ	Ruscus
Solanaceæ	Thymus	Salix	Allium
Solanum	Lamium	Betulaceæ	Gramineæ
Physalis	Marrubium	Alnus	

MATERIA MEDICA.

This comprises a practical knowledge of the methods of estimating the value of important drugs, of distinguishing commercial varieties of the same, and of separating such of their active principles as are official in the British Pharmacopœia.

The candidate is also expected to have a general acquaintance with the active constituents of all important drugs, and to possess a general knowledge of the chemical properties of the official alkaloids, glucosides, resins, and essential and fixed oils.

The microscope will be introduced for the examination of certain drugs.

EXAMINATION FEES.

	£	s.	d.
First Examination	2	2	0
Minor Examination	5	5	0
Major Examination	3	3	0

All fees must be paid at the time of giving notice to attend an examination, and no portion of a fee will, under any circumstances, be returned.

REDUCED FEES.

Persons who have failed to pass an examination, or who have failed to attend an examination at the time appointed, may, on payment of reduced fees, enter for—

Any of the three examinations immediately following that for which the full fee was paid. In all other cases the full fee is payable.

The reduced fees payable are as follows :—

(*a*) In the case of a person who has attended an examination and failed to pass.

	£	s.	d.
First Examination	1	1	0
Minor Examination	3	3	0
Major Examination	2	2	0

(*b*) In the case of a person who has failed duly to attend any examination at the time appointed .....One Guinea.

(*c*) In the case of a person who shall have proved to the satisfaction of the Council or the Board of Examiners (by production of medical certificate or otherwise) that failure to attend was occasioned by unavoidable or proper causes .....One Shilling.

SUBSCRIPTIONS TO THE PHARMACEUTICAL SOCIETY.

	Annual subscription. £	s.	d.
Persons who have passed the First examination, or whose certificates have been accepted in lieu thereof, are eligible to be elected "Students" of the Society	0	10	6
Persons who have passed the Minor or Modified examination, if not in business, are eligible to be elected Associates of the Society	0	10	6
Persons who have passed the Minor or Modified examination, if in business, are eligible to be elected Associates in Business of the Society	1	1	0
Persons who have passed the Major examination, and Registered Chemists and Druggists in Business before August 1, 1868, are eligible to be elected Members of the Society.....	1	1	0

Life Composition fee for Members and Associates in Business : Ten guineas.

All subscriptions are due on election, and on January 1st in each succeeding year.

PRIVILEGES OF SUBSCRIBERS TO THE SOCIETY.

Members, Associates and Students of the Society are supplied with the Journal of the Society regularly as published, free of charge. They have also the use of the Library and Museum. Members and Associates have a voice in the administration of the Benevolent Fund of the Society, and, in case of need, may receive assistance therefrom. Students of the Society are eligible, under certain conditions (see below), to compete for the Jacob Bell Scholarships, the Manchester Pharmaceutical Association Scholarship, and the Herbarium Prize.

PRIZES AND SCHOLARSHIPS.

COUNCIL EXAMINATION PRIZES.

Pharmaceutical chemists who were Associates of the Pharmaceutical Society at the time of passing the Major examination are entitled to compete for the following prizes at the end of the session in which they passed the Major examination :—

First Prize.—Pereira Medal in silver, and a present of books value £5, or thereabouts, given by the late Thomas Hyde Hills in memory of Jacob Bell.

Second Prize.—The Pharmaceutical Society's Medal in silver.

Third Prize.—The Pharmaceutical Society's Medal in bronze.

Subjects of examination—materia medica, botany, and chemistry.

The competition for these prizes takes place in July of every year, after the ordinary meetings in that month of the Boards of Examiners.

The Registrar communicates with each person entitled to compete, requiring not less than three days' notice of his intention to present himself for examination, and no person will be admitted to compete unless he shall have given the required notice.

The examination is a written one, and competitors may be examined in London or in Edinburgh.

The Council selects and appoints special examiners, who set the questions, examine the answers, and report the result direct to the Council.

THE JACOB BELL MEMORIAL SCHOLARSHIPS.*

Two Bell Scholarships are offered annually, and come into operation at the commencement of the Session in October, and the scholars shall for that Session be pupils in the Pharmaceutical Society's School.

Annual Value of Scholarships.—Each scholarship is of the annual value of thirty pounds, and is tenable for one year only. The payment will be made in two moieties ; the first to be paid when the scholar enters upon his studies in the school, and the second at the expiration of five months. In addition to the endowment, the Council provides for the Bell scholars free laboratory instruction and admission to the lectures, and books of the value of £5—given by the late Thomas Hyde Hills—are divided equally between them.

Subjects of Examination.—*Latin :* Virgil ; the first three books of the Æneid ; Latin prescriptions ; translations of Latin into English and English into Latin ; translations from any Latin pharmacopœia, and parsing. *French or German. English* : Composition and parsing. *Arithmetic* : The first four simple and compound rules, fractions, and decimals ; the British and metrical systems of weights and measures. *Elementary Chemistry, Pharmacy, and Botany.*

Conditions of the Competition.—Each competitor must give notice to the Secretary on or before June 1.

The notice must be accompanied by—

(*a*) A registrar's certificate of birth.

(*b*) Testimonials from present or previous employers, or masters, as to capability, industry, and general conduct.

(*c*) A declaration that the competitor has passed not less, or has been engaged not less than three years in the pharmacy of a registered pharmaceutical chemist, or chemist and druggist. (The form on which this declaration is to be made can only be obtained from the Secretary.)

At the time of giving notice the competitor must be a subscribing "Student" of the Society.

* A scholar is supposed to be commencing his studies, or at least to have made only that progress which may be reasonably looked for during an apprenticeship. The object of the examination is to ascertain that the candidate has such an amount of ability, and affords evidence of having made such use of it in the acquirement of elementary knowledge, as will justify the expectation of his proving a successful student, who may do credit to the appointment, and become a useful and accomplished member of the pharmaceutical body.

On the day on which the examination is held the competitor must be not less than 20 or more than 22 years of age.

No person to whom a Manchester Pharmaceutical Scholarship has been awarded is permitted to compete for a Bell Scholarship.

The examination for these scholarships takes place on the second Tuesday in July, at the same centres as for the First examination. It will be wholly in writing, and will be conducted under the same conditions as the "First" examination, and such safeguards as the Council may from time to time deem expedient. The written papers must be distinguished by a motto, and not by the name of the candidate.

The examination will be conducted by two or more persons appointed by the Council, and the award made (subject to the approval of the Council) by a Committee consisting of the President, the Vice-President, and the said examiners.

MANCHESTER PHARMACEUTICAL ASSOCIATION SCHOLARSHIP.

One Scholarship is offered annually, and will be presented at the commencement of the Session of the Pharmaceutical Society's School in October. The scholar shall for that session be a pupil in the Society's School, or in case he may elect, he shall be a pupil in any provincial School of Pharmacy approved by the Council of the Society.

The Scholarship is of the value of about £26 (the income arising from a sum of £750), which is to be expended for instruction in the Society's School, or in the provincial school selected by the scholar and approved by the Council of the Society.

Subjects of Examination:—*Latin*: Virgil: *Æneid*, first three books, or Cæsar, *De Bello Gallico*, first three books of Commentaries;* Latin prescriptions; translation of Latin into English, and English into Latin; translations from any Latin pharmacopœia, and parsing. *French or German*:—*English*: Composition and parsing. *Arithmetic*: The first four simple and compound rules, fractions and decimals; the British and metrical systems of weights and measures. *Elementary Chemistry, Pharmacy and Botany.*

Conditions of the Competition.—Each competitor must give notice to the Secretary on or before June 1.

The notice must be accompanied by

(*a*) A registrar's certificate of birth.

(*b*) Testimonials from present or previous employers or masters as to capability, industry, and general conduct.

(*c*) A declaration that the competitor has passed not less, or has been engaged not less than three years in the pharmacy of a registered pharmaceutical chemist, or chemist and druggist, in Lancashire, Cheshire, or the High Peak Parliamentary Division of Derbyshire. (The form on which this declaration is to be made can only be obtained from the Secretary.)

At the time of giving notice the competitor must be a subscribing "Student" of the Society.

On the day on which the examination is held the competitor must be not less than 19 or more than 21 years of age. The examinations are held at the same time and centres as for the Jacob Bell Scholarships, and the award made in the same manner and by the same persons as in the case of those scholarships.

No person to whom a Bell scholarship has been awarded is permitted to compete for the Manchester Pharmaceutical Association Scholarship.

HERBARIUM PRIZE.

A silver Council Medal is annually offered for the best herbarium, collected in any part of the United Kingdom, the Channel Islands, or the Isle of Man, between the first day of January in one year and the first day of July in the year following, and should there be more than one collection possessing such an amount of merit as to entitle the collector to reward, a second prize consisting of a bronze medal, and also certificates of honour, will be given at the discretion of the Council. In the event of none of the collections possessing sufficient merit to justify the Council in awarding medals or certificates, none will be given.

Competitors must be subscribing "Students" of the Society, and under twenty-one years of age.

The collections must consist of phanerogamous plants and ferns, arranged according to the natural system adopted in some work on British botany (such as that of Babington or Hooker), and be accompanied by lists, arranged according to the same method.

No collection may contain more than 150 specimens, which must be carefully selected and mounted so as to display the characteristic features of the more prominent and typical genera of the chief British Natural Orders. The name of each plant, its habitat, and the date of collection, must be stated on the paper on which it is mounted.

Each collection must be accompanied by a note, containing a declaration signed by the collector, and certified by his employer, or a Pharmaceutical Chemist to whom the collector is known, to the following effect:—The specimens which accompany this note were collected by myself, between the 1st day of January, 18—, and the 1st day of July, 18—, and were named and arranged without any other assistance than that derived from books.

The merits of the collections will be estimated not so much by the number of plants as by the correctness with which they are named, and by their being typical specimens. The manner in which they are preserved and mounted will also be taken into account.

The collections must be forwarded to the Secretary of the Society, 17, Bloomsbury Square, so that they may be received by him not later than the first day of July, indorsed "Herbarium for Competition for the Prize." After the prize distribution in October, they will be retained one month, under the care of the Curator of the Museums, and then returned to the collectors, if required.

* Passages from both authors are given, but a candidate is only required to translate from one author.

HOW TO BECOME QUALIFIED IN IRELAND.

Great Britain and Ireland have distinct Pharmacy Acts, and their examination regulations differ to some extent. Thus the syllabus of the Irish Preliminary examination is much more extensive, but on the other hand, that of the qualifying examination—the passing of which entitles the candidate to style himself "pharmaceutical chemist"—is not more comprehensive than that of the British "Minor."

Preliminary Examination.

The Preliminary examination of the Pharmaceutical Society of Ireland is held on the first Monday of January, April, July, and October. The following are the compulsory subjects:—

Latin.—To translate into English and parse sentences from a Latin author:—Cæsar's 'Commentaries,' First Book; or Virgil's 'Æneid,' First Book.

English.—English grammar, including orthography and parsing. To write on a subject selected by the Examiner, and to write from dictation.

Arithmetic.—The first four rules, simple proportion, vulgar fractions, and decimals. To describe the British weights and measures, and the metric system.

Algebra.—As far as simple equations, inclusive.

Geometry.—Including the first book of Euclid.

In addition, candidates must pass in one of the following optional subjects:—

Elementary Physics and Mechanics.—Sound, light, and heat, as given in Ganot's 'Elementary Course of Natural Philosophy'; mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.

The Rudiments of Botany.—Oliver's 'Lessons in Elementary Botany.' Part I.

Elementary Chemistry.—As included in Roscoe's 'Lessons in Elementary Chemistry,' chapters 1 to 13 inclusive.

French, German, or any other modern language.

As in the case of the British Preliminary, certificates of certain other examining bodies are accepted in lieu of this examination.

The fee for this examination is £2 2s., which should be lodged in the Bank of Ireland to the credit of the Pharmaceutical Society of Ireland, and the receipt sent with the candidate's application to the Registrar, at the Society's office, 67, Lower Mount Street, Dublin, not later than the Monday fortnight preceding the day of examination. The optional subject selected should be stated, and the application be accompanied by a certificate of birth. A candidate who has failed to pass is at liberty to present himself for re-examination six months later on payment of 10s. 6d.

Assistants' Certificates.

These certificates are granted on passing the Preliminary or its equivalent and a special examination in the following subjects:—

Prescriptions.—Candidates will be required to read autograph prescriptions, translate them into English, render a correct translation of the directions for use, and detect unusual doses.

Practical Dispensing.—To weigh, measure, and compound medicines, write the directions in suitable language, finish and properly direct each package.

Materia Medica and Quality of Specimens.—To recognise the Pharmacopœia chemicals in frequent demand, and specimens of roots, barks, leaves, fruits, resins, and gums in ordinary use; also to estimate the quality of each specimen submitted, and its freedom from adulteration.

Pharmacy.—To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, such as extracts, tinctures, and powders, and give the proportions of the more active ingredients. The candidates will also be examined in the Sale of Poisons (Ireland) Act.

Rejected candidates may present themselves again after a lapse of six months, on payment of 10s. 6d. A necessary condition in the case of all candidates is that they must have been engaged for four years in an open pharmacy kept (*a*) by a pharmaceutical chemist or an apothecary in Ireland, or (*b*) by a pharmaceutical chemist or chemist and druggist in Great Britain, or (*c*) he may have served two years in a registered druggist's or chemist and druggist's shop in Ireland, and two years subsequently in an open pharmacy.

Registered Druggists.

Registered druggists may sell poisons, but are not entitled to compound medical prescriptions. The qualification of "registered druggist" is acquired by passing an examination testing the candidate's knowledge of English orthography and composition, arithmetic, the weights and measures of the British Pharmacopœia, the appearance and properties of the various drugs and chemicals in general use, and the Irish Poisons Act. The candidate must previously have served a four years' apprenticeship, with a pharmaceutical chemist, licentiate, apothecary, registered chemist and druggist, or registered druggist. The examination fee is £2 2s., and there is a registration fee of the same amount.

The Pharmaceutical Licence.

If, besides complying with all the conditions for the assistant's examination, the candidate has attained the age of twenty-one years, passed the Preliminary not less than twelve months previously, and attended a course in practical chemistry of not less than three months' duration, including 100 hours' practical work at the bench, and a course in botany and materia medica, he will have fulfilled all the conditions imposed on those who seek to pass the final examination and acquire the right to term themselves "pharmaceutical chemists." This qualification is practically equivalent to the British "chemist and druggist," but gives the holder the extra advantage of enjoying a monopoly in compounding medical prescriptions.

The following are the examination subjects :—

Botany.—To recognise the principal indigenous plants used in medicine, to refer them to their natural orders, and to give the definitions and the distinctive characters of their several parts.

Materia Medica.—To recognise specimens of the drugs of the Pharmacopœia, to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

General and Pharmaceutical Chemistry.—The elementary laws of chemistry and physics, including chemical equations. To recognise the chemical substances of the Pharmacopœia; to describe the processes by which they are obtained; qualitative analysis (including the tests of the Pharmacopœia) and volumetric analysis; and to submit to a practical examination in those subjects.

Practical Pharmacy.—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly; to explain the processes of making the non-chemical preparations of the Pharmacopœia, and to recognise them; and to have an intimate knowledge of the Sale of Poisons (Ireland) Act, 33 and 34 Vict. chap. 26, 1870.

A clear fortnight's notice must be given to the Registrar, the fee of £5 5s. being also paid, and proofs submitted that the candidate has fulfilled the different requirements of the Society. He will then be summoned in due course to attend the examinations, which are held at Dublin on the second Wednesday and following days of January, April, July, and October, commencing at 11 a.m. If unsuccessful, the candidate can try again after the lapse of six months on payment of £1 11s. 6d.

Further particulars respecting the Irish examinations, etc., are published in the Society's Calendar (1s. 8½d., post free), which can be obtained from the Registrar, 67, Lower Mount Street, Dublin.

THE ANALYSIS OF SALTS.

Notes on the Table for the Detection of Metals Occurring as Salts Dissolved in Water or Slightly Acid Solution.

The student must carefully bear in mind that the analysis of a mixture of substances can only be satisfactorily performed after he has become thoroughly acquainted with the reactions of the individual substances. The usual scheme of analysis for the detection of the ordinary metals should be used intelligently, and the principles and reactions underlying each process mastered if success is to be assured. In what follows an endeavour will be made to explain these reactions. If the solution be strongly acid or alkaline, deviations must be made in the course of analysis to meet such contingency. In the present note we shall deal only with the reactions met with in the analysis of a neutral or slightly acid solution. In this connection it is well to remember that many neutral salts of the heavy metals ($CuSO_4$ and $HgCl_2$) show an acid reaction in aqueous solution.

The group reagents employed are :—

(i.) Hydrochloric acid.
(ii.) Hydrogen sulphide.
(iii.) Ammonium sulphydrate.
(iv.) Ammonium hydroxide.
(v.) Ammonium carbonate.

Many other schemes have been proposed and can be actually employed, the use of H_2S being in some dispensed with. The above group reagents are, however, commonly employed. Note that ammonium salts are employed because of the ease with which the added reagent may be eventually removed by ignition.

The First Group.

(i.) On the addition of HCl, AgCl and HgCl are precipitated, being insoluble in weak acid. The chlorides of the remaining metals are soluble in water or weak acid ($SbCl_3$, *e.g.*), and therefore remain in the filtrate. It is advisable to use *dilute* HCl for two reasons—

(*a.*) Strong acid precipitates various salts if the solutions be fairly strong.

(*b.*) AgCl and HgCl are to some extent soluble in strong HCl; traces might therefore be overlooked.

Silver and mercurous salts are precipitated by H_2S, but their previous separation as AgCl and HgCl simplifies the analysis of the next group. Moreover, H_2S precipitates from mercurous solutions, not the mercurous sulphide (Hg_2S), but a mixture of Hg and HgS, into which the mercurous sulphide decomposes, $Hg_2S = Hg + HgS$. When the portion of the H_2S precipitate insoluble in NH_4HS (*vide* next group) is boiled with HNO_3, the HgS remains insoluble, but any metallic mercury would dissolve and complicate the analysis of the nitric acid solution. Some $PbCl_2$, unless the amount of lead salt present be very small, will be precipitated with AgCl and HgCl, since $PbCl_2$ is only slightly soluble in cold water.

Separation of the Chlorides.

Separation of the three chlorides is effected by (i.) boiling with a considerable quantity of water, which dissolves the $PbCl_2$; (ii.) the insoluble residue of AgCl and HgCl is treated with ammonia, which dissolves (*a*) AgCl, forming a soluble metallo-amine $AgCl(NH_3)_2$, and (*b*) converts the HgCl into a black insoluble metallo-amine, $2HgCl + 2NH_3 = NH_2Hg_2Cl + NH_4Cl$. A white mercur*ic* amine ("white precipitate") is obtained in a similar manner by the action of NH_3 on $HgCl_2$. It is advisable to treat the AgCl and HgCl with ammonia *on the filter*, so as to remove the soluble silver compound from the insoluble black mercurous amine, which is rather unstable, and yields some metallic mercury by decomposition. If only a small quantity of silver, relative to the amount of mercury, be present, and the mixed chlorides be digested with ammonia in a test tube, this metallic mercury will decompose the silver chloride, $AgCl + Hg = HgCl + Ag$, and consequently the silver, instead of being found in the ammoniacal filtrate, will be left on the filter (with the mercury compound) as metallic silver.

The Second Group.

Separation of the next group by H_2S requires very careful manipulation to ensure success. The original solution may have been neutral or slightly acid. The filtrate after addition of HCl

and separation of AgCl, HgCl, and $PbCl_2$ (partially) will of course be acid. H_2S will therefore only precipitate those metals whose sulphides are insoluble in weak acids, viz., Hg, Pb, Cu, Cd, Bi, As, Sb, and Sn. The separation of these sulphides by H_2S should be carefully and thoroughly performed, since failure to effect this causes the unseparated portion to appear in the filtrate after treatment with H_2S, and confuses the analysis of the remaining groups. Its proper performance requires time and discretion, and the beginner often finds it tedious. Attention to the following hints will secure satisfactory results. Remember that the sulphides in question are soluble in *strong* HCl ; if the solution contains much acid, separation will be slow, and perhaps incomplete. Pass a fairly rapid stream of H_2S into the liquid until it smells strongly of the gas ; warm the solution gently and again pass the gas, afterwards raising it to boiling and passing H_2S into it again. Now set it aside for several minutes and filter a little of the supernatant fluid ; dilute this with an equal bulk of water, heat it to boiling, saturate with H_2S, and set it aside for five minutes. If no precipitate forms the operation may be regarded as completed, but if any precipitate appears it should be returned to the bulk, the whole diluted with an equal bulk of water and the treatment with H_2S repeated at boiling temperature until a small portion of filtrate gives no further precipitate. Complete precipitation often seems tedious, but it should on no account be scamped if neat and definite results are to be obtained. The following points should be remembered. Lead and mercury give a coloured precipitate when H_2S is first passed into their solutions, double salts ($HgCl_2$, HgS, and $PbCl_2$, PbS, *e.g.*) being formed, which are completely converted into black sulphides by continued action of the gas. Arsenic, if present as arseniate, is only precipitated as sulphide when the arseniate has been reduced by the H_2S to the arsen*ious* state, and this reaction requires a boiling temperature for its completion. If the solution contained ferric salts, chromic, or nitric acid, these will be reduced by sulphuretted hydrogen, giving a precipitate of sulphur which is easily distinguished from the yellow CdS, and As_2S_3 by its paler colour and density. Ferric salts are reduced to ferrous :—

$$Fe_2Cl_6 + H_2S = 2FeCl_2 + 2HCl + S.$$

Chromic acid to chromium chloride :—

$$2H_2CrO_4 + 3H_2S + 6HCl = Cr_2Cl_6 + 3S + 8H_2O.$$

Nitric acid to nitric oxide :—

$$2HNO_3 + 3H_2S = 2NO + 3S + 4H_2O.$$

Treatment of the Precipitated Sulphides.

The sulphides precipitated from weakly acid hot solutions and allowed to stand filter much more easily than when precipitated from cold neutral solutions without subsequent digestion. Precipitated sulphides exhibit to a marked degree the property of becoming "colloidal," and consequently passing through the filter paper when all adhering saline matter has been washed away. If H_2S water or very dilute acetic acid be used for washing the precipitate, this tendency is checked. The washed precipitate is now digested with ammonium sulphide, which effects a separation into two portions :—

(A) insoluble in NH_4HS (Hg, Pb, Cd, Cu, Bi),

(B) soluble in NH_4HS (As, Sb, Sn).

The mixture should not be boiled lest some of the sulphides of As, Sb, and Sn are re-precipitated.

(A) This portion is again sub-divided by treatment with nitric acid in which HgS is insoluble, while the sulphides of lead, copper, bismuth, and cadmium dissolve, forming nitrates. If Hg be present, a black residue of HgS will be left. This is filtered out, dissolved in a small quantity of aqua regia, and this solution (which will contain $HgCl_2$) subjected to confirmatory reactions for mercury. This confirmation is necessary for the following reason. When the sulphides insoluble in ammonium sulphide are treated with HNO_3 to form nitrates, H_2S is evolved, *e.g.* :—

$$PbS + 2HNO_3 = Pb(NO_3)_2 + H_2S.$$

The H_2S reacts with the excess of nitric acid to form free sulphur :—

$$3H_2S + 2HNO_3 = 3S + 2NO + 4H_2O.$$

and this sulphur sometimes occludes a portion of the sulphides other than mercury sulphide, and protects them from the action of the nitric acid. A black residue insoluble in HNO_3 may, therefore, be obtained in the absence of mercury, and should always be further tested

Treatment of the Nitric Acid Solution.

The nitric acid solution containing $Pb2(NO_3)$, $Bi3NO_3$, $Cu2(NO_3)$, and $Cd2(NO_3)$ may be treated in two ways :—

(*a*) Evaporate to a low bulk, add sufficient dilute sulphuric acid to displace the whole of the nitric acid, and convert the nitrates into sulphates. Continue the evaporation until white sulphuric acid fumes begin to be evolved. This shows that all nitric acid is dissipated, for if this be not accomplished some lead nitrate will remain in solution and interfere with the subsequent detection of cadmium. The sulphates with the excess of sulphuric acid are now allowed to cool, and on the addition of water the sulphates of bismuth, copper, and cadmium, being soluble, may be filtered off from the white insoluble $PbSO_4$. To the solution excess of ammonia is added. Bismuth hydrate is precipitated, but the copper and cadmium hydrates redissolve to form soluble ammonio compounds. The bismuth hydrate is filtered off, washed, and dissolved in the least possible quantity of warm dilute HCl by pouring the latter over the filter and returning the filtrate until all the precipitate has dissolved. The solution contains $BiCl_3$, and on pouring this into a comparatively large volume of water a white cloudy precipitate of oxychloride, BiOCl, is produced. The less acid used for dissolving the hydrate the more delicate does this reaction become.

The filtrate from the Bi3(OH) will be blue if copper be present. To this a solution of potassium cyanide is added in excess. This precipitates $CdCy_2$, which combines with excess of KCy to form the soluble double cyanide, $K_2CdCy_4(2KCy{\cdot}CdCy_2)$. The action of KCy on cup*ric* solutions is in the main the same, but differs in this. Cupric cyanide is unstable and decomposes into cupr*ous* cyanide and cyanogen,

$$CuSO_4 + 2KCy = CuCy_2 + K_2SO_4$$
$$CuCy_2 = CuCy + CN.$$

The cuprous cyanide dissolves in excess of KCy to form a double cuprous potassium cyanide, which probably has the formula $K_3CuCy_4(CuCy,3KCy)$. This double cyanide is colourless, hence addition of KCy solution decolorises the previously blue copper solution. To separate Cd and Cu use is made of the fact that H_2S decomposes the cadmium, potassium cyanide producing a yellow precipitate of CdS, while the cuprous potassium cyanide is unaffected. After separation of cadmium sulphide by H_2S the presence of copper in the filtrate may be confirmed by boiling it with dilute sulphuric acid, which expels hydrocyanic acid and forms cupric sulphate (and free copper, since cuprous sulphate immediately decomposes into cupric sulphate and metallic copper),

$$2CuCy + H_2SO_4 = Cu_2SO_4 + 2HCy$$

Cupr*ous* cyanide. Cupr*ous* sulphate.

$$Cu_2SO_4 = CuSO_4 + Cu,$$

and the original blue colour of the solution reappears. To this the usual confirmatory reactions for copper may be applied.

(*b*) An alternative method for the treatment of the solution of copper, cadmium, lead and bismuth nitrates is to precipitate lead and bismuth together as hydrates with ammonia. The mixed hydrates are dissolved by nitric acid to form nitrates, in which solution bismuth is detected by the formation of oxynitrate and lead as sulphate.

Sulphides Soluble in NH_4HS.

B. The filtrate obtained after treatment of the whole H_2S precipitate with ammonium sulphide solution may contain arsenic, antimony, and tin. As_2S_3, Sb_2S_3 (with some Sb_2S_5 if antimonic compounds were present in the original solution), SnS from stannous and SnS_2 from stannic compounds are precipitated by H_2S. The treatment with ammonium sulphide results in the formation of soluble ammonium thio-compounds of As, Sb, and Sn, the lower sulphides As_2S_3, Sb_2S_3, and SnS first taking up sulphur (from the polysulphide present in the ammonium sulphide solution) to form As_2S_5, Sb_2S_5, and SnS_2. These sulphides unite with ammonium sulphide to form various compounds, of which the following may be taken as typical :—

$$Sb_2S_5 + 3(NH_4)_2S = 2(NH_4)_3SbS_4,$$

Thio-antimonate of ammonium.

$$SnS_2 + (NH_4)_2S = (NH_4)_2SnS_3,$$

Thiostannate of ammonium.

The H_2S precipitate should be *only warmed* with the sulphydate of ammonium, the treatment being repeated with a second portion of sulphydate to ensure the complete separation of As, Sb, and Sn

from the sulphides insoluble in NH_4HS. The filtrate is now warmed with *weak* hydrochloric acid (if strong acid be used, some antimony sulphide may be dissolved). This re-precipitates the sulphides, which are to be filtered off and washed free from soluble ammonium compounds. The re-precipitation of these sulphides is due to the instability of the free acids (formed by addition of HCl), corresponding to the ammonium thio-compounds just mentioned.

$$\text{(i.)}\ (NH_4)_2SnS_3 = 2HCl = H_2SnS_3 + 2NH_4Cl.$$
$$\text{(ii.)}\ H_2SnS_3 = H_2S + SnS_2.$$

Compare this with the action of an acid on a carbonate, *e.g.*—

$$\text{(i.)}\ CaCO_3 + 2HCl = H_2CO_3 + CaCl_2.$$
$$\text{(ii.)}\ H_2CO_3 = H_2O + CO_2.$$

In the latter case we have unstable carbonic acid liberated, which decomposes into anhydride (CO_2) and water. In the former an unstable thio-acid is liberated, which decomposes into thio-anhydride (SnS_2) and H_2S, the sulphur analogue of water. These reactions show the strong analogy of sulphur to oxygen. The precipitate will contain the higher sulphides As_2S_5, SnS_2, and Sb_2S_5, the last decomposing to some extent into sulphur and the lower sulphide. Separation may be effected (i.) by boiling with strong hydrochloric acid, which dissolves tin and antimony sulphides forming chlorides and leaving yellow arsenic sulphide insoluble, or (ii.) by warming with solution of ammonium carbonate which has just the reverse effect, sulphides of tin and antimony being insoluble in this reagent (some SnS_2 will dissolve if the mixture be boiled), while As_2S_5 dissolves, forming a mixed compound, intermediate between an arsenate and thio-arsenate, carbonic acid being evolved.

In case (i.) confirmatory tests for arsenic are applied to the insoluble portion, while the HCl solution is well diluted and poured into a dish containing a piece of platinum foil and a fragment of zinc. The zinc-platinum couple reduces the antimony and tin to the metallic state, the former being mostly deposited on the platinum as a black film while the tin appears as a flocculent precipitate. After fifteen minutes the platinum is removed and confirmatory tests for antimony applied to the black coating. Any zinc remaining is carefully removed or dissolved by the addition of a little more *dilute* HCl and the fluid carefully decanted from the flocculent deposit. The latter is carefully drained and boiled with a *small quantity* of strong HCl, which dissolves the tin, forming stannous chloride. Any black insoluble residue should be examined for antimony. The hydrochloric solution is now freely diluted in a white porcelain basin, and H_2S passed into it—brown stannous sulphide, SnS, is precipitated, very small quantities being detected by contrast with the white porcelain, or any of the reduction reactions for $SnCl_2$, *e.g.*, heating with $HgCl_2$ may be employed instead of H_2S. Remember that both tin and its sulphide are insoluble in *weak*, but soluble in strong HCl.

If ammonium carbonate be used for the separation of As from Sb and Sn, the insoluble portion is well washed, dissolved in strong HCl, and the diluted solution treated with zinc and platinum as described above.

(To be continued.)

Detection of Lead Chromate in Paper Wrappers.—According to Wollf, lead chromate is extensively used on the Continent as a pigment for yellow paper in which chocolate and other sweetmeats are wrapped. The danger of poisoning from this source, especially to children, is obvious. The presence of the objectionable pigment is rapidly shown as follows:—A square of about 5 Cm. is cut and placed, without folding, in a small flat-bottomed capsule. It is then thoroughly moistened with rectified spirit, the excess of alcohol decanted, and a few drops of nitric acid allowed to run over the surface of the paper. If chromates are present, the characteristic odour of aldehyde will be evolved, and the paper will turn green from the formation of chromium sesquioxide. The nitrate of lead formed by the reaction is diluted with 10 or 15 C.c. of water, the solution decanted and tested at once with potassium iodide; if too much acid has not been used the distinctive precipitate of lead iodide will be at once obtained. If the acid be in excess the solution should first be evaporated to dryness and then tested. Green papers, which owe their colour to a mixture of lead chromate and prussian blue, may be tested in a similar manner. The author regards zinc chromate as harmless.

NOTES AND FORMULÆ.

(Specially abstracted for the Pharmaceutical Journal.)

Agar-Agar Suppositories.

Tests made with these suppositories show that agar-agar jelly in the proportion 1 to 29, does not dissolve at the body heat as stated by Lewin, but a uniform solution only takes place in experiments under pressure with a secured cork. The adhering portions which remain on the sides of the vessel in the process of melting the basis, and which cannot very well be calculated, detract considerably from the value of the suppositories as affording an absolutely exact means of administering the medicine. In actual practice it is found that the introduction of the suppositories is difficult on account of their brittleness. When preserved for a fortnight in an air-tight vessel they are found to be covered with mildew. Buchtwilz reports that when kept in the air they dry hard and are, therefore, rendered useless. —*Pharm. Woch.*, xiv., 263.

Pumice Stone for Filtering.

English pharmacists are generally familiar with the valuable properties of pumice stone as a filtering medium, which Busch (*Pharm. Centralh.*, xxxviii., 424) has lately recommended as a novelty for filtering liquids which contain minutely distributed precipitates (such as barium sulphate, lead sulphate, calcium oxalate), likely to pass through the filter. The very finest pumice stone powder must be used, and it must have been freed from all acid-soluble impurities. Two to three grains of the powder are put on the point of the filter, and a clear filtrate is said to be obtained after the first few drops.

Detection of Glycerin in Syrupy Liquids.

Deniges recommends heating a small quantity of the liquid with three or four times its weight of powdered bisulphate of potassium. Any acrolein vapours which may have formed are detected by Nessler's reagent, or they are passed into a hot mixture of 2 C.c. of a 1 to 2 solution of silver nitrate, 2 C.c. of solution of ammonia, and 2 C.c. of solution of soda. The reduction of the silver solution indicates the presence of glycerin.—*Pharm. Centralh.*, xxxviii. 427.

New Dental Filling Material.

The following mixture under the name of "aluminised gutta-percha" is recommended by Bliss as a filling:—White gutta-percha, 8; aluminum filings, 5; oxide of zinc, 1; whiting, ½. The filling is said to be easily manipulated, free from bulging, and to hold its position in the cavity when firmly packed.—*Journ. Brit. Dent. Ass.*, xviii., 401, after *Pac. Stomat Gaz.*

Determination of Mercury in Mercurial Ointment.

The following simple and rapid method for determining the amount of metal in mercurial ointment is described by Fonzes-Diacon. A weighed quantity of the ointment is placed on a tared filter and so placed in a Soxhlet extraction apparatus, that the open part of the paper is under the delivery tube of the condenser. The whole is then extracted with ether, and when all the fatty matter is removed, the filter is withdrawn from the apparatus, cautiously dried, and the mercury weighed. The same method is applicable for the quantitative determination of any substance insoluble in ether contained in an ointment.—*Bull. de Pharm. du Sud-Est*, ii., 198.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

OILS (FIXED), FATS AND WAXES.—The substances known under these names form a group having many properties in common, and are conveniently discussed together. As they occur in Nature they are composed chiefly of esters of certain of the "fatty acids." These fatty acids are mostly of high molecular weight, and are homologous either with acetic (or formic), acrylic, or propiolic acid. For example, stearic acid is homologous with acetic acid, and is therefore a derivative of the saturated series of hydrocarbons. The general formula for the acids of this series is $C_nH_{2n+1}COOH$, acetic acid being CH_3COOH, while stearic acid is $C_{17}H_{35}COOH$ ($C_{18}H_{36}O_2$ or $HC_{18}H_{35}O_2$). Other acids of this series are butyric acid, C_3H_7COOH, one of the characteristic acids of butter, and lauric acid, $C_{15}H_{31}COOH$, in coco-nut oil. The fatty acids homologous with acrylic and propiolic acids, on the other hand, are unsaturated; in fact, they have the same relationship to the saturated acids that the unsaturated hydrocarbons (from which they are derived) have to the saturated hydrocarbons of the methane series. Thus the acids of the acrylic series are two atoms of hydrogen, and the members of the propiolic series four atoms of hydrogen poorer than the corresponding acids of the acetic series, just as ethylene, C_2H_4, and acetylene, C_2H_2, contain two and four atoms respectively less hydrogen than the corresponding two-carbon hydrocarbon ethane, C_2H_6, of the saturated series. Acrylic acid, the simplest member of the series so-named, is C_2H_3COOH (cp. propionic acid, C_2H_5COOH), and the general formula for the acids of the acrylic series is, therefore, $C_nH_{2n-1}COOH$. Oleic acid, $C_{17}H_{33}COOH$, is the most important member of this series. Propiolic acid is C_2HCOOH (cp. propionic acid), and the only member of this series of any importance occurring as a constituent of fats is linoleic acid, $C_{17}H_{31}COOH$, in linseed oil. The general formula for the acids of the propiolic series is $C_nH_{2n-3}COOH$. The fixed oils and fats are composed almost entirely of glyceryl esters of the fatty acids described above, glyceryl, C_3H_5, being the hydrocarbon residue of the trihydric alcohol glycerin, $C_3H_5(OH)_3$. Since the fatty acids are monobasic, the neutral glyceryl esters contain three acid residues combined with C_3H_5; for example, glyceryl stearate (stearin) is $(C_{17}H_{35}COO)_3C_3H_5$, glyceryl oleate (olein) $(C_{17}H_{33}COO)_3C_3H_5$, and glyceryl linoleate (linolein) $(C_{17}H_{31}COO)_3C_3H_5$. The fixed oils and fats obtained from natural sources are composed of one or more of these glyceryl esters, and usually a small quantity of free fatty acid, besides traces of albuminous matter and colouring and flavouring substances to which the special character of each oil or fat is due. The exact composition of each varies within certain limits, depending a good deal upon its method of preparation, and the care devoted to its purification. Sometimes they contain an undue proportion of free fatty acid conferring upon them the property known as rancidity. This rancidity is due usually to the fermentative action of bacteria, whose activity is encouraged by careless storage or insufficient care in preparation. The variation in the composition of oils and fats of undoubted purity renders their sophistication comparatively easy and the detection of adulterants correspondingly difficult. The methods of examination will be subsequently discussed. The waxes are composed chiefly of fatty acid esters of monohydric alcohols mostly of high molecular weight and homologous with methyl alcohol. For instance, spermaceti contains among other compounds the palmitic ester of cetyl alcohol, $C_{16}H_{33}OH$, and beeswax the palmitic ester of myricyl alcohol, $C_{31}H_{63}OH$. It will be observed that both these alcohols are homologous with methyl alcohol, the general formula for the alcohols of this series being $C_nH_{2n+1}OH$. The wax-like substance known as paraffinum durum or paraffin wax is composed almost entirely of a mixture of hydrocarbons of the saturated paraffin series having high molecular weights, while paraffinum molle is similarly constituted, the molecular weights of its constituents being lower, and its melting point is reduced in consequence. The following is a brief summary of the methods of examination adopted in determining the identity, purity, or commercial value of the various fixed oils, fats, and waxes. The physical properties, viscosity, specific gravity, melting and solidifying points, and solubility in various solvents are of great importance.

1. *Viscosity.*—This is observed by noting the weight or measure of oil flowing through a given orifice in a given time compared with some substance taken as standard, water or glycerin for example. Castor oil is one of the most, and sperm oil one of the least viscid oils.

2. *Specific Gravity.*—This is determined in the usual way by means of the specific gravity bottle or sprengal tube. In the case of solid fats or waxes the specific gravity is taken by weighing a piece in air and water successively, or the sp. gr. may be observed at temperatures above their melting points by immersing the bottle containing the melted substance in hot water of known temperature. This is most conveniently done at the temperature of boiling water. The sp. gr. of oils and fats, even when pure, varies sufficiently to render this observation in some cases useless for the detection of adulteration, especially when the adulterant has nearly the same sp. gr., or two adulterants, one higher and the other lower, are judiciously combined.

3. *Melting and Solidifying Points.*—These are determined in the usual way. It is necessary to remark that the solidifying point is affected a good deal by the temperature to which the substance has been previously heated, and also that owing to the variation in composition the melting and solidifying points of a given oil vary sometimes within fairly wide limits.

4. *Solubility.*—Oils, fats, and waxes are almost entirely insoluble in water and cold alcohol. Boiling absolute alcohol dissolves many of them, the greater part being re-deposited on cooling. The oils most soluble in alcohol are those containing glycerides of the lower fatty acids and linolein. The free fatty acids are mostly soluble in alcohol, so that fatty bodies containing any of these free acids will be partially soluble in this solvent. Castor and croton oils are also exceptionally soluble in alcohol. Ether, petroleum ether, benzene, chloroform, carbon bisulphide, and terpentine dissolve most substances of this class with facility.

Besides these physical methods the following chemical methods are commonly employed in the examination of oils, fats, and waxes.

Saponification.—This is carried out by treatment with a fixed alkali—potash or soda—and gives very valuable indications, both as to the actual constitution of the substance and its freedom from adulteration. The term "saponification" is now used to describe the hydrolysis of any ester, although it had its origin in the decomposition of oils by caustic alkali in making soap. In its widest significance it now indicates the decomposition of an ester into alcohol and acid. For instance, if ethyl acetate (acetic ether) be heated with water—

$$\underset{}{CH_3COOC_2H_5} + H_2O = \underset{\text{Acetic acid.}}{CH_3COOH} + \underset{\text{Ethyl alcohol.}}{C_2H_5OH}.$$

The following graphic representation makes the nature of this hydrolytic action very clear:—

$$\begin{matrix} CH_3COO & C_2H_5 \\ H & OH \end{matrix}$$

Similarly, when fats are treated with superheated steam—stearin, for instance—

$$\underset{}{(C_{17}H_{35}COO)_3C_3H_5} + 3H_2O = \underset{\text{Stearic acid.}}{3C_{17}H_{35}COOH} + \underset{\text{Glyceryl alcohol.}}{C_3H_5(OH)_3}.$$

It will be noticed that these two reactions are precisely similar, only in one case we have a monovalent radicle, ethyl C_2H_5, and consequently a monohydric alcohol, and in the other a trivalent radicle, glyceryl C_3H_5, which produces a trihydric alcohol. The saponification of fats is more easily produced by heating with aqueous solutions of caustic alkalies, and still more so by alcoholic solutions. The fats being more or less soluble in alcohol, react more readily with the alkali. In the examination of fats the saponification is carried out by heating about 5 grammes of oil or fat with an alcoholic solution of potash in excess. When all oily globules have disappeared the product is evaporated to remove alcohol, and the residue contains the potassium salt of the fatty acids present and the equivalent quantity of alcohol whose hydrocarbon radicle was previously combined with the acid. For example:—

$$\underset{\text{Stearin.}}{(C_{17}H_{35}COO)_3C_3H_5} + 3KHO = \underset{\text{Stearate of potassium.}}{3C_{17}H_{35}COOK} + \underset{\text{Glyceryl alcohol.}}{C_3H_5(OH)_3}.$$

The residue is now dissolved in hot water and acidulated with hydrochloric acid, which liberates the fatty acids. These being insoluble and lighter than water rise to the surface and may be separated and examined. The aqueous fluid will contain the glycerin or other alcohols, and by suitable means these may be separated and examined.

(*To be continued.*)

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PHARMACISTS AND THEIR PUPILS.

The older system of apprenticeship is dead and gone, and with the relaxation of the restrictions formerly imposed upon their pupils, too many pharmacists have lost interest in the future of their craft, inasmuch as they have ceased to concern themselves greatly, if at all, about the scientific and technical training of youths committed to their care for the time being. Regarding apprenticeship simply as a bargain—so much service to be rendered for so much training—it is not to be wondered at that, human nature being as it is, the growing disinclination of pupils to submit to arbitrary interference with their freedom of action should be followed by the employer's objection to worry himself about the acquirement of knowledge by his apprentice. It is doubtless quite natural that young men at the present day should protest against regulations and treatment that were accepted as a matter of course a century ago, but it is equally comprehensible that men in business should be unwilling to allow themselves and their places of business to be made a mere convenience of for the sake of the rising generation.

Unless all pharmaceutical training, therefore, is to be driven into the hands of lecturers and demonstrators in schools of pharmacy—a most undesirable state of affairs, seeing that lecturers and demonstrators may never have been engaged in the practice of pharmacy—it seems necessary that some compromise should be arrived at. Students should be regarded as something more than sources of cheap labour; employers are entitled to expect a reasonable amount of personal interest to be taken in their affairs by those who come to them to be trained. But the students must not regard themselves as superior to all manual labour, and employers ought to realise that proper training implies more than packing goods and handing them over the counter. If a given place of business is lacking in the essentials of a model pharmacy, and the recognised work of pharmacy is unknown there, parents and guardians should carefully avoid sending their wards there as apprentices. The proprietors of such places, which are frequently adapted for the conduct of any sort of business but dispensing, have no moral right to receive pupils whom they have no means of training, and if they do receive them and accept heavy premiums as a means of eking out their income from trade, their conduct is deserving of severe reprobation.

Probably the number of pharmacies in each town where apprentices can be properly and fully trained is very limited, and even in those the proprietors may find the task they impose upon themselves in this respect too great. It is always open to them, however, to allow their apprentices opportunities of acquiring the necessary knowledge. Though, for example, few pharmacists may find it convenient to teach chemistry and botany, facilities for obtaining instruction in those subjects are freely offered in most districts, and the obvious duty of the pharmacist who desires to see his profession advance is, at least, to enable his apprentices to attend classes where they can obtain that instruction. Even as a matter of sound business policy this plan suggests itself for adoption, for in every pupil may be seen a prospective business opponent, and there is no surer way of providing against possible competition of a purely trade character than by inculcating a true professional spirit. That can only be accomplished by means of improved education, and the more pharmacists encourage and insist upon the acquirement of systematised knowledge by their pupils, the better they are protecting their own interests and showing concern for the status of pharmacy in the immediate future.

PHARMACY AS A CAREER.

The object of the present issue of the Journal being to impart information required by those proposing to enter pharmacy and by apprentices and assistants anxious to know how they may best proceed in the direction of becoming enrolled in the ranks of qualified pharmacists, it is necessary to repeat much that has been published before. But as each year rolls on and is added to time that has been, a large new audience appears, prepared to listen to, and may be profit by, what may be told concerning pharmaceutical education. To such mainly is addressed what follows, though perchance even old soldiers in the noble army of chemists and druggists may read and enjoy, finding pleasure in fighting their educational battles over again.

Perhaps it may be considered that the best advice to give to youths whose thoughts incline to pharmacy as a profession, is that given by *Punch* to those about to marry—don't! But there is good reason to believe that there is yet much room in pharmacy for individuals who, realising from the outset what will be expected of them, are prepared to do it and do it well. Even yet there is a great lack of well-educated and capable pharmacists in Great Britain—men of culture with first-class scientific and technical training, and withal, possessed of sound business capacity. Of average and inferior craftsmen, on the other hand, there are sadly too many. What pharmacy needs, what the public wants, is the best service that can be rendered with the means available.

To those who are not prepared to supply what is required, altogether irrespective of the extent of the financial reward offered, pharmacy as a profession offers but few charms. No fortunes are likely to be made in the exercise of the dispensing art, nor have great ambitions much prospect of being satisfied in that direction. But a modest livelihood will always be open to the conscientious chemist and druggist, and in proportion to the capital expended a thoroughly well-qualified man may expect to receive better returns than are offered by most professions and trades. His individuality must ever remain the chief factor determining the measure of his success, and that to a modest man may be great if he but trusts in himself and neglects no opportunity of advancing his position by legitimate means.

ANNOTATIONS.

The Flückiger Memorial Medal awarded to Mr. E. M. Holmes was described in last week's Journal as the first, but a little confusion has been caused in the minds of some readers, owing to the fact that several bronze replicas of a similar medal exist. The fact is that when Professor Flückiger retired in 1892 the sum of ten thousand francs was raised in England, Germany, Switzerland, and elsewhere for the purpose of presenting a testimonial to him. The bulk of the money was reserved for the endowment of a Flückiger Scholarship, or for providing grants in aid of research. The remainder served to defray the cost of an illuminated address, an album containing the portraits of subscribers, and a gold medal with replicas in bronze. One of these replicas was sent by Professor Flückiger to the President of the Pharmaceutical Society as a sign of his gratitude and a slight proof of his appreciation of the friendship and encouragement he had always met with in England. Others were sent to the Presidents of the German and Swiss Pharmaceutical Associations, and to representatives of the subscribers in different countries, with whom Professor Flückiger had friendly relations. Thus, Dr. Attfield and Mr. Thomas Hanbury received bronze medals, and amongst the names of other recipients enumerated by the *Apotheker Zeitung*, of September 27, 1893, appear those of Beckurts, Brunswick; Dragendorff, Dorpat; Fritzsche, Leipsic; Hilger, Munich; Hoffmann, New York; Nagelvoort, Detroit; Planchon, Paris; Schaer, Strassburg, and Tschirch, Berne.

At Flückiger's Death, however, the testimonial fund assumed the nature of a memorial fund, and though it is scarcely correct to speak of it as having started then, as stated in last week's Journal, the new rules drawn up for the guidance of the trustees were such as almost to justify the use of that expression. Amongst other important changes, it was decided to strike no more complimentary replicas of the presentation medal, but to award the gold memorial medal every five years for distinguished services in the promotion of scientific pharmacy, the first medal to be awarded in 1897. This medal, as stated in the letter of Herr Frölich, a translation of which appeared in the Journal last week (p. 217), has been "struck as a memorial of the deceased master in pharmacognosy," and to quote from the regulations signed by all the trustees on June 13, 1896, "Die Flückiger-Medaille wird nur in Gold geprägt und alle fünf Jahre vergeben. Zum ersten Male erfolgt die Verleihung im Jahre 1897." The decision as to who should receive the first medal was left in the hands of the members of the German "Apotheker-Verein," as representing also for the time being their Swiss *confrères*, and on the recommendation of the Trustees being put to the vote at the Strasburg meeting, it was unanimously agreed that the individual to be honoured should be our distinguished fellow-countryman, Mr. E. M. Holmes, who thus became the first Flückiger medallist. In his case, the medal is not awarded because of his position but, like our own Hanbury Medal, in recognition of work done and valuable service rendered in the promotion of scientific pharmacy. This explanation should suffice to clear away doubt as to the importance of the award, if any such actually exists.

The Importance of Local Organisation in Pharmacy is, we are glad to see, recognised by the conductors of the *Anti-Cutting Record*, and doubtless many readers will be gratified to know that the promoters of the P.A.T.A. are not men of one idea only. In fact, the offer is made in the pages of our contemporary to assist in starting local associations in any towns where they do not already exist. It must be repeated, however, that it is not necessary that all the machinery usually regarded as inseparable from the carrying on of the business of associations should be called into existence. The main thing required is that one individual in each town or country district shall keep a list of the names and addresses of all chemists in that town or district, so that on receiving an intimation (say, through the pages of the Journal) of the desirability of discussing a given topic, he may at once proceed to call a meeting for that purpose. Such meetings could very often be held in private houses, and the incidental expenses would be so slight that the merest nominal subscription or collection would amply suffice to cover them.

What is Advocated by us is not so much the increase of local associations and their federation, though both those objects are very good in their way, but rather the development of a simple system of organisation which shall include every chemist in business. If every chemist in a district is invited to a meeting and offered the opportunity of expressing his opinion on any particular subject, the conclusions arrived at by those assembled in conference may fairly be accepted as representing the views of the majority in that district. And if every district should thus record its views a general consensus of opinion could readily be arrived at. Existing associations can do much to help in the development of such a scheme of general organisation by discussing the matter at meetings during the approaching session, and deciding upon some plan of covering all districts at present isolated. They will thus extend their influence and improve their position whilst giving practical proof of their belief in the principle that union is strength. We gladly publish the letter on this topic sent by the Secretary of the Federation of Local Pharmaceutical Associations (see p. 255), and would suggest that this question of the development of the spirit of union in districts at present not properly organised might fittingly serve as a subject for simultaneous discussion by the federated associations.

Nobel's Bequest of a considerable slice of his fortune to establish four annual prizes to be awarded to those who had done most for the cause of literature, science, and humanity, is not to be allowed to pass unquestioned, as the testator's heirs are now disputing the will, and the learned societies which were constituted trustees have not ventured to announce any competition for the current year. It is stated, however, that the Norwegian Parliament, which has to dispose of a prize in favour of the person who has exerted the most successful effort to render war impossible, has appointed a committee to examine the claims of candidates without awaiting the decision of the law regarding the bequest. The *Daily Chronicle* understands that the choice lies between Vereschagin, the realistic painter of battle scenes, and Count Tolstoy, and adds "One cannot be surprised that neither the Kaiser nor the Tsar is in the running."

A Remarkable Recovery from Snake-bite is recorded, a Liverpool man having recovered after being bitten by a double-horned viper at Opobo, West Africa. He is said to be the only man known to have lived after being bitten by that species of snake in West Africa. The bite was on the foot, and so far as can be judged from press reports, the method of treatment adopted was to inject a solution of iodine or an iodide. At the same time the patient was given large quantities of brandy, and though at one time his temperature reached 107·3, he surprised everyone by surviving, and ultimately recovered sufficiently to be able to return to England.

The Position of Pharmacists in the Social Scale was the subject of an article in these pages three months ago, and that has since been quoted from and commented upon by the *Australasian Journal of Pharmacy*, which thinks that the claim of the pharmacist to have his calling ranked with the professions is well founded, but remarks that it is self-evident that the responsibility of maintaining the dignity of a class depends very much upon the conduct of its members. After quoting approvingly from the *Pharmaceutical Journal* article and pointing out that the view of the situation taken therein relates more particularly to the methods of conducting the pharmacy, our Antipodean contemporary reverts once more to the important point to which it has often had to direct notice, that a strict observance of the letter and spirit of the laws regulating the profession will do much to help in maintaining its dignity. It cannot be too often impressed upon the attention, it is rightly observed, that the very existence of the legal protection now accorded to the pharmacist is dependent upon his good conduct, and that his so-called "monopoly" is palpably viewed with no good feeling by an influential section of the community. "A succession of publicly-known breaches of the law or neglects of duty by a few careless or ignorant members would not improbably bring about such a revision of legislation as would locally extinguish the pharmaceutical claims to the professional status, if indeed it did not virtually deprive him of his present means of livelihood."

Mr. Justice Cave, whose death occurred on Tuesday, will be remembered as having been one of the judges who heard the last appeal case in which the Pharmaceutical Society was directly interested—the Kay's essence of linseed case. The question then raised was whether an article, for the manufacture of which Letters Patent had been granted, was exempted from the poison regulations under the Pharmacy Act, 1868, after the patent had expired. Mr. Justice Cave, supported by Mr. Justice Wills, replied in the negative, and without calling upon the Society's counsel dismissed the appeal with costs, declining also to give leave to appeal further. In an obituary notice in the *Times*, the deceased judge is described as being fearless, if occasionally over-confident, and brusque and stubborn in his demeanour towards counsel pressing a point which appeared to him untenable. "He shirked no difficulty, did not hide vacillations under a cloud of verbiage or impalpable qualifications and reservations; and, if he was occasionally wrong—and in the early days of his judicial career he was curiously often right—he was always intelligible." Such men as this our judges should always be, and their retirement or decease is always a loss to the Bench which they have adorned.

The Bulbs of Japan Lilies have lately been affected to such an extent by the growth of a fungus (*Rhizopus necans*), which traverses their tissues and at last destroys them, that the existence of the plants was threatened. According to the *Kew Bulletin*, only two hundred and fifty out of a consignment of seventy-three thousand bulbs of *Lilium speciosum* were fit for sale when they arrived in England from Japan. In like manner ninety per cent. of a consignment of bulbs of *L. auratum*, amounting to nearly forty thousand, was spoiled. Fortunately, the matter has been under investigation at Kew, and it has been found that simple immersion of the bulbs in a one per cent. solution of mercuric chloride or of salicylic acid suffices to kill the spores of the fungus. Neither of these substances has any injurious effect on the living bulbs, provided they are not left in the liquid for more than fifteen minutes. It was found that the fungus cannot penetrate the unbroken tissues of the bulbs, but that it gains admittance through wounds, more especially broken roots.

The Production of Aluminum is the subject of an interesting note in the *Chemical Trade Journal*. It is pointed out that it has only been a few years, comparatively, since aluminum was practically classed among the precious metals, having a value nearly, if not quite, that of gold. Until about 1858 the metal was almost exclusively a laboratory product, and it was not until the introduction of electrical appliances that it became possible to regard it as one to be used for general purposes. But since cheaper and better methods of producing aluminum have been employed, the output has steadily and rapidly increased, until now it is confidently stated by some that before another year has passed only three commercial metals—iron, lead, zinc—will be rated at a cheaper price. Practically all the aluminum in the world's market, up to and including 1895, was produced in France, Switzerland, and the United States, the production being about seven thousand pounds daily. Each of these, as well as Great Britain, added largely to its aluminum plants in 1896, with the result that the output reached nearly fifteen thousand pounds daily. According to Mr. E. Germain, the United States Consul at Zurich, in a recent Consular report, the producers of aluminum abroad have added largely to their plant. The additions to the works at Neuhasen, in Switzerland, when completed, will add some six thousand pounds to the daily production. It is also stated that a German-American syndicate has planned the erection of works for the manufacture of aluminum at the waterfalls of Sarpfoss, in Norway, to be ready for operation by the beginning of next year, and that those works are to have a capacity of about six thousand pounds daily. Consul Germain estimates that with the additions in Switzerland, the new plant in Norway, and the increased capacity of the Niagara Falls plant, the output of aluminum in 1898 will average more than forty-two thousand pounds daily, or about six times the amount produced in 1895.

Edison's Latest Discovery, the *Daily Chronicle* reports, is that his eye has been affected to such an extent by work on the X rays that it was "a foot out of focus," and has taken three months to become restored to its normal condition. Furthermore, he says his hair fell out in handfuls, and three months ago he could not close his hand at all, but the abstention which has benefited his eyes has also had the effect of bringing his hair back and allowing him to make a fist with only some little trouble and pain. One of Edison's assistants, however, fared even worse than himself, hair, beard, eyebrows, and eyelashes having all fallen out in this case, while the skin became wrinkled and burnt. But, according to Edison, a few months will restore him, and he will be better so far as appearance is concerned than he was before, as the skin which has been discoloured and destroyed by X rays will be replaced by a new epidermal covering that is softer and finer than the original. In connection with this matter the question suggests itself whether all the curious stories in which Edison's name occurs are set afloat by himself or with his sanction. If he believes them to be true he must be a wonderful man indeed.

The Royal Photographic Society will hold its forty-second annual exhibition shortly, the necessary arrangements being now in a forward condition. It will be opened to the public on Monday, September 27, and the Saturday previous there will be a private view, followed in the evening by a conversazione, at which the President, the Right Honourable the Earl of Crawford, K.T., F.R.S., and Council will receive the Fellows, members, and their friends. The exhibition will be open daily from 10 to 5, and on Monday, Wednesday, and Saturday evenings (when lantern slides will be shown) from 7 to 10; and will close on November 13.

THE JACOB BELL AND MANCHESTER SCHOLARSHIPS.

HOW TO PREPARE FOR THEM.

BY A BELL SCHOLAR.

The regulations published by the Pharmaceutical Society contain full information regarding these scholarships (see page 237), and should be studied carefully together with a pamphlet, "Advice to Students," which may also be obtained on application to the Secretary, 17, Bloomsbury Square, W.C.

It is not absolutely necessary to procure the help of an experienced coach, though this is useful, of course. The following suggestions are intended especially for the private student; they have in every case been put in practice by the writer.

Higher education being the order of the day, it is now more generally understood that a man is useful in proportion as he is educated. Consequently few employers will refuse a reasonable amount of time for the nccessary study. When convenient, times should be arranged that would render possible attendance at such evening classes as are available. Given four years in which to prepare, it is well to devote the greater part of the first year to elementary botany and inorganic chemistry, practical and theoretical; the advanced stage of these subjects might be taken the second year, and in the third elementary physics and organic chemistry, practical and theoretical.

Pharmacy should be learnt during pupilage in the pharmacy. The Pharmacopœia should be studied and difficult galenicals prepared, as, for example, a scale preparation, one or two typical extracts, and most of the syrups.

A part of each week must be devoted to the remaining subjects, the Virgil being steadily worked through. Not one subject must be allowed to become "rusty," or the task of revision is increased. Especial attention should be given to composition in Latin, French, and English. A Latin and a French Bible will prove of marvellous value in this direction if regularly used to follow the lessons.

In every case a time table should be drawn up and adhered to. It must necessarily vary with the individual, his leisure and his progress from time to time. Reading in the morning should be cultivated as much as possible; so, too, should outdoor exercise. Pharmaceutical students so frequently forget that the "mens sana" is most appropriately stored "in corpore sano." The following time-table is submitted as an example:—

	Monday.	Tuesday.	Wednesday.
6 to 7 a.m.	Arithmetic	Virgil	Latin Grammar and Composition.
7 to 8 a.m.	Pharmacy	Chemistry	Pharmacy
10 to 11 a.m.	Botany	French	English
	Thursday.	Friday.	Saturday.
6 to 7 a.m.	Arithmetic	Virgil	Latin Grammar and Composition
7 to 8 a.m.	Chemistry	Chemistry	Virgil
10 to 11 a.m.	Botany	French	Latin Pharmacopœia and Ince

In the fourth year if possible more time must be given to study and constant revisions undertaken. Let us now consider each subject in detail. Latin: Virgil's 'Aeneid' Lib. I., II., III., may be studied in the first case from Sidgwick's edition ('Cambridge Press' 1*s.* 6*d.* each). In revising another edition may be read with advantage, since the notes vary and are very helpful in throwing a new light on difficult passages. Among others, Papillon and Haigh's (Oxford Press, 3*s.*), will be found a useful work. Let the translation be made with the aid of notes and consigned to paper. Then and only then let a key be consulted. Bradley's 'Arnold' is one of the most useful works on Latin composition. This subject will repay very hard work. A copy of the 1851 edition of the 'London Pharmacopœia' in Latin should be borrowed from the Society, and a certain number of pages translated every week. Ince's 'Latin Grammar of Pharmacy' gives all information on the latinity of prescriptions, a list should be made of all difficult words and phrases for future revision, and this plan may be followed with advantage in each subject.

FRENCH.—Grammar and syntax must not be neglected, and short paragraphs out of the newspaper should frequently be put into French. The occasional perusal of a good French novel or play offers both instruction and diversion. Alphonse Daudet's works may be specially mentioned in this connection.

ENGLISH.—Write at least one essay a week on a page of foolscap. Abbott's 'How to Write Clearly' gives much useful information, as also does a little book on this subject published at 1*s.* 6*d.*, by Skerry, Chancery Lane. It is well to read a few of the masters of English prose, in order to add to one's ideas and improve one's style. The essays of Carlyle, Macaulay, and Goldsmith, with an occasional dip into the realms of fiction, will answer this purpose.

ARITHMETIC.—Pendlebury's (Bell, 4*s.* 6*d.*) is the best text-book. Miscellaneous examples, especially problems, should be worked out.

CHEMISTRY.—In this science, as in pharmacy and botany, the acquirement of broad principles should be aimed at rather than the accumulation of a heterogeneous mass of facts. Attfield's 'Manual' is still the pharmacy student's right hand, as it relates much to the Pharmacopœia, and is intended to give the private worker in practical chemistry just the help he needs. If a laboratory is not available, a little ingenuity will enable the student to fit up at a small cost a little working laboratory of his own.

PHARMACY.—Proctor (Churchill, 14*s.*), Squire and the 'Art of Dispensing' are the best books in this subject, supplemented perhaps by Coblentz, Caspari or Remington for fuller information concerning pharmacopœial processes, a thorough knowledge of which is highly necessary.

BOTANY may be studied to a great extent outdoors. Professor Oliver's book is widely used by beginners, so also is J. W. Oliver's 'Elementary Botany' (Blackie, 2*s.*). Green's 'Manual' (Churchill, vol. i., 7*s.* 6*d.*, vol. ii., 10*s.*) may afterwards be studied. The student should be able to describe a plant in technical language.

PENMANSHIP.—Among directions to candidates we find that in awarding marks, neatness and legibility are taken into account. This point is frequently ignored. In the rush of business and the hurry of note-taking the handwriting often develops into a scrawl. To counteract these influences the candidates cannot do better than work through a set of copybooks, preferably of the Civil Service style. Cusack's set of seven for 1*s.* 2*d.* does very well, and five minutes a day is quite sufficient to effect this purpose in the course of a few months. A further advantage to be gained by adopting this plan is the increased speed attained. Speed goes for everything in competitive examinations, and often spells success.

To a student who has steadily worked for a scholarship the London matriculation should offer little difficulty. A choice may be made of "matric." subjects that differ only slightly from those for the scholarships examinations. Let us compare:—

"MATRIC."	"BELL."
1. Latin.	1. Latin.
2. French or German.	2. French or German.
3. English Language, English History, with Geography relating thereto.	3. English (Composition and Parsing).
4. Mathematics (Euclid, Algebra, and Arithmetic).	4. Arithmetic.
5. Chemistry or Botany.	5. Chemistry.
6. Mechanics.	6. Botany.
	7. Pharmacy.

The additional subjects required for the matric. are therefore algebra, Euclid, i. to iv., and mechanics. The advantages of the matric. are too well known to need remark, and the student will do well to endeavour to pass it during his apprenticeship if he has

not already done so. The passing of the matric. is a fair reward for possible disappointment in the Bell, and a matriculant will seldom find much difficulty in passing the Minor and Major examinations in due course.

In conclusion it may be added that steadfast resolution and unwavering perseverance are qualities which not seldom have enabled a man of slow wit to outstrip more brilliant rivals in this as in all departments of life.

PRACTICAL PHARMACOGRAPHY.*

BUCHU FOLIA.

Buchu Leaves, Eng.—Feuilles de Bucco, Fr.—Bucco blätter, Buku blätter, Ger.

Macroscopic Characters.—The three official species differ in shape, size, and to a certain extent in the flavour of the leaves.

I. B. BETULINA.—The leaves vary from $\frac{1}{2}$ to $\frac{3}{4}$ inch (12-18 Mm.) in length, and from $\frac{1}{3}$ to $\frac{1}{2}$ inch (8-12 Mm.) in width, in the upper part. In shape they are obovate, cuneate below, somewhat undulate, and recurved at the apex, glabrous and minutely

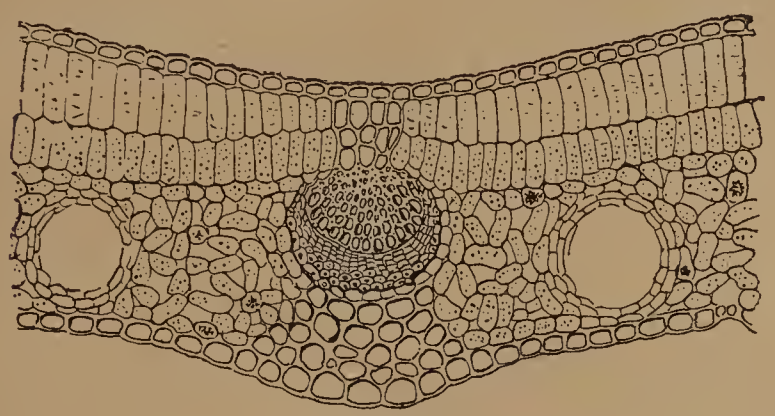


Fig. 1.—Section of Buchu leaf, showing the sub-epidermal mucilaginous cells, swollen in water. After Planchon and Collin.

wrinkled, with a polished surface, denticulate at the margin, furnished with scattered oil cells, one occurring also at the base of each tooth and in the obtuse apex. The odour is characteristic, recalling a mixture of peppermint and black currant.

II. B. CRENULATA.—The leaves are oblong-oval, or elliptical, obtuse or somewhat rhomboidal, varying from $\frac{1}{2}$ to $1\frac{1}{4}$ inch (12-30 Mm.) in length and from $\frac{1}{4}$ to $\frac{1}{2}$ inch (6-12 Mm.) broad in the middle. The surface is glabrous, polished and minutely wrinkled, and the margin crenulate. The leaf is furnished with oil cells in exactly the same way as *B. betulina*. The odour recalls that of horsemint (*Mentha aquatica*), and the flavour that of peppermint, with a trace of caraway.

III. B. SERRATIFOLIA.—The leaves are linear-lanceolate, varying from 1 to $1\frac{1}{4}$ inch (25-30 Mm.) in length, and from $\frac{1}{8}$-$\frac{1}{4}$ inch (3-6 Mm.) in width in the middle. They are obtuse at the apex and

Fig. 2.—Lower epidermis, showing crystals of hesperidin and sphæraphides. After Planchon and Collin.

serrulate at the margins, glabrous, polished, and minutely wrinkled, and are furnished with oil-cells in the same manner as the two preceding species. The odour and flavour resemble those of *B. crenulata*, but the taste is more distinctly bitter. Buchu apparently owes its properties to an essential oil. In the case of *B. betulina* the oil affords a crystalline deposit of diosphenol (*Pharm. Journ.* [3], xxv., p. 797), which has been ascertained by Dr. Cash to possess antiseptic properties. It has an odour like menthol. The leaves also yield a ketone, resembling menthone, and a hydrocarbon (*Pharm. Journ.* [4], v., p. 89). The leaves in addition yield mucilage and contain hesperidin.

Microscopic Characters.—The epidermis consists of tabular polyhedral cells (five to six sided) without stomata on the upper surface of the leaf. These cells contain amorphous masses, or sphærocrystals of hesperidin (Fig. 2). Between the epidermal layer and the palisade cells there is a layer of colourless cells, thin and with irregular walls, as seen in alcohol or almond oil, but in water swelling up and forming mucilage by the dissolution of the walls (Fig. 1). The mesophyll consists of a single layer of palisade cells and a spongy parenchyma beneath, sphæraphides occurring in some of the cells. The oil cavities are lined with two or three layers of flattened cells. Those at the base of the marginal teeth occupy nearly the whole thickness of the leaf. The lower epidermis is furnished with stomata. The midrib is not prominent on the upper surface, and very slightly so below. It consists of a woody bundle with soft liber and a pericyclic arch of lignified cells on its under surface, separated from the upper and lower epidermis by layers of polygonal thick-walled cells, which do not contain chlorophyll (Fig. 1). Several species of the allied genera or of the same genus are occasionally offered in commerce, but only one occurs with sufficient frequency to demand notice. This is *Empleurum serrulatum* (Fig. 3, D), known in commerce as "Fine Long Buchu." The leaves resemble those of *B. serratifolia* but are narrower and longer, $1\frac{1}{4}$ to $1\frac{1}{5}$ inch (30-36 Mm.) long, and about $\frac{1}{8}$ to $\frac{1}{6}$ inch (3-4 Mm.) broad. The apex is sharply pointed, and does not contain an oil cell, although these are present at the base of every tooth. The lateral veins, which are only slightly

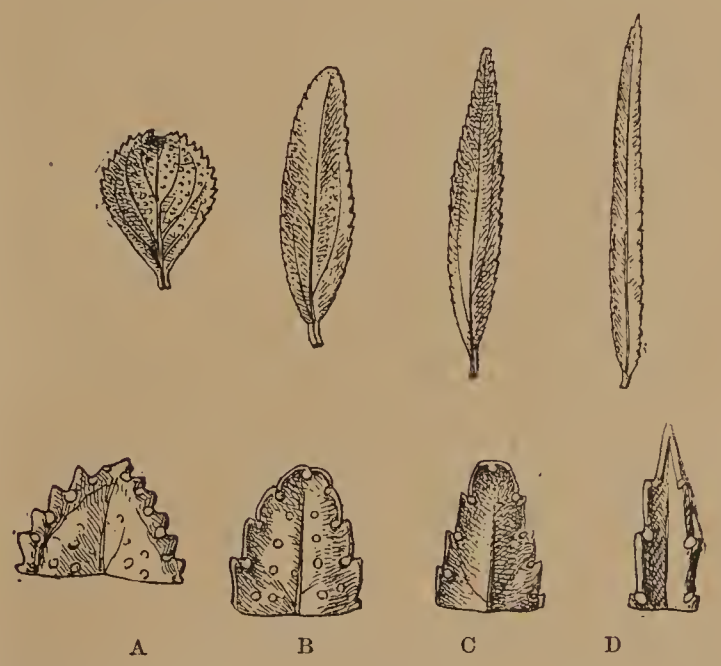


Fig. 3.—Leaves, natural size, and tips of same, enlarged. (A) *Barosma betulina*; (B) *B. crenulata*; (C) *B. serratifolia*; (D) *Empleurum serrulatum*.

visible in the official species of buchu, are practically not visible in *Empleurum*. The odour is very different, slightly recalling that of baked apples, and the faint flavour is rather like that of lemons and caraways mixed, but there is a distinct bitterness. Umney has pointed out that the infusion of these leaves has an odour like trimethylamine, and that ferric chloride does not produce in it the green coloration which it gives with the leaves of *B. betulina*. The leaves have a similar structure to those of buchu as regards the mucilage cells. The fruit of *Empleurum serrulatum* is often found mixed with the leaves. It consists of a single carpel, linear-oblong and compressed, with a sword-shaped beak, the whole being about $\frac{3}{4}$ inch (18 Mm.) long, of which the beak forms half. The fruit of *Barosma* consists of five carpels, opening by the ventral suture, and adhering by their margins when dehisced.

* Previous articles on this subject appeared on pages 30, 170, 230, and 269, of last volume, including Aconiti Folia, Aconiti Radix, Amygdalæ, Amylum, Anethi Fructus, Anisi Fructus, Anisi Stellati Fructus, Armoraciæ Radix, Anthemidis Flores, Arnica Rhizoma; on page 42 of the present volume, Belæ Fructus, Belladonnæ Folia, and Belladonnæ Radix were dealt with.

WHERE TO STUDY.

THE following brief particulars concerning the various institutions where there are classes and courses of laboratory instruction suitable for pharmaceutical students, are intended to give students a general idea of the facilities that are offered. Fuller particulars may be obtained in any case by writing to the Secretary of the school. In some towns not mentioned in the list classes are arranged in connection with local pharmaceutical associations or in public institutions :—

LONDON SCHOOLS.

The School of Pharmacy, 17, Bloomsbury Square, London, W.C.—STAFF: *Botany.*—Professor J. Reynolds Green, Sc.D., F.R.S., F.L.S., and Mr. Lloyd Williams. *Chemistry.*—Professor J. Norman Collie, Ph.D., F.R.S., and A. Lapworth, Ph.D. *Materia Medica and Pharmacy.*—Professor Henry G. Greenish, F.I.C., F.L.S., and Mr. Harold Wilson. Applications for admission should be addressed to the Secretary of the Pharmaceutical Society, at the above address.

BOTANY.—The Elementary Course will extend from October 7, 1897, to the end of June, 1898, the lectures being delivered on Thursdays and Fridays at 12 o'clock. The laboratory work will be held on Friday mornings, commencing at half-past 9, and will be conducted by the demonstrator under the supervision of the professor. The Advanced Course will extend from October, 1897, to the end of March, 1898. From October to December lectures will be delivered on Thursdays and Fridays at 2 o'clock, and from January to March on Thursdays only, at the same hour. The laboratory work will be held on Thursday mornings from half-past 9 till 1, and will be conducted by the demonstrator under the direction of the professor. The laboratory work in connection with both courses will be so arranged as to illustrate and supplement the lectures, and it will include the dissection of plants and the practical study of their morphology; their histological features, the study of their structure by means of the microscope; the preparation and appropriate treatment of sections, and the methods of investigation; the practical study of the chief physiological processes; the features of the several natural orders comprised in the subjoined schedules, and the mode of representing them by means of diagrams and formulæ. It will include also the revision of the subject matter of the lectures. The gardens of the Royal Botanic Society, Regent's Park, will be open for purposes of study to all students of the School. FEES: Elementary course, £5 5s.; advanced course, £3 3s.

CHEMISTRY AND PHYSICS.—The lectures on elementary chemistry are delivered by the professor on Wednesday and Saturday, and those on physics by the assistant lecturer on Monday mornings at half-past 9 o'clock. The lectures on advanced chemistry will be on Monday and Tuesday at 12 o'clock, and those on physics by the assistant lecturer on Thursday at 12 o'clock. The Elementary Course, which commences in October and terminates at the end of June, has reference to the principles of chemistry as illustrated by the properties of the non-metals and metals, special attention being paid to those which are of importance in medicine and the arts. It also includes a consideration of the elements of organic chemistry, and of heat, besides those other parts of physics which are closely related to chemistry. The Advanced Course, which is more particularly intended for advanced students, commences in October, and terminates at the end of March. It includes lectures on the atomic theory and the determination of atomic weights, organic chemistry, and also lectures and demonstrations in light, electricity, and magnetism. All the lectures are fully illustrated by experiments. Revision classes will be held from time to time, as required. The lectures on physics will include practical demonstrations in the use of physical instruments. Elementary students are strongly recommended to enter in October, but in the case of a student who is unable to commence work in October and is obliged to enter at a later date, the professor will be glad to render him every assistance in supervising his work in those portions of the subject which have already been discussed in the preceding lectures. FEES: Elementary course, £5 5s.; advanced course, £3 3s.

PRACTICAL CHEMISTRY.—The chemical laboratories are open from 9 a.m. until 5 p.m. daily. On Saturdays they are closed at 2 o'clock. These laboratories are fitted up with every convenience for the study of the principles of chemistry by personal experiment. They are specially designed for the student of pharmacy, but are equally well adapted for the acquirement of a knowledge of chemistry in its applications to medicine, manufactures, or analysis. A complete elementary course of instruction occupies about nine months, students working not less than three hours daily; a complete advanced course, including the higher branches of quantitative analysis, occupies about six months. FEES: Elementary course (3 hours daily), £12 12s.; advanced course, (3 hours daily) £9 9s.

MATERIA MEDICA.—The Elementary Course of lectures in this subject will be delivered on Tuesdays at half-past 9 o'clock, commencing on October 5, 1897, and extending to the end of June, 1898. Each lecture will be followed by practical work in the histological laboratory, which will be conducted by the demonstrator under the supervision of the professor. The Advanced Course of lectures will be delivered on Wednesdays at 12 o'clock, commencing on October 6, 1897, and terminating at the end of March, 1898. The lectures will be preceded by practical laboratory work. FEES, £3 3s. for each course.

PHARMACY.—The lectures on this subject will be delivered on Mondays and Tuesdays at half-past 2 p.m., commencing on October 5, 1897, and extending to the end of June, 1898. Each lecture will be followed by practical work in the laboratories. The subject matter will be divided into pharmacy and dispensing. The first of these divisions will include lectures on, and practical instruction in, the performance of all pharmaceutical operations, such as evaporation, distillation, sublimation, calcination, fusion, desiccation, disintegration, solution, dialysis, crystallisation, granulation, precipitation, decantation, filtration, clarification, infusion, digestion, decoction, maceration, percolation, and expression, as well as in the production of all classes of galenical preparations, such as medicated waters, dilute acids, collodions, confections, etc. Under dispensing will be included practice in the reading of prescriptions, the detection of errors and unusual doses, and systematic instruction in the weighing, measuring, compounding, and finishing off of medicines. All operations that can be performed at the dispensing counter, such as the various methods of coating pills, preparing tablets and tablet triturates, lozenges, suppositories, etc., will be practised by the student, who will thus be afforded an opportunity of acquiring a sound knowledge of this branch of his business. During the course of instruction in pharmacy and dispensing modern appliances for the pharmaceutical laboratory and the dispensing counter will be described, and, if possible, practically used, special attention being directed to such apparatus as the retail pharmacist may advantageously employ in the daily routine of his calling.—FEE: £6 6s.

PRIZES.—At the end of June bronze medals and certificates of honour are offered for competition by students who have attended the elementary course, and at the end of March silver medals and certificates of honour are open for competition by students who have attended the advanced course. The silver medallists are presented by Mr. Thomas Hanbury with a copy of 'Pharmacographia' and of 'Science Papers,' in memory of his brother, the late Daniel Hanbury, F.R.S. For particulars of Scholarships see pp. 237-8.

South London School of Pharmacy, Limited, 325, Kennington Road, London, S.E.—STAFF: Dr. Muter, F.R.S. (Edin.), F.I.C., etc.; Mr. W. H. Dodd, F.C.S., etc.; Mr. W. F. Mawer, F.C.S. (and Lond. Univ.); Mr. F. Armstrong; Mr. L. De Koningh, F.I.C., etc.; Mr. J. Thomas, B.Sc. (Lond.), First Class Honours in Chem. and Physics; and Mr. A. C. M. Muter, A.I.C. The school premises include a chemical laboratory, fully

fitted for both quantitative and qualitative analysis ; a very complete museum of drugs, chemicals, and plants ; and a laboratory for the manufacture of pharmaceutical preparations, fully fitted with all the necessary technical fittings, such as stills, steam-pans, etc., so that students can practically manufacture the preparations of the Pharmacopœia and gain knowledge not hitherto attainable outside the laboratory of a manufacturer. In this department is also a fully-furnished dispensary where students can obtain thorough practice in the art of dispensing in all its branches. There are also rooms specially furnished with microscopes and all appliances for practical biology ; and also with full sets of electrical, optical, and thermal instruments. The lecture rooms, etc., are in a separate building from the laboratories, so as to be free from fumes. The laboratories open at 9 a.m., and classes go on at intervals all day until 6 p.m., except between 1.30 and 2.30 p.m., when there is an interval. Work ceases at 1 p.m. on Saturdays. The session lasts from the end of September in each year until the middle of July in the following year. A fresh course of lectures (commencing at the foundation of each subject) is begun in September, January, and April. Fees.—Minor course : Lectures and classes in chemistry, chemical physics, botany, materia medica, Latin, and pharmacy, £5 5s. Major course : Lectures and classes in organic chemistry, physics, botany, and materia medica, £3 3s. No ordinary student can attend the theoretical classes without also taking the practical work, the fees in the practical department for both Minor and Major divisions being £3 3s. per month and for the special extra academical tutorial term, open only to students of the school, £4 4s. for either Minor or Major. Compounding fees for every necessary subject either for Minor or Major (theoretical and practical) : £12 12s. for the first term (about 3½ months), £8 8s. for a second, or any subsequent term. Students having once "compounded" can remain in the school as long as they please on payment of the practical fees only.

Westminster College of Chemistry and Pharmacy, Trinity Square, Borough, London, S.E.—Principals, Mr. G. S. V. Wills, F.L.S., Ph.C., and Mr. H. Wootton, B.Sc. (Lond.). Secretary : Mr. E. Walden. Day Classes are held in chemistry and physics, materia medica, botany, pharmacy, and dispensing. The college is open from 9 to 5 daily, and the time not devoted to lectures and tutorial classes is occupied in practical work in the various subjects. Fees :—Minor complete course £8 8s. ; six months, £12 12s. ; twelve months, £15 15s. For the latter fee a student is taught until he can pass both Minor and Major examinations. Major course, three months, £5 5s. ; twelve months, £10 10s. Students who take a six months' course and pass the Minor at their first attempt, receive free tuition for the Major. Evening Classes, for the Preliminary, Minor, and Major examinations, and practical work are held every Tuesday, Wednesday, and Thursday from 7 till 9 Fee, Minor course, three months, 10s. 6d. It may be mentioned that the Pereira Medal was this year awarded to a student of this school, Mr. W. A. Knight, an honour of which the principals are justly proud.

Metropolitan College of Pharmacy, 162, Kennington Park Road, London, S.E.—Principal, Mr. Watson Will. Demonstrators, Messrs. G. T. Branch, H. Lucas, and M. F. Burgin. Secretary, Mr. W. S. Carver. Day Classes are held in chemistry (inorganic, organic, and practical), materia medica, pharmacy, botany, vegetable histology, and physics. Hours, from 9 a.m. to 6 p.m. There are three sessions, winter, from September 1 to December 31 ; spring, from January 1 to April 10 ; summer, April 12 to July 24. Fees : Minor course, £10 10s. ; Major course, £6 6s. ; Major evening course, from September 1 to following July, Fee £12 12s. ; Minor evening course, £3 3s. Evening classes (7 to 10 p.m.) are held in chemistry (inorganic, organic, and practical), pharmacy, materia medica, botany, physics, prescription-reading, and histology. Minor courses similar to day. Extra evenings may be taken for practical work.

Birkbeck Literary and Scientific Institution, Breams Buildings, Chancery Lane, E.C.—Arrangements have been made for the instruction of students in chemistry, biology, and experimental physics, in conformity with the requirements of the Intermediate and Final B.Sc., the Preliminary Scientific (M.B.), and the Intermediate M.B. examinations of the University of London, of the Conjoint Examining Board of the Colleges of Physicians and Surgeons, and the Minor and Major examinations of the Pharmaceutical Society. Special attention will be paid to lecture experiments, and to individual practical work in each subject. The chemical, biological, and physical laboratories have been recently much enlarged and completely re-fitted, and accommodation is now provided for fifty students in each laboratory. Application should be made to the secretary for special prospectuses.

Brixton School of Chemistry and Pharmacy, 12, Knowle Road, Brixton, London.—Principal, Dr. A. B. Griffiths, F.R.S. (Edin.), F.C.S. At this school day and evening classes are held for the Minor and Major examinations. Tuition is afforded in chemistry, botany, materia medica, pharmacy, physics, and prescription reading. Each student receives assistance in his work, and every endeavour is made to secure a successful issue. The school is fitted with the best appliances, and there are also collections of materia medica specimens, microscopic preparations of drugs, rare chemicals, essential oils, etc. Medals and certificates are awarded to successful students. There are also special classes for ladies preparing for the Apothecaries' Hall examination.

British Institute of Preventive Medicine, 101, Great Russell Street, W.C.—Staff, Bacteriological Department : Allan Macfadyen, M.D., B.Sc. ; R. T. Hewlett, M.D., M.R.C.P. ; A. G. R. Foulerton, F.R.C.S., D.P.H. (Camb.). A. Salter, M.D., D.P.H. Water Laboratory : A. Harden, Ph.D. The winter session commences on October 1, and the summer session on May 1. There are courses of instruction in bacteriology in relation to hygiene (Fee £5 5s.) ; biological chemistry (Fee £12 12s.) ; the bacteriology of fermentation ; photo-micrography ; water analysis, etc., etc., etc., and a practical laboratory course illustrating the principles of hygiene. The laboratories are open daily from 10 to 5 o'clock for the purpose of instruction and original research work. The work is under the supervision of Allan Macfadyen, M.D., B.Sc., assisted in the bacteriological department by R. T. Hewlett, M.D., M.R.C.P., and in the chemical department by Mr. A. G. R. Foulerton, F.R.C.S., D.P.H. (Camb.). It is hoped that the new building on the Chelsea Embankment will be ready for occupation in January next.

City School of Chemistry and Pharmacy, 27, Chancery Lane, London, E.C.—Staff, Mr. G. E. Skerry, M.A. ; Mr. F. A. Hocking, B.Sc., Ph.C. ; Mr. Dallas, M.A. ; Mr. Purnell, A.P.S. ; Mr. M. J. Cole, etc. Day Classes are held in all subjects for the Minor examination, including chemistry, physics, and pharmacy, materia medica, botany, prescription-reading, microscopy, vegetable histology, analytical chemistry, practical pharmacy, Latin, mathematics, geology and biology (practical and theoretical), the courses beginning in January and June respectively. Fee for the six months' course, £12 12s. Evening Classes for the Minor are also held. Six months' Fee, £7 7s. The next term commences September 14.

Imperial College of Chemistry, 51, Imperial Buildings, Ludgate Circus, E.C.—Principal, Mr. Frederick Davis. Private Classes (day, 10 to 5 ; evening 5.30 to 8) are held in chemistry, biology, botany, materia medica, microscopy, pharmacy, physiology, prescriptions, sanitary science, and hygiene. Minor Fees, £10 10s. Especial private tuition may be arranged for any desired subject.

The Students' Laboratory, 40, Lamb's Conduit Street, W.C.—Teachers : T. A. Ellwood, F.I.C., F.C.S., C. E. Sage, F.C.S., M.P.S. In connection with this laboratory classes are held to prepare students for the examinations of the Pharmaceutical Society, the system employed being devised to ensure individual teaching and personal attention to each student in both practical and theoretical work. The laboratory is opened every evening except Saturdays, from 6.30 to 9.30 p.m. Fees for three months : One night weekly, £1 11s. 6d. ; two nights weekly, £2 17s. 6d. ; three nights weekly, £4 4s. ; four nights weekly, £5 5s. ; five nights weekly, £6 6s.

PROVINCIAL SCHOOLS.

BARROW-IN-FURNESS.

Barrow-in-Furness Higher Grade School.—At the Barrow Higher Grade School technical classes are held on Monday, Tuesday, Thursday, and Friday evenings, commencing September 17, in theoretical and practical chemistry, physiology, and hygiene. Further particulars may be obtained from the Secretary, Mr. C. F. Preston, town clerk.

BIRMINGHAM.

Central School of Pharmacy, 90, New Street, Birmingham.—Mr. F. Stokes Dewson holds classes for the pharmaceutical examinations—Major, Minor, and Preliminary. The classes are held day and evening. Practical pharmacy and dispensing receive special attention.

Birmingham Municipal Technical School, Suffolk Street, Birmingham.—Day Classes are held in theoretical and practical chemistry for chemists and druggists. Teachers, Mr. C. J. Woodward, B.Sc., and Mr. C. D. Sykes. Fee, 5s. per session. Evening Classes are held in botany. Teacher, Mr. J. W. Oliver. Fee, 2s. 6d. per session; and also in physics. Teachers, Dr. Sumpner, and Mr. P. C. Coultas, A.R.C.Sc. Fee, 5s. per session.

Mason College, Birmingham.—Teachers: Professors Percy F. Frankland and Hillhouse, and Mr. Dencer Whittles. Day Classes are held in chemistry, botany, materia medica, pharmacy, etc. Fees: Chemistry (from October to March and a weekly tutorial class) £5 5s.; organic chemistry suitable for Major students (April to June), £1 11s. 6d.; botany (spring and summer terms), £2 2s.; systematic botany (summer term), £1 1s.; materia medica and pharmacy, £1 1s.; practical chemistry, 10s. 6d.

Temple Chambers Tutorial Classes.—Principal, Mr. F. H. Alcock, F.I.C., Pereira Medallist. Tutorial Classes for pharmaceutical students are held at the Analytical Laboratory, Temple Chambers, Broad Street Corner, Birmingham. The laboratories are conveniently arranged for the practical study of the subjects necessary for the Minor and Major qualifications. Special attention is paid to microscopy, vegetable histology, and synthetical and analytical chemistry. The fees are dependent upon the hours of attendance and subjects required. For full-time students the fees are 7 guineas per quarter. As each student works independently, he may begin when he pleases.

BRADFORD.

Bradford Technical College.—Head of Department and Lecturer in Chemistry, Mr. Walter M. Gardner; Assistant Lecturer and Demonstrator, Mr. A. B. Knaggs; Lecturer in Botany, Biology, and Materia Medica, Mr. W. West. Day and Evening Classes are held in chemistry (inorganic and organic), qualitative chemical analysis, quantitative chemical analysis, botany, practical botany, organic materia medica, pharmacy, and biology. A special pharmaceutical course has been arranged, including the above subjects and extending over two (evening) sessions. It is adapted for students who are preparing for the Minor examination of the Pharmaceutical Society, and an inclusive fee, at a reduced rate, is charged to students who enter for the full course.

BRISTOL.

University College, Bristol.—Teachers: Professors Sydney Young, D.Sc. (Lond.), F.R.S., A. P. Chattock, M.I.E.E., C. Lloyd Morgan, F.G.S., and Messrs. F. E. Francis, B.Sc., Ph.D., E. Jackson, M.A., B.Sc., Ph.D., L. N. Tyack, S. H. Reynolds, M.A., G. Brebner, A. B. Prowse, M.D., and F. W. Stoddart, F.I.C. Day and Evening Classes are held at the University College in chemistry (organic and inorganic), experimental physics, and botany. There are also chemical and physical laboratories. In addition, the Bristol Pharmaceutical Association has for two years past organised a class for instruction in materia medica and pharmacy. Fee, 7s. for the course. This class meets weekly during the two winter sessions, and is conducted by Mr. Benjamin Keen, Secretary to the Association.

CAMBRIDGE.

Cambridge Pharmaceutical Association.—Classes are held in botany and chemistry at the Technical Institute, Cambridge, commencing in October, and are open to all pharmaceutical students. Further particulars may be obtained from the secretary, Mr. E. Saville Peck, 30, Trumpington Street, Cambridge.

EXETER.

Exeter School of Pharmacy, at the Exeter Technical and University Extension College.—Principal, A. W. Clayden, M.A. Chemistry, W. H. Lewis, M.A. Pharmacy and Botany, A. H. Ware, M.P.S. Full instruction is given in all subjects required for the Minor examination. The Session commences in the first week of October and terminates at the end of June. Inclusive Fee, £10 10s. The above fee is for full-time work during the whole Session, but arrangements may be made enabling advanced students to join at any time for a reduced fee. Evening Classes are also held. For prospectus and particulars, apply to the Secretary of the College at the Albert Memorial Museum, Exeter.

LEEDS.

Leeds Technical School, Cookridge Street.—A large number of students in pharmacy attend this school. The courses in theoretical and practical chemistry are under Mr. R. E. Barnett, B.Sc., A.R.C.S., assisted by Mr. Ferguson, A.R.C.S. That in physics is under Mr. Tindall, B.Sc. Mr. N. Walker conducts the botany class. Practical work in chemistry, physics, and botany is offered in addition to the lecture courses. The lecture fees are from 2s. 6d. per session, and the laboratory fees from 7s. 6d. The classes are held in the evenings between 7 and 9.45.

LIVERPOOL.

Liverpool School of Pharmacy, 6, Sandon Terrace, Upper Duke Street, Liverpool.—Principal, Mr. R. C. Cowley, assisted by demonstrators. Day Classes are held in all the subjects of the Minor and Major examinations. Fees: Minor course, £10 10s.; Major course, £9 9s. Once a week classes are held, one evening for juniors and one for advanced students. The fee for this class for an entire course is £3, or for the whole session £7 10s. The course of study in this school is controlled by the Council of the Liverpool Chemists' Association.

University College, Liverpool, School of Pharmacy, Brownlow Hill. Principal, Professor G. H. Rendall, M.A., Litt.D. Dean, Professor A. M. Paterson, M.D. Professors and Lecturers, Chemistry: Professor J. Campbell Brown, D.Sc., F.C.S., F.I.C.; T. Lewis Bailey, Ph.D.; Samuel B. Schryver, B.Sc., Ph.D.; F. E. Francis, B.Sc., Ph.D. Physics, Professor Oliver J. Lodge, D.Sc., LL.D., F.R.S.; James L. Howard, D.Sc. Botany, Professor R. J. Harvey Gibson, M.A., F.L.S.; Charles E. Jones, B.Sc. Materia Medica, Professor W. Carter, LL.B., M.D., B.Sc., F.R.C.P.; Prosper H. Marsden, F.C.S. Pharmacy, Prosper H. Marsden, F.C.S. A complete course of instruction for the examinations of the Pharmaceutical Society of Great Britain may be taken in University College. The session consists of a first course, beginning in October, and a second course, commencing in May. The Manchester Pharmaceutical Association Scholarship, of the annual value of about £26, may be held in this school. Lectures and practical instruction are provided in all the essential subjects, and there are well-equipped museums of chemical, botanical, and materia medica specimens. Courses may be taken out separately: or a composition fee of £17 may be paid, covering the entire Junior course. Students paying the composition fee are required to complete the course within three sessions from the date of payment. Applications for admission and all inquiries must be addressed to the Registrar, University College, Liverpool.

MANCHESTER.

Manchester College of Pharmacy, 225A and 227A, Oxford Street, Manchester.—Principal, Mr. Charles Turner. Day Classes are held in prescription reading, and Latin, practical dispensing, pharmacy, materia medica, botany, chemistry, and physics. Fees: Minor course (January to April), £9 9s.; (April to July), £9 9s.; (second Monday in August to January), £11 11s. Major course: £6 6s.; (second Monday in August to January), £7 7s. Evening Classes are held in chemistry, Latin, physics, practical chemistry and dispensing, botany, materia medica, and

pharmacy. The fees are, Minor course: (January to July), £4 4s.; (September to December), £3 3s. Major course: (January to July), £3 3s.; (second Monday in August to January), £2 10s. A Once a Week Class is held in practical chemistry, dispensing, pharmacy, chemistry, Latin, physics, botany, and materia medica. The fees for this class are: Minor course (January to July), £4 4s. Major course: (January to July), £3 3s.; (second Monday in August to December), £2 10s.

Northern College of Pharmacy, 100, Burlington Street, Manchester.—TEACHERS, Messrs. George Clayton and Frederick Lawson. The method of instruction comprises lectures and tutorial classes. Full Time and Afternoon Classes are held in organic and inorganic chemistry, physics (theoretical), practical chemistry, practical pharmacy, dispensing, theoretical pharmacy, botany, materia medica, prescription reading, theoretical chemistry, microscopy, and prescription Latin. FEES.—Minor course (day), January to April, £9 9s.; April to July, £9 9s.; September to January, £10 10s.; (afternoon), January to July, £4 4s.; September to December, £2 10s. Major course, January to April, £5 5s.; April to July, £5 5s.; September to January, £6 6s. Evening Classes are held in theoretical chemistry, physics, Latin, practical chemistry, dispensing, botany, materia medica, microscopy, and pharmacy. The fees for these classes are: Minor course, January to July, £4 4s.; September to December, £2 10s. Major course, January to July, £3 12s. 6d.; September to January, £2 5s.

Owens College, Manchester.—PRINCIPAL, A. W. Ward, Litt.D., LL.D., pharmaceutical department. TEACHERS, Professors A. Schuster, H. B. Dixon, W. H. Perkin, D. J. Leech, and F. E. Weiss, and Mr. W. Kirkby. Day Classes are held in physics, chemistry (organic and practical), materia medica and therapeutics, pharmacy, pharmaceutical chemistry, botany, practical botany, pharmacy law. The winter session is devoted to the subjects for the Minor examination, and the summer session to courses suitable for students preparing for the Major examination. FEES: A composition fee of £17 17s. admits to the College courses for the first year, and of £15 15s. for the second year. Students may pay for the classes separately. An entrance exhibition of £10 is awarded on the results of a competitive examination in elementary botany and chemistry. It is open to students entering for the full pharmaceutical course. Intending candidates must give notice to the registrar on or before September 20. A prize of £5 will be offered at the end of the winter session, 1897-8, for competition among students proceeding to the course for the Major examination. The Manchester Pharmaceutical Scholarship, value about £26, is also tenable at this College.

NEWCASTLE-ON-TYNE.

North of England School of Chemistry and Pharmacy, 55, Northumberland Street, Newcastle-on-Tyne.—PRINCIPAL, Mr. George F. Merson, F.C.S. Day and Evening Classes are held in all subjects of the Minor and Major examinations. FEES: Full time classes, £8 8s.; evening classes, £3 3s.; Wednesday afternoon class, £3 3s. The fees are in each case per term of three months. A special weekly class for junior assistants and apprentices is held by Mr. Merson. The fees for this class are £1 1s. for each subject, or £3 3s. for all. Apprentices are encouraged to take three or four consecutive winter courses of six months each, so as to prepare a sound groundwork of examination subjects. Classes for Medical and Veterinary Students: Chemistry, botany, materia medica, pharmacy, etc., are also held. PRIZES (competitive examination at end of each winter course) offered, of books, to apprentice students.

NOTTINGHAM.

Nottingham and Notts. Chemists' Association, 2, Chapel Bar, Nottingham.—The Council of this Association has made arrangements for a complete three years' course of instruction, suitable for students preparing for the Minor examination of the Pharmaceutical Society, to be given at the University College, Nottingham. The course includes chemistry and botany, both theoretical and practical; physics, materia medica, and dispensing. Pharmaceutical chemistry (Mr. R. M. Caven): FEE, 15s. per term; elementary organic chemistry, suitable for advanced pharmaceutical students (Dr. J. J. Sudborough): FEE, 7s. 6d.; materia medica (Mr. C. Haydon White): FEE FOR THE COURSE, 15s.; physics (Professor Heaton): FEE, 5s. During the forthcoming College session, commencing on October 11, instruction will be given in pharmaceutical chemistry, both theoretical and practical; materia medica, and physics.

PLYMOUTH.

Plymouth, Devonport, Stonehouse and District Chemists' Association, 7, Whimple Street, Plymouth.—Summer classes in practical botany are conducted by Mr. O. A. Reade from May to September inclusive. (1) Lectures on morphology and classification every alternate Tuesday at 8.30 p.m.; (2) Field botany every alternate Wednesday, meetings as arranged. Fee for course, 2s. Prizes are given annually for the best sets of herbaria collected locally. Winter Classes in pharmacy and materia medica are held weekly from October to March inclusive. Pharmacy by Mr. O. A. Reade; materia medica and prescription reading by Mr. J. R. Johnson. Fee for the course in one subject, 4s.; both subjects, 7s. 6d. The classes are held in the rooms of the Association, 7, Whimple Street, and at the end of each session prizes are awarded by the Association. A good museum and library are also provided for the use of students.

Plymouth Science, Art, and Technical Schools.—Day and Evening Classes are held at these schools in chemistry, physics, physiology, materia medica, botany, biology, dentistry, pharmacy and hygiene. TEACHERS: chemistry, J. Burns-Brown and Dr. Thackrah; physics, Mr. Talbot; physiology, materia medica and hygiene, Dr. Wilson; botany and biology, Mr. Hodgson. The Session extends from September to July.

SHEFFIELD.

Sheffield College of Pharmacy, 118, Princess Buildings, The Moor, Sheffield.—TEACHERS, Messrs. Robert B. Greaves and J. W. J. Turner. Day Classes are held in chemistry and physics, practical chemistry, botany, pharmacy, materia medica, prescription reading, organic chemistry, dispensing, and practical pharmacy. FEES, Minor (full course), £8 8s. (short course), £4 10s.; Major (full course), £7, (short course), £4. Evening Classes are held in botany, chemistry, and practical chemistry. The fee per term is £1 12s. 6d. inclusive. Winter session commences September 23, for evening students, and for ordinary day classes October 4.

Sheffield School of Pharmacy, New Surrey Street, Sheffield.—The Sheffield Pharmaceutical and Chemical Society holds Evening Classes in botany, chemistry, materia medica, etc. The materia medica and botany classes are conducted by Mr. J. Austin; chemistry and physics, and practical chemistry by Mr. Henry Highfield. Full particulars and syllabus can be obtained from the School Secretary, Mr. S. T. Rhoden, 33, Church Street.

SCOTTISH SCHOOLS.

ABERDEEN.

Aberdeen School of Pharmacy, 21, Bridge Street, Aberdeen. Evening Classes are held in connection with the Aberdeen and North of Scotland Society of Chemists and Druggists, preparatory for the Minor examination. The winter course commences in October and terminates in March, and a short summer course commences April 1 and terminates June 30; the latter course being more particularly suited for advanced students. The class meets every night (9-11 p.m.) for the consideration of the various subjects, which are fully studied both theoretically and practically. Day pupils are received by special arrangement, and special arrangements are also made for medical students, whereby they may receive instruction in practical chemistry and pharmacy. FEES: October to March, £3 3s.; April to July, £2 2s.; single subjects, 10s. 6d.

DUNDEE.

Dundee Science and Art Classes.—Mr. J. Braik Mason holds classes in chemistry, and Mr. James Aimer classes in botany, at the Science and Art classes held at the Technical Institute, Dundee. The fee for two classes is 7s. 6d., or 5s. for one.

EDINBURGH.

Edinburgh Royal Dispensary and School of Pharmacy, 21, West Richmond Street, Edinburgh. LECTURER, Mr. William

Duncan, assisted by Messrs. Mackenzie and German, pharmaceutical chemists. Day Classes are held in practical chemistry and physics, theoretical chemistry, pharmacy, dispensing and prescription reading, botany, materia medica, practical pharmacy and dispensing. The session lasts from October to July, and is divided into three terms, which commence in October, January, and April. Fees: Major course, £8 8s.; Minor course, £8 8s. Evening Classes are held in practical work and theoretical subjects. The fee for these classes is £3 3s.

Edinburgh Central School of Chemistry and Pharmacy, 26, Clyde Street.—Teachers, Wm. B. Cowie, Geo. Senter, G. Malthouse, and A. C. Cameron, assisted by competent demonstrators. Junior course for Minor (day and evening)—Theoretical: Courses of lectures are given on chemistry, physics, pharmacy, botany, materia medica, pharmaceutical Latin, and pharmacy law. Practical: Chemical analysis (inorganic, organic, and volumetric); physics (balance, hydrostatics, etc.); pharmacy and dispensing. Senior course for Minor (day and evening).—Theoretical and practical: In addition to junior course, thorough revision is given in all the required subjects. Major course: Special arrangements are made to suit the requirements of students. The full time courses commence in October, January, and April. The evening courses commence early in September. The course for "First" examination commences in October, January, and April. Fee per quarter for Minor or Major course, £8 8s. (day); £3 3s. (evening); and £1 1s. for "First" course.

GLASGOW.

Glasgow and West of Scotland School of Pharmacy (Central School of Pharmacy), 157, St. Vincent Street, Glasgow.—Teachers, T. Mackenzie, Ph.C.; T. F. Barbour, F.I.C.; A. M. Ferguson, M.A. Day Classes are held in theoretical and practical chemistry, physics, botany, including vegetable histology, materia medica, prescription reading, theoretical and practical pharmacy, and dispensing. Fees, Minor or Major course, £8 8s. per quarter. Evening Classes are held on Tuesdays, Wednesdays, and Fridays for the Minor examination, and on Tuesdays, Thursdays, and Fridays for the Major. These classes include all the subjects taken in the day courses, both theoretical and practical. Fees, Minor and Major courses, £2 2s. two nights a week per quarter; £3 3s. three nights a week per quarter.

Glasgow School of Pharmacy, 180, West Regent Street, Glasgow.—Principal, John Lothian, Pharmaceutical Chemist. Day and Evening Classes for Preliminary, Minor and Major examinations. The subjects included are chemistry, physics, botany, materia medica, pharmacy, and dispensing. The system of instruction consists of lectures, demonstrations, tutorial and practical classes. The school has been entirely reorganised, and transferred to more commodious premises on the second floor. Fees, Major or Minor day classes, £8 8s. per quarter; Major or Minor evening classes, £3 3s. per quarter; Preliminary, £1 1s. per quarter.

IRISH SCHOOLS.

DUBLIN.

School of Chemistry and Practical Pharmacy, 67, Lower Mount Street, Dublin.—Director, Professor Tichborne, LL.D., F.I.C., assisted by Mr. P. Kelly, M.P.S.I. The Irish Pharmaceutical Council established this school about nine years ago in order to obviate the serious inconvenience caused to pharmaceutical students through the discontinuance of evening lectures by the medical schools. Everything in the way of chemistry likely to be of service to the pharmaceutical student in his profession is included in the course, which comprises the general principles of chemistry and chemical physics, qualitative chemistry, volumetric analysis, urine testing, public health chemistry, air analysis, etc. The school is a very popular one with students, and the accommodation has had to be extended from time to time, and, owing to the crowded state of the school recently, a number of additional benches have been provided.

School of Botany and Materia Medica, 67, Lower Mount Street, Dublin.—Director, Professor Ninian Falkiner, M.B., Fellow and Examiner in Materia Medica, Royal College of Physicians, Ireland, assisted by T. Battersby Jobson, M.D., T.C.D. The lectures are given twice a week in the evenings, but besides there are demonstrations in Trinity College Botanic Gardens. The classes are so highly prized that, although only two years in operation, already nearly one hundred students have taken advantage of them.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday, the 1st instant, the monthly meeting of the Council was held at 67, Lower Mount Street, Dublin, the President, Mr. W. F. Wells, junior, in the chair, and the other members present being the Vice-President, Mr. Downes, Dr. Walsh, Professor Tichborne and Conyngham, Messrs. Beggs, Bernard.

Professor Tichborne reported that he had attended the Brussels Conference. Nothing could have exceeded the personal kindness shown to him by the President of the Conference, Professor Ranwez, and the General Secretary, M. Duyck; but as a delegate of the Society no reception at all was given to him. He thought this was owing to some mistaken idea that the society he represented was only a small local society. Dr. Paul was asked at the banquet to return thanks for the English-speaking members present, and did so; but he (Professor Tichborne) did not see why a member of the press should have returned thanks for societies represented by delegates. As for the international pharmacopœia movement, he (Professor Tichborne) was of opinion that it was dead and buried.

[From this report, Professor Tichborne appears to have been under a misapprehension.—Ed. *P. J.*]

The President reported that he and the other members of the Council who had been appointed delegates had attended the meeting of the British Pharmaceutical Conference at Glasgow. Every attention and kindness was shown to them; and the first toast at a smoking concert was the "Pharmaceutical Society of Ireland," which was proposed in very kind terms by the President of the Pharmaceutical Society of Great Britain. It might not be possible to have a universal pharmacopœia, but there could be universal good feeling between pharmacists all over the world.

A letter was read from the Vice-President, withdrawing his resignation.

The President said he was extremely glad Mr. Downes had done so, for he had been a great help to him (Mr. Wells), and he should be glad to have his services during the short time he should have to remain in the chair.

A letter from the Civil Service Commission informed the Council that on the 7th inst. open competitive examinations for the situations then vacant of dispensers in Her Majesty's Naval Hospitals would be held in London, Edinburgh, and Dublin.

Mr. Bernard withdrew a notice of motion he had given respecting the furnishing to the journals of a special report which had been taken of proceedings of the Council at its July meeting.

Other business having been disposed of, the Council adjourned.

BOTANICAL SOCIETY OF AMERICA.

The most successful meeting which this flourishing Society has yet held has just closed in Toronto, Canada.

The Society is but three years old, yet the attendance at the meeting, as also the variety of papers presented would be creditable of an older organisation. Every facility was afforded the Society by the local committee of management for the meeting of the British Association.

The Sessions were held in the lecture room of the Biological Building of the Toronto University. Among the members present who took part in the proceedings were the President, Dr. John M. Coulter, University of Chicago; the retiring President, Chas. E. Bessey, University of Nebraska; Secretary, Dr. Chas. R. Barnes, University of Wisconsin; Dr. J. C. Arthur, Purdue University; Dr. N. L. Britton, Director of New York Botanical Gardens; B. T. Galloway, Chief of the Division of Vegetable Physiology of the United States Department of Agriculture. Other eminent botanists in attendance were Professor D. P. Panhallow, McGill University, Montreal; Professor G. F. Atkinson, Cornell University; Dr. Byron D. Halsted, Rutgers College, New Jersey; Dr. D. T. MacDougall, University of Minnesota; Professor H. Marshall Ward, F. O. Bower, and Messrs. Harold Wagner, J. Bretland Farmer, and J. Reynolds Green.

The Council of the Association met on Monday, August 16, and

completed the business of the meeting. The election of officers for the ensuing year resulted as follows:—President, N. L. Britton, New York; Vice-president, J. C. Arthur Lafayette, Ind.; Secretary, C. R. Barnes, Madison, Wis.; Treasurer, Arthur Hollick, New York; Councillors, Messrs. B. S. Robinson, Cambridge, Mass., and F. V. Colville, of Washington, D.C.

An invitation was received from the directors and trustees of the Missouri Botanical Gardens to hold the next meeting in the garden. This was reluctantly declined, as the Society desires to co-operate with the American Association for the Advancement of Science, which holds its semi-centennial meetings next August, in Boston, Mass. A proposition was made to establish one or more medals, to be awarded for valuable research. This met with no favour from the Society, which prefers to expend funds rather to promote research than to reward results. Nine new members were elected. This concluded the business part of the meeting.

At the evening session the retiring president delivered his address.

In the evening the general meeting of the Society was held in the Biological Building, and the business of the gathering commenced. In accordance with the custom of the Society, the doors were thrown open and the public cordially invited to attend. The responses to the invitation were not numerous, but those who attended evinced a deep interest in a lecture which could only be appreciated by students of botany.

President's Address.

The lecture of the retiring President, Professor Chas. E. Bessey, of the University of Nebraska, upon "The Relationship and Classification of Flowering Plants," was a most profound deliverance, which gave evidence of deep research and great study. It was listened to with the deepest interest by the audience. After pointing out the difficulties under which every botanist labours, arising from the fact that it is as yet impossible to present a complete phylogeny of the angiosperms, and that phytopalæontology is too young a science and the materials are yet far too scanty to have given us direct evidence as to the phylogeny of all families of plants, the lecturer proceeded: We have thus open to us three lines of investigation in the study of the phylogeny of plants, namely: (1) the historical, in which the materials are supplied by phytopalæontology; (2) the ontogenetic, in which the development of the individual supplies us with the necessary data; and (3) the morphological, in which the different development of homologous parts in our index of relationship. In this paper I propose to bring these three lines of investigation to bear upon the problem of the phylogeny of the angiosperms.

From all the foregoing we may pretty safely proceed to construct the hypothetical phylogeny of the angiosperms, to serve as the basis of their taxonomy. And let it be fully understood that this is not presented as final or as entirely satisfactory; it is merely a working hypothesis, which claims no other merit than that of an attempt at conformity to the suggestions, sometimes faint, sometimes doubtful, from palæontology, from embryology (ontogeny), and from morphology. That some of these suggestions have been misinterpreted or that others have been overlooked is altogether likely, but in this I must beg the indulgence of systematists, who may well recognise the difficulties surrounding the problem here undertaken.

The angiospermous phylum parted very early into two subclasses, the monocotyledons and dicotyledons. This separation took place while the flower-strobilus was still apocarpous, and before any of the strobilar leaves had undergone much, if any, modification. At this stage the vegetative characters of the sporophyte were so well established that no profound modifications have been undergone since. The modifications which gave us the main lines of monocotyledons were first the fusion of the carpels with one another and the production of a syncarpium, and second, the progressive fusion of the syncarpium with the other strobilar leaves. These resulted in the phylum, which begins with apocarpæ and passes to coronarieæ, epigynæ, and microspermæ. In some apocarpæ and many plants of the type of the coronarieæ the perianth has been more or less reduced (by aphanisis), in some cases amounting to complete suppression, as in palms, aroids, and sedges and grasses.

The primitive dicotyledons were apocarpous plants which soon developed along two diverging lines, characterised in the one case by the tendency of the leaves of the strobilus to fuse with each other in a transverse direction (transverse symphysis), while in the other the tendency was to a fusion of the leaves in two directions (transverse and longitudinal symphysis). The phylum resulting from the predominance of transverse symphysis began with the apocarpous ranales, soon developing into the syncarpous Caryophyllales and Malvales. The type of the Caryophyllales became slightly modified in the Primulales by the tranverse symphysis of the inner perianth-whorl resulting in gamopetaly. In the Polemoniales the type of the primulales began to undergo modification by aphanisis, resulting in a reduction of the microsporophylls to five, and the carpels in the syncarpium to two or three. Increasing aphanisis produced the Personales and Lamiales, with their four or five microsporophylls and irregular perianth, and in the latter group with each carpel restricted to the production of but one or two macrosporangia. The phylum, in which both transverse and longitudinal fusion are well marked, proceeds from the apocarpous roseworts to the syncarpous saxifrages of the Rosales to the Celastrales, in which epigyny is sometimes attained, thence to the Umbellales, where epigyny is constant, and to the Rubiales, in which gamopetaly has become a fixed character, culminating in the group of the Asterales, with its greatly reduced bicarpellary syncarpium. Early predominance of aphanisis in the Ranale phylum soon gave rise to the apetalous laurels and nutmegs from the buttercup type. A somewhat later appearance of aphanisis gave rise to the willows, amaranths and buckwheat from the pink type, and the spurgeworts and nettleworts from the mallow type. Similarly, early predominance of aphanisis in the Rosale phylum gave rise to the apetalous plane-trees from the rosewort type, while its later appearance gave rise to the proteads, daphnads, oleasters, sandalworts, and loranths from the holly type, and the walnuts, oaks, and galeworts, from the horse chestnut type. Early predominance of symphysis gave rise to the peculiar group of the myrtles from the rosewort type, in which, by later aphanisis, came the hippurids, birthworts, and vine-rapes. The Parietales and Polygalales are later developments more or less parallel to the Caryophyllales, while the Geraniales and Guttiferales stand in a similar relation to the Malvales.

At the conclusion of the lecture it was announced that a session would be held at 10 o'clock the next morning, and another in the afternoon, the invitation to the general public to attend being reiterated. A morning and afternoon Session on the 17th completed the labours of the meeting; the time of these Sessions was occupied in reading and discussing the papers presented. The following is a list of them:—

B. L. Robinson.—A Case of Ecblastesis and Axial Prolification in *Lepidium apetalum*.

J. C. Arthur.—Movement of Protoplasm in Coenocytic Hyphæ.

John M. Coulter.—Pollen Grains and Antipodal Cells.

Frederic E. Clements, presented by C. E. Bessey.—The Transition Region of the Caryophyllales.

D. P. Penhallow.—A Revision of the Species of *Picea* occurring in North-Eastern America.

Edward L. Greene.—Bibliographic Difficulties.

William Fawcett.—The Botanic Gardens of Jamaica. Read by title.

Mr. Fawcett, finding himself unable to be present, sent his paper by post, but it unfortunately was not received in time to be presented. The Council had invited Drs. D. T. MacDougal and D. H. Campbell to present, in connection with this paper, their report upon the Island of Jamaica as a site for the proposed tropical laboratory. It was intended that Mr. Fawcett's account of the botanic gardens should show, by means of lantern illustrations, something of the facilities already provided there. Although obliged to forego this, Dr. MacDougal spoke of the physical features and climate of the island, and Dr. Campbell discussed its botanical resources. The great interest with which this report was listened to indicates the desire which every botanist feels to have this proposed laboratory in early operation.

The Council also invited Mr. Herbert J. Webber to present before the Society an account of his remarkable discoveries in connection with the fertilisation of Zamia. Mr. Webber spoke of the development of the pollen tube and its spermatozoids and of the way in which they effect the fertilisation of the egg. After the meeting Mr. Webber displayed the preparations in which he made his discoveries. These were examined with the greatest interest.

It will be seen by an inspection of the foregoing list that the papers presented touched all of the great fields of botanical science with the exception of phyto-geography.

SELECTED FORMULÆ FOR PERFUMES.*

White Rose.—Extracts of rose, 1000 grammes; jasmine, 500 grammes; violet, 1000 grammes; tubéreuse, 1000 grammes; tincture of musk, 100 grammes; tincture of civet, 40 grammes; oil of rose, 10 grammes; rose de geranium, 40 grammes.

Linden Blossom.—Extracts of jonquille, 300 grammes; jasmine, 200 grammes; rose, 100 grammes; tubéreuse, 100 grammes; tincture of orris, 100 grammes; tincture of ambergris, 100 grammes; tincture of tonka, 50 grammes; tincture of civet, 20 grammes; tincture of musk, 10 grammes; oil of wintergreen, 1 gramme; genuine bitter almond oil, ½ gramme.

Tea Rose.—Extracts of rose, 8000 grammes; jonquille, 1000 grammes; tincture of tonka, 200 grammes; tincture of vanilla, 500 grammes; tincture of civet, 10 grammes; tincture of musk, 20 grammes; oil of bergamot, 70 grammes; extract white rose, 500 grammes; extract ylang-ylang, 500 grammes.

Red Rose.—Extracts of rose, 5 kilos.; jasmine, 5 kilos.; tubéreuse, 1 kilo.; cassia, 1 kilo.; tincture of musk, 60 grammes; tincture of civet, 40 grammes; oil of patchouli, 5 grammes; otto, 40 grammes.

Geranium.—Extracts of rose, 1000 grammes; orange, 500 grammes; jasmine, 200 grammes; tincture of orris, 200 grammes; tincture of musk, 2 grammes; oil of rose geranium, 50 grammes.

Hyacinth.—Extracts of jasmine, 1½ kilo.; tubéreuse, 1 kilo.; orange, ½ kilo.; tincture of styrax, 100 grammes; oil of lemons, 5 grammes; hyacinthine, 25 grammes.

Moss Rose.—Extract of rose, 6 kilos.; tincture of musk, 5 grammes; tincture of civet, 10 grammes; oil of rose, 8 grammes; oil of cloves, 5 grammes; oil of bergamot, 10 grammes.

Frangipani.—Extracts of orange, 2 kilos.; rose, 1 kilo.; tubéreuse, 1½ kilo.; cassia, ½ kilo.; tincture of orris, 2 kilos.; tincture benzoin, 50 grammes; tincture of musk, 125 grammes; tincture of tolu balsam, 250 grammes; tincture of tonka, 200 grammes; tincture of civet, 100 grammes; tincture of vanilla, 250 grammes; oil of neroli, 5 grammes; genuine bitter almond oil, 2 grammes.

Wood Violet.—Extracts of violet, 5 kilos.; cassia, 1 kilo.; jasmine, 1 kilo.; orange, 1 kilo.; tincture of orris, 2 kilos.; tincture of musk, 50 grammes; oil of sandalwood, 50 grammes; oil of orris (liquid), 15 grammes; oil of geranium (Afr.), 15 grammes; genuine bitter almond oil, 2 grammes; ionone, 15 grammes.

Musk.—Extracts of jasmine, 2 kilos.; tubéreuse, 1 kilo.; tincture of ambrette, 2 kilos.; tincture of musk, 1 kilo.; tincture of benzoin, 2 kilos.; oil of patchouli, 10 grammes.

Musk II.—Spirit, 4000 grammes; tincture of vanilla, 350 grammes; oil of bergamot, 180 grammes; oil of cloves, 20 grammes; oil of cinnamon, 10 grammes; otto of rose, 10 grammes; oil of neroli, 10 grammes; oil of lavender, 5 grammes; tonquin musk, 10 grammes; extract of mignonette, 300 grammes; rose water, 500 grammes.

Ixora.—Extracts of rose, 2000 grammes; orange, 300 grammes; tincture of benzoin, 300 grammes; tincture of tonka, 100 grammes; tincture of musk, 200 grammes; tincture of ambrette, 50 grammes; tincture of orris, 500 grammes; tincture of vanilla, 500 grammes; oil of roses, 20 grammes; oil of patchouli, 5 grammes; rose geranium, 15 grammes.

Edelweiss.—Extracts of rose, 4 kilos.; orange, 1 kilo.; tubéreuse, 1 kilo.; tincture vetiver, 3 kilos.; tinture of tonka, 2 kilos.; tincture of ambrette, 1 kilo.; tincture of musk, 400 grammes; oil of rose, 10 grammes; vetiver oil, 5 grammes.

Queen of the Night.—Extracts of jasmine, 2 kilos.; orange, ½ kilo.; jonquille, 1½ kilo.; tinctures of tonka, 5 kilos.; orris, 2 kilos.; musk, 500 grammes; vanilla, 500; civet, 100; oil of cloves, 50 grammes.

Maréchal Niel.—Extracts of jasmine, 2 kilos.; rose, 2 kilos.; orange, ½ kilo.; tinctures of orris, 3 kilos.; ambrette, 1 kilo.; musk, ½ kilo.; geranium de rose, 100 grammes; oil of rose, 50; oil of bergamot, 300 grammes; oil of lemons, 50 grammes; oil of cloves, 10 grammes.

Ess. Bouquet.—Extracts of rose, 1½ kilo.; cassia, ½; jasmine, 4; mignonette, 1; violet, 1; tubéreuse, 1, kilos.; tinctures of musk, 100; tonka, 120; vanilla, 125; geranium de rose, 17; oils of lavender (fleur), 10; roses, 3; verbena, 2; cloves, 2; bitter almond, 2; bergamot, 180; rosewater, 1000 grammes.

* Abstracted from the *Pharmaceutische Post*.

NEW REMEDIES.

Migrol is a mixture of equal parts of sodium-pyrocatechol-acetate and caffeine-pyrocatechol-acetate; it is a remedy for migraine, headache, and nervous prostration. Dose: 0·5 grm. once to three times per diem.—*Pharm. Zeit.*, xlii., 483.

Sanal.—Sanal is the name given to a new application for open wounds. It is a reddish-brown ointment having the odour of vanilla, and is said by Muller to be composed of litharg. bole, calamine, Peruvian balsam, yellow wax, and vaseline.—*Pharm. Zeit. f. Russl.*, xxxvi., 3246.

Eka Iodoform.—A mixture of iodoform and paraform has been named eka iodoform, and is stated to be an improvement in antiseptic properties on iodoform. Gottstein states that the eka iodoform is absolutely sterile and possesses antiseptic properties. Thomalla has obtained favourable results with it in the treatment of wounds.—*Pharm. Zeit.*, xlii., 483.

Sodium Salicylate in Hæmoptysis.—Mays, of Philadelphia, finds that salicylates are extremely beneficial in many cases of hæmoptysis. He considers that in many cases this alarming symptom is due to the presence of rheumatic toxin in the blood, which weakens the walls of the pulmonary blood vessels and renders them permeable to their contents. Sodium salicylate removes this toxin and consequently the hæmoptysis ceases.—*Bost. Med. Surg. Journ.*, cxxxvii., 90.

Itrol for Gonorrhœa.—Silver citrate introduced by Credé under the name of itrol seems to be gaining popularity for urethral injection. Werler states it possesses highly disinfecting properties, which are retained even in dilute solutions. A solution of 1 : 8000 penetrates into the mucous membrane without producing perceptible irritation. Four injections are given daily. At first a solution of 0·025:200 is used, which should be gradually increased to 0·05 : 200.—*Pharm. Centralh.*, xxxviii., 460.

Glycerinum Lacto-Carbolicum.—Botey applies one of the following mixtures to tuberculous affections of the throat, which combines the soothing effect of the phenol with the specific healing properties of lactic acid:—Acid carbolic, 1, 2, or 5 grammes; acid lactic, 2, 4, or 15 grammes; glycerin, 20 grammes. The painting should be done energetically, the throat being touched up two to three times. In cases of great irritability an application of cocaine should precede painting with this application.—*Pharm. Centralh.*, xxxviii., 458.

Cacodylic Acid for Psoriasis.—Danlos recommends the internal use of cacodylic acid for obstinate cases of psoriasis, in which external remedies have failed. It is given as follows:—Acidi cacodylic, 2·5; rum and syrup. cort. aurant., aa 20; aquæ dest., 60 grammes; olei menth. pip., 2 drops. A teaspoonful (0·125 gramme cacodylic acid pro dosi) to be taken 6 or 4 times daily. A daily dose of 0·75 gramme produced considerable improvement after three weeks, and a subsequent dose of 0·5 gramme per diem dispersed the eruption entirely. Unfavourable symptoms, such as keratosis or pigmentation, did not appear, the breath had a garlic like odour, and occasionally slight disturbances of the digestion were observed.—*Pharm. Centralh.*, xxxviii., 460.

Oxy-camphor.—By treating a mixture of camphor and orthoquinone with zinc dust, or aluminum amalgam, a new body, oxy-camphor, has been obtained, in which an atom of hydrogen in the camphor molecule has been replaced by an hydroxyl radicle. It is a crystalline body soluble to about 1 in 50 in cold water. From experiments on animals it would seem that oxy-camphor may be given in large doses without danger, and that it exercises a markedly sedative action on the respiratory centre. As an anti-dyspnœic, it is as active as morphine, although without any narcotic action; dyspnœa in cardiac cases has been relieved by single daily doses of 1 gramme, or the same dose night and morning; as much as 3 grammes may be given in the course of twenty-four hours in doses of 0·50 centigramme to 1 gramme.—*L'Union Pharm.*, xxxviii., 296, after *Sémaine Médical*.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Advertisements and Orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

Articles and Reports sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

Correspondents should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for Illustrations should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Queries addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

Reprints of Articles cannot be supplied unless authors communicate with the Editor before publication of the articles. The right to reproduce all original matter and illustrations published in the Journal is strictly reserved.

LETTERS TO THE EDITOR.

Local Organisation in Pharmacy.

Sir,—Your articles on "Local Organisation" are very agreeable reading to those who met together at Nottingham in 1893 to "strengthen and develop" local associations by a process of federation. At the time in the minds of some it created an impression that an attempt was being unwisely made to weaken the power of the Pharmaceutical Society by a rival which could achieve nothing that the Society was not capable of itself if supported by the entire body as members. Arguments were offered that honest attempts to improve the conditions of our calling, let them come from whatever direction they may, deserved encouragement, but there was no doubt the impression was there, and nothing but time could show them where their duty lay. Time seems to favour us. We are now told by no less an authority than the *Pharmaceutical Journal* that we have shown ourselves of such a modest and retiring disposition. Well, sir, by so doing we hope to preserve our virtue the longer. We are not Don Quixotes. If the principle we hold—which also I am glad to note you hold—that the strength of a structure depends upon its base is right, its growth is assured not by any flourish of trumpets or even loud words, but by quiet organisation. Then, again, we have not set for ourselves the task of organising, but of lending encouragement to any district in which men are to be found willing to associate themselves in the interest of the craft. That encouragement takes the form of advice as to the methods of organising; collects resolutions from all associations and submits them to all associations; receives a delegate from each association at the time of the British Pharmaceutical Conference to determine what special subjects should occupy the attention of the associations during the winter months. The responsibility of the Federation rests immediately with local associations, and local associations depend upon the energies of the individuals composing them. In this way we have sought to destroy the excuse a man might have that his influence as a pharmaceutical unit was practically *nil;* the Federation aimed at creating machinery that could organise these units; as machinery it has no brains, and, therefore, no opinions; these exist only in the units. No man need grumble at his lot, let him work out his own salvation, it is the duty he owes to himself, to his craft, and to society, but he can do little by himself; let him unite with the others of his craft in his district, forming a local association, and let that association report itself to the federation, and we will see that it has some matters for urgent consideration put before it, and give them a very good opportunity to break down the reserve that is so noticeable and regrettable among members of a craft in a district. And now, sir, I must make it clear that this letter is not an expression of the Secretary of the Federation, but of myself in the humblest capacity. I have accepted the office of Secretary for the year, and I am expecting through your powerful advocacy to show a very large increase in the number of local associations who are working in unison through the federation, and because I believe nothing but good can follow, I thank you. I have no doubt, Mr. Editor, you are not unlike the rest of the world; encouragement goes a very long way, you deserve it, and I hope to see by communications made to the Journal that the craft recognise it.

Birmingham, September 4, 1897. R. Darton Gibbs.

Collection of Seaweed.

Sir,—Permit me to add a few notes, gained from many years' experience, to the interesting article on this subject on p. 193. 1. It is quite possible to wade on the shore in absolute comfort if a pair of sand shoes and what are known as fishing stockings are carried in a small bag. These can be put on at the shore and the boots left at the nearest cottage or carried in the bag, and after the collecting is over, the trousers and stockings and boots are as dry and presentable as if the collector had not been wading at all. 2. To obtain as much time as possible, it is best to visit the shore an hour before low tide and follow the tide out until it flows again. 3. Where a stream runs into the sea at low water rare species are often met with. *Zostera* beds afford an immense variety of species all the year round, attached either to the upper part of the leaves or nestling amongst the roots. 4. The tide runs in far more rapidly on a level shore and there is more danger on such a shore than on a rocky one, except where a small bay has perpendicular cliffs impossible to climb. A flat dish, such as is used for photographic purposes, and a glass plate contained in it is most convenient for laying out specimens in. 5. The rags should be of fine muslin, after it has been washed, as both new calico and new muslin have dressing on them to which the seaweeds will adhere. The "rags" should not be removed until the weeds have adhered to the paper, or the trouble spent in laying out the seaweeds will be lost. The paper used for mounting should be non-absorbent. Hot pressed paper is the best, but ordinary notepaper made of fine wood pulp answers the purpose where better cannot be got. The whiter the paper the better it shows off the weeds. 6. Muslin that has been used for gelatinous weeds, such as *Mesogloias*, should be washed before being used again, or it will adhere to the seaweed over which it is placed. 7. Those who may be spending their holidays at the extremes of the British Islands, such as Scilly and Shetland, or the north-west of Scotland, are almost sure to meet with novelties. In 1851 the British Marine Flora included only 400 species. It now includes about 750, and new species are being discovered almost every month.

London, September 1, 1897. E. M. Holmes.

Note on the B.P. Cinchona Assay Process.

Sir,—Whilst assaying cinchona bark by the official process, following strictly the instructions there given, but operating upon 10 grammes of bark, I found that after removal of the tartrates of quinine and cinchonidine, and precipitation of the cinchonine by a slight excess of ammonia, there still remained in the filtrate from this an appreciable quantity of alkaloid, as indicated by Mayer's reagent after acidulation. As the total quantity of alkaloid yielded did not come up to official standard by official process the ammoniacal filtrate from the cinchonine precipitate was agitated with two successive quantities of chloroform and the chloroform solutions evaporated. The residue weighed ·08 gramme, that is, ·8 per cent., and was certainly of an alkaloidal nature. The exact figures obtained were :—

Quinine and Cinchonidine.....	3·04 per cent.	} B.P. stand.	
Cinchonine, etc.....	1·55 ,,	}	4·59 per cent.
Alkaloid removed by Chloroform	0·8 ,,		
Total	5·39		

It seems, then, that the attention of the authorities should be called to this, for a sample of bark of official standard might be condemned by that *bête noir* of our profession, the non-pharmaceutical public analyst.

Erdington, September 1, 1897. W. H. Mortimer.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

NEW B. P.—You may expect to see the new volume early next year. [*Reply to* MACDARWEN.—108/3.]

BELL SCHOLARSHIP.—See special article on this subject on page 237. [*Reply to* SYLVA.—108/39.]

CELLULOSE TETRA-ACETATE.—You can obtain this from Mr. I. Frankenburg, Greengate Works, Salford. [*Reply to* J. Y.—107/25.]

F. I. C.—Write to the Secretary, Institute of Chemistry, 30, Bloomsbury Square, London, W.C. [*Reply to* NOUS.—108/40.]

SAMPLE OF SUGAR.—Your sugar is dextrose. You can obtain it through your wholesale house. [*Reply to* H. W. C.—108/30.]

BOTANICAL.—The flowering top is that of *Cannabis sativa*; the leaf probably that of *Euphorbia lathyris*. [*Reply to* C. C.—108/37.]

REGISTRATION OF NAME.—Apply to the Comptroller, Patent Office, Trade-Marks Branch, 25, Southampton Buildings, Chancery Lane, London, for particulars. [*Reply to* ASSOC.—108/41.]

BOOKS ON VEGETABLE MICROSCOPIC WORK.—Cross and Coles' 'Modern Microscopy,' Bower's 'Course of Practical Botany,' and Strasburger's 'Handbook of Practical Botany' are the works most likely to be useful to you here. [*Reply to* T. K.—106/44.]

CHEAP COUGH MIXTURE.—Probably something like the following will answer your purpose:—Ammon. bromidi, 2 drachms; aquæ anisi, 1 fl. oz.; aceti. ipecac., 4 fl. drachms; oxymel scillæ, 2½ fl. ozs.; syrup pruni virg., 1½ fl. oz. Mix; a dessertspoonful for a dose. [*Reply to* BEBA.—108/8.]

OLEATE OF MERCURY FOR BALDNESS.—There is not likely to be any good result from applying oleate of mercury in the case of baldness. The best treatment would probably be that described by Leistikow (*Ph. J.* [iv.], ii., 139). This is stated to give very good results, but requires perseverance and methodical application, as do all remedies for alopecia. [*Reply to* ALOPECIA.—108/11.]

SOFT POMADE HONGROISE.—White wax, 4 ozs.; soft soap, 2 ozs.; jasmin pomade, ½ oz.; gum arabic, 1½ oz.; rosewater, 4 ozs. Dissolve the gum in the water, melt the other ingredients together, then mix. Colour black with a little lampblack first rubbed smooth with the pomade. If not soft enough, add more pomade. [*Reply to* POMADE.—108/12.]

ESSENCE FOR AËRATED GINGER BEER.—Powdered unbleached Jamaica ginger, 3 lbs.; powdered capsicum, 6 ozs.; rectified spirit, *q.s.*; percolate, to produce 3 pints; add lemon flavour, 2 pints; essence of vanilla, 6 ozs.; oil of wintergreen, 10 minims; oil of neroli, 30 minims; oil of cinnamon, 10 minims; essence of pineapple, 30 minims. Shake the mixture occasionally for a few days; then add water, 2¼ pints. Shake well, set aside for seven days, and then filter. A good deal can probably be siphoned off bright without filtration. [*Reply to* GINGER.—108/20.]

OSTEO-PLASTIC CEMENT.—Pour strong nitric acid on oxide of zinc and stir until effervescence ceases; then, after a few hours, heat in an ordinary porcelain crucible until red vapours cease to be given off. The contents of the crucible should be raised to a white heat, and then be left to cool gradually. The heating and cooling processes should occupy from six to ten hours. The crucible will require to be broken away from the hard stony mass inside, which, when pounded and very finely pulverised, constitutes the cement powder. Mix this powder with syrupy phosphoric acid for use. *Reply to* L. D. S.—108/7.]

COMPOSITION OF HAIR DYE.—This contains 2·25 per cent. of copper chloride and about the same quantity of pyrogallic acid. [*Reply to* H. W. C.—107/40.]

VETERINARY SURGEON.—Apply to the Secretary, Royal College of Veterinary Surgeons, 10, Red Lion Square, London, W.C., for the information you require. [*Reply to* SURGEON.—108/22.]

"FOSSIL OIL."—You do not state whether the oil is used internally or externally. Possibly some reader can tell us what is supplied in Ireland for "fossil oil." [*Reply to* S. H.—108/14.]

SPECIMEN OF LINIMENT.—This is chiefly soap liniment with a little oil of cajuput and probably a little belladonna liniment, but we cannot tell certainly from the very small quantity sent. [*Reply to* H. W. C.—108/16.]

LONDON PASTE.—This is official in the Throat Hospital Pharmacopœia, and is composed of a mixture of equal parts of caustic soda and lime, which is made into a paste as required for use. It is employed as a caustic. [*Reply to* E. C. D.—108/21.]

DIRECTIONS FOR HEADACHE POWDERS.—"One of these powders to be taken stirred up in a little tea or coffee when in pain. An interval of at least six hours should be allowed to elapse before the dose is repeated." [*Reply to* A. A. M.—107/39.]

BOOKS FOR THE MAJOR.—Let us know what books you already have, then we shall be in a position to advise you what further purchases to make. You will probably find all the information you require in the article on the "Student's Library," page 232. [*Reply to* MAJOR.—108/32.]

UNQUALIFIED PRACTITIONERS.—(1) There is nothing illegal in doing so; (2) Scheduled poisons may only be sold by registered chemists; (3) Inform the Registrar, Pharmaceutical Society, 16, Bloomsbury Square, W.C. [*Reply to* JUSTICE.—108/26.]

WINTER DRINK.—Probably the following will answer your purpose:—Soluble essence of ginger, 1 fl. oz.; soluble essence of lemon, 2 fluid drachms; soluble essence of orange, 2 fluid drachms; tincture of capsicum, 10 minims; tartaric acid, ½ ounce; peppermint water, 2 ounces; syrup, to make 1 pint. Colour with a sufficiency of burnt sugar. [*Reply to* BEBA.—108/9.]

TO FASTEN LABELS ON DRAWERS.—Probably a mixture, made of powdered gum tragacanth, 2 parts, and calomel, 1 part. Make into a stiff paste and apply on the back of the glass label, then press the latter very firmly on the drawer, and leave in a horizontal position over night. Another good cement for the purpose is made by heating glue with glacial acetic acid until it is of a syrupy consistence and applying while hot. [*Reply to* H. H.—107/43.]

ILLUSTRATED BOOK ON ANATOMY.—There are so many works published on the subject that it is difficult to advise you in the selection of one. Gray's 'Anatomy, Descriptive and Surgical'; or Quain's 'Elements of Anatomy,' published in nine parts, dealing respectively with embryology, histology, osteology, arthrology, spinal cord and brain, nerves, organs of senses, splanchnology, and superficial and surgical anatomy, are the two best works. You can take the second a part at a time. You will obtain these, less full discount, from H. Grattan, Tabard Book Store, 17, Borough High Street, S.E. [*Reply to* T. K.—106/44.]

OBITUARY.

HOARE.—On August 31, William Parker Hoare, Chemist and Druggist, Cromer. Aged 43. Mr. Hoare was an associate of the Pharmaceutical Society.

BINDLOSS.—On September 2, George Frederick Bindloss, Pharmaceutical Chemist, Brondesbury Park, London, N.W. Aged 61. Mr. Bindloss had been a member of the Pharmaceutical Society since 1865.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Barrett, Brauer, Caven, Cocks, Colley, Cummings, Dawson, Dickenson, Eberlin, Gibbs, Griffiths, Hall, Marston, Morgan, Mortimer, Newcome, Newsholme, Pearson, Plumbly, Rose, Rowland, Squire, Thomas, Wood, Yewdall.

20 SEP 97

THE CONNECTION BETWEEN PHARMACY AND SCIENCE.*

BY PROFESSOR E. SCHAER.

The traditions of the Apotheker Verein require that suitable provision should be made at the annual meetings for considering scientific subjects connected with the practice of pharmacy, and having been honoured with a request to deliver an address on this occasion I wish, as representative of pharmacy in the University of Strasburg, to ask your attention to a matter of such vital importance to the craft that I do not anticipate any difference of opinion or need for justification.

The question whether pharmacy—in the past, present, and future—should be regarded as having essentially the mere honourable character of a purely mercantile business, or to some extent, if not exclusively, as a scientific occupation, has within recent years become sufficiently actual and important to merit consideration, and it is my intention to discuss that question not in regard to certain superficial views that may be characterised as mere forms of speech, but from a point of view going more to the root of the matter, so that the conclusions arrived at may be useful not only to members of our craft, but also to those outside of it.

This question as to the character and position of pharmacy has in past times been a frequent subject of discussion, and competent authorities at home and abroad have always supported the view that pharmacy should rank as a scientific occupation, the rational exercise of which for the public benefit is inconceivable, unless those engaged in the practice of the art possess a manifold acquaintance with natural science. In that sense pharmacy is consequently entitled to be regarded as being a branch of applied science.

These facts are so thoroughly recognised that the statement of them may appear commonplace and almost superfluous. But there is at least a logical consequence deducible from them: they at least justify the expectation that the pharmacist, after completing his education and entering upon the practice of his art with the consciousness that it has a scientific basis, will zealously apply himself, according to his means and abilities, to the advancement of those branches of science upon which the practice of his calling depends—in short, that he should, according to his opportunity and special inclinations, do some work either in pharmacognosy or pharmaceutical chemistry.

A mere cursory retrospect of practical and scientific pharmacy during the last hundred years suffices to recall to mind a numerous and respectable array of practical apothecaries,† who, in the midst of their business occupations—not wanting in responsibility—were also actively engaged in advancing those specially pharmaceutical branches of science above referred to. In confirmation of this it is sufficient to mention the names of Spielmann, Valentin Rose, Buchholz, Dobereiner, Geiger, Trommsdorff, Buchner, Duflos, Mohr, Hager, Leméry, Baumé, Soubeiran, Delondre, Robiquet, Morin, Baup, and many others of no less repute in all countries.

But such a review, interesting as it would be in many respects, would scarcely bring us nearer to a perception of the relation between pharmacy and the pure sciences, which appears to me to be the critical point indicative of the scientific character of the pharmaceutical business. It is of much greater importance in that respect to select and consider those individuals who, having originally taken up the calling of pharmacy, either from inclination or under the influence of external conditions, and after continuing for some time in that occupation, then became inspired with a love of pure science, and followed the impulse by devoting themselves to chemistry, botany, or biology as investigators and academic teachers. In discussing and enumerating men of that category it may perhaps be said that they were induced by natural predisposition to take up the pursuit of science and would probably have done so without passing through a preliminary period of occupation in practical pharmacy. But in opposition to that view of the matter, which, in some instances no one will attempt to dispute, biographical documents and historical records furnish abundant evidence that, in the case of many eminent men of science, the first insight into and absorption by natural science sprung from their practical occupation in medicine or in pharmacy. One of the most striking instances in support of that fact is afforded by Dr. Robert Mayer, of Heilbronn, to whom we are indebted for the discovery of the conservation of energy. He was the son of an apothecary, and was at an early age intended for the medical profession, and many of his experiments were carried out in his father's establishment with the aid of his elder brother, who had succeeded to the business. In truth, the inducement is not slight to dwell for some moments in contemplation of the long series of famous scientific investigators who have sprung from the occupation of pharmacy—among chemists from Humphry Davy, Heinrich Rose, Poggendorff, Liebig, Rammelsberg, Hlasiwetz, Löwig, Proust, down to Städeler, Otto, Stöckhardt, Erdmann, Würtz, Selmi, Wagner, and the lately deceased Fresenius—among botanists Martius, Göppert, Kützing, down to Ferd. von Müller, Trécul, and Berg—and among physiologists Schwann, Wallace, and Baumann.

Convincing as this enumeration of distinguished chemists and botanists may be for the purpose of the present argument as to the connection and reciprocity of pure science and pharmacy, it has less value and moral weight than a conscientious and truthful survey of the pharmacists who have carried out scientific work, not after leaving their occupation, but while practically engaged as apothecaries, and have pursued one or other of the sciences connected with their calling with the result of advancing them by their own investigation and observation. It is to this point that attention must be directed as constituting a "criterium magnum" when the question is discussed which is of such vital importance in regard to the honourable future of the apothecary's calling—how far pharmacy as an art, useful to the public, is to be regarded as essentially as a branch of applied science? In the discussion of that question the circumstance that individual apothecaries may, like persons in other positions of life, have sometimes acquired exceptional distinction in some branch of science, is not the only point to be considered. More decisive evidence of the scientific character of pharmacy, as an art, is to be found in the fact that, ever since apothecaries have been in existence, a considerable number of them have associated with the practical conduct of their business the pursuit of such branches of science as are indispensable aids to practical pharmacy and have helped to extend their scope.

I must here confess that the study of this subject was first suggested to me by the circumstance that some years ago the well-known *Annalen der Chemie und Pharmacie*—a journal originally pharmaceutical, both in contents and name, and so edited by Liebig—had its title abbreviated by striking out the word "Pharmacie." For that simplification there may have been plausible reasons, the discussion of which might be misinterpreted,

* Abstract of an address delivered at the Twenty-sixth Annual Meeting of the German "Apotheker-Verein" in Strasburg, on August 24, 1897.

† Notwithstanding the corruption of the true meaning of the word "apothecary" by long-continued practice—almost peculiar to this country—which has also been productive of other mischievous consequences, it has been adopted in the translation of this address because it is the proper English equivalent of the German term "apotheker," employed by the author, and most correctly conveys his meaning.—[ED., *Ph. J.*]

but it had the effect of suggesting some historical inquiry that furnished material which appeared appropriate for the present address, especially at a time when various kinds of reform are recognised to be as difficult as they are necessary, and when there is but little disposition to accede to pharmacy or its followers the most modest position in the history of culture and science.

In proceeding to make a selection from among the apothecaries who have advanced chemistry or botany it will be necessary to confine our consideration to a few prominent instances, more especially since those who come within this category are very much more numerous than might be expected. For the purpose now in view it will not be inappropriate to commence the inquiry with the sixteenth century, when apothecaries—as the term is now understood—were already in existence.

At that period a foremost position was occupied by the Antwerp apothecary, Peter Coudenberg, a contemporary, friend, and correspondent of the celebrated botanist Lobelius, of Dodonaeus, Clusius, and of Konrad Gesner, described by Coudenberg as "the very learned apothecary at the sign of the old bell in Antwerp, an industrious and excellent investigator of all medicinal drugs, who by his zeal and activity had filled his garden with the most diverse and rare plants, and continued to extend and enrich it." In speaking of this man, not only as a pharmacist, distinguished by the extent of his work in connection with pharmaceutical subjects and the number of his publications, but also as a botanist, his long-continued exertions in collecting and acclimatising exotic plants must be considered as unique in the history of botany and as having been the means of providing material for the investigation of foreign plants which were then difficult to obtain, owing to the scarcity of systematic botanic gardens. Coudenberg established his garden in 1548, only a few years after the foundation of the first University Gardens at Padua, Bologna, and Pisa. In the course of the next ten years he had collected nearly six hundred rare exotic plants and had acquired a European celebrity before the famous gardens of Leyden, Paris, and England were established. With great sacrifice of time and trouble, as well as lavish expenditure, Coudenberg continued to carry out careful observations of exotic plants, and to correspond with many of the most eminent botanists of his time. Among the number was Konrad Gesner of Zurich, who published in the "Horti Germaniae," 1560-61, a list of the plants cultivated by Coudenberg, and mentioned also some other less extensive apothecaries' gardens at Leipzig, Nuremberg, Torgau, etc. From that catalogue, dating probably from 1555, as well as from the descriptions of Dodonaeus, Lobelius, and Coudenberg's Belgian biographers, it appears that a very large number of interesting exotics representing the sources of various medicinal drugs had been for the first time cultivated in Europe. Among the more important were *Agave americana*, *Artemisia pontica*, *Cassia senna*, *Celosia cristata*, *Cistus creticus*, *Dracæna draco*, *Rhamnus zizyphus*, *Scorzonera hispanica*, *Solanum melongena*. Numerous other plants that were only rarely to be found north of the Alps in the sixteenth century were grown in the Antwerp pharmacist's garden, for instance, *Achillea moschata*, *Cassia fistula*, *Cicer arietinum*, *Cynara scolymus*, *Cupressus sempervirens*, *Ceratonia siliqua*, *Delphinium staphisagria*, *Glycyrrhiza echinata*, *Gossypium herbaceum*, *Pistacia vera*, *Punica granatum*, *Solanum lycopersicum*, *Olea europœa*, *Urginea scilla*. The assistance rendered by Coudenberg in advancing systematic botany, both directly and indirectly, cannot well be estimated at the present time, but it is unquestionable that his scientific work extended far beyond the limits of his practical occupation as an apothecary. A century later, another Belgian pharmacist, Joh. Hermann, of Brussels, had a botanical garden of almost equal importance in which more than 1850 indigenous and exotic plants were grown.

At the same period Renward Cysat, of Lucerne, a celebrated pharmacist as well as statesman, was distinguished not only by the zealous prosecution of his special calling, but also by his cultivation of botanical science in the same manner as Coudenberg. After serving an apprenticeship in his native town and passing some time in the establishment of Beccaria, in Milan, Cysat took a business in Lucerne, and some fifteen years later was elected to a position of considerable political importance. Notwithstanding the demands thus made upon his time, Cysat continued to devote his attention to scientific pursuits and especially to botany, carrying on a copious correspondence in relation to the introduction and study of foreign plants. He was the first to succeed in cultivating *Prunus laurocerasus* north of the Alps. His letters to Felix Platter abound in suggestions as to the cultivation of the foreign plants which he had been the means of importing into Europe, such as *Opuntia*, *Laurus nobilis*, *Zizyphus*, *Citrus*, *Arbutus*, *Cupressus*, *Capparis*, *Jasminum*, etc. So early as 1585 Cysat sent to Platter in Basle a specimen of *Opuntia* which he had procured through a relative from Palestine. About the same time he recorded successful results in the cultivation of *Nicotiana tabacum*, a plant which he had known for several years and employed for medicinal purposes. Before that time *N. rustica* had been cultivated in Berne by Aretius about 1570, and shortly after its first importation into Italy. Among the medicinal plants first cultivated in Central Europe was *Ricinus*, fully described by Cysat in 1603 under the Arabic name "Cherva," and among ornamental plants a species of Passiflora may be mentioned which was imported from Peru in 1608, and was one of the first kinds grown in Europe. So much interest was excited by the cultivation of this plant that on the occasion of a visit to Rome, Cysat was desired to show it to the Pope, Paul the Fifth. The papers left by this remarkable man furnish evidence that he was not only interested in the collection and study of foreign plants, but that he was equally active in extending the knowledge of indigenous plants. His manuscripts contain many excellent drawings and descriptions of newly-discovered Swiss plants, as, for instance, rare kinds of *Ophrys* and of the other orchids occurring in the neighbourhood of the lake of Lucerne. Cysat died in 1614, and he may be justly regarded as one of the most accomplished apothecaries of his time.

Passing to the seventeenth century, we find among the numerous apothecaries who were also cultivators of chemistry, two whose labours in advancing that science can scarcely be too highly estimated—Joh. Georg Gmelin and Caspar Neumann. Of the descendants of the former Kopp remarks in his 'History of Chemistry' that few families have shown, through successive generations, more marked taste and capacity for the pursuit of natural science, and especially chemistry." Though a simple apothecary at Tübingen, J. G. Gmelin was an able chemist, and had been trained in Sweden under a predecessor of Berzelius. According to the testimony of his contemporaries, he carried out a number of important investigations, but did not publish anything beyond a work on the preparation of mercurial acetate under the peculiar name of 'Sperma Mercurii.' In training his three sons for his own calling, he inspired them with an interest in natural science and by his own example gave them a taste for chemistry which subsequently led them to do good work and was transferred to their successors. The eldest son was a physician at Tübingen; the second was for some time connected with the academy of St. Petersburg, and after travelling in Asiatic Russia, took the position of Professor of Botany and Chemistry at the University of Tübingen in which post he was afterwards succeeded by his younger brother.

The sons and nephews of these three brothers followed in the same direction. One of them became a pupil of Berzelius and a teacher of chemistry and pharmacy, as well as author of an 'Introduction to Chemistry' which was highly esteemed at the time. Another son was the famous professor of chemistry at Gottingen and his son, Leopold Gmelin, born in 1788, who became professor of chemistry and medicine at Heidelberg, was the author of the well-known 'Treatise on Chemistry' which has been in use down to a recent period.

Of still more extended importance than the pharmaceutical ancestor of the chemist Gmelin, was the Berlin apothecary Caspar Neumann, born in 1683. After being initiated in the calling of a pharmacist, he travelled during some ten years, partly at the cost of the State, and made the acquaintance of the first chemists in many countries. In 1721, he returned to Berlin to take up the business of an apothecary and, at the same time, the position of teacher of chemistry at the Medico-Chirurgical College. Before his death in 1737, Neumann was appointed chief court apothecary and was elected to the Berlin Academy and made a fellow of the Royal Society of London.

Neumann's chemical contributions to the memoirs of the Berlin Academy and to the Philosophical transactions are very numerous and they contributed largely to extend chemical knowledge as well as to encourage a taste for investigation They relate not only to pure chemistry, but also to medicine and pharmacognosy, as in the memoirs on oil of ants, castor, opium, cloves, amber, camphor, and other stearoptenes, also to the chemistry of nutrition and articles of food, as in the dissertations on beer, wine, tea, coffee and the determination of acid and extract in these articles. The great influence exercised by this chemist and pharmacist is shown by the circumstance that within a few years after his death his more important publications were translated into several languages. Caspar Neumann is also entitled to a prominent place in the history of chemistry, as having been the teacher of Andreas Sigismund Marggraf, the last of the German chemists and pharmacists belonging to the phlogistic period, and for having excited in that highly-gifted man a deep interest in chemistry. Marggraf was the son of a Berlin apothecary, born in 1709, and while being trained for that business he studied chemistry under Neumann for five years. At an early period he devised an improved method of preparing phosphorus from the extract of urine, and during several years he was engaged in extending his knowledge either at universities or as the assistant of apothecaries in other places, among others at the establishment of J. D. Spielmann in Strasburg. On returning to Berlin, in 1735, Marggraf undertook the conduct of his father's business for a time, but subsequently devoted his attention entirely to chemical pursuits until his death in 1782. In additon to the many important investigations by which Marggraf advanced the chemical knowledge of his time, the work done by him in connection with technical applications of the science were perhaps still more valuable, especially the investigation of the beet and other indigenous plants, as to the amount of sugar contained in them, and his suggestions as to their application for manufacturing purposes. In that work his early pharmaceutical experience was probably of much assistance to him.

The well-merited esteem for Marggraf's work is to some extent liable to be diminished by comparison with the great importance of that done by his younger colleague, the Swedish apothecary Carl Wilhelm Scheele, without the aid of academic education or any of the favourable conditions attaching to a professorship at a university, but solely as a self-taught chemist. If there were any necessity to insist upon the intimate relation of pharmacy to the natural sciences and upon the inducement afforded for their study by the apothecary's calling, more convincing proof of the fact could not be found than in the case of this Swedish apothecary, whose work attracted the attention of the whole learned world.

Closely connected with the investigations of Scheele are those of the Belgian apothecary François Lambert Desaive, who was born in the same year as Scheele and, after being trained to the business in Paris and several Belgian towns, became master apothecary in his native town of Liège, where he continued for fully twenty years to carry out the investigation of various chemical subjects connected with pharmacy and pharmacognosy. Not a few of these investigations relate to pure chemistry and, among them, the most important was the quantitative determination of the increase in weight accompanying the oxidation or combustion of zinc, an investigation carried out simultaneously with those of Scheele and Lavoisier on the same subject but quite independently. This long-forgotten investigation has only recently been restored to the place it is entitled to occupy in the history of the discovery of oxygen by Desaive's countryman, Victor Pasquier.

Martin Heinrich Klaproth was another apothecary, contemporary with Scheele, who became celebrated as a chemist. Born in 1743 in a small town in the Harz Mountains, Klaproth was for fully thirty-three years engaged in the practice of pharmacy and during the latter part of the time as manager of the "White Swan" in Berlin, after the death of the elder Valentin Rose. He did not give up that position until 1792, when the younger Valentin Rose took up his father's business, and at the age of fifty Klaproth became Professor of chemistry in the Artillery School and a member of the Academy. He then devoted his attention exclusively to chemical work and, on the foundation of the Berlin University in 1809, was appointed the first Professor of Chemistry, a position which he continued to hold for seven years as the first chemical authority, not only in Berlin but throughout Germany.

While manager of Rose's establishment and afterwards as teacher of chemistry, Klaproth carried out a vast amount of work and his memoirs published in different journals were subsequently issued in a collected form. Besides originating new analytical methods and contributing largely to the foundation of analytical chemistry, discovering new elements and generally extending the knowledge of others, Klaproth rendered great service to chemistry by the stimulus he gave to investigation and by the influence he exercised in bringing about the acceptance of the anti-phlogistic theory by the Berlin Academy. It should also be remembered that he was instrumental in promoting the scientific activity of Heinrich and Gustav Rose, the sons of his friend Valentin Rose, who afterwards acquired great distinction, the one as an analyst, and the other as a mineralogist.

Passing on from the first half of the eighteenth century to the later decades, we find two eminent apothecaries who are recognised as having been largely concerned in the advance of botany, Karl Ludwig Willdenow, born at Berlin in 1765, and Theodor Friedrich Ludwig Nees von Esenbeck, born in 1798. The former was a practical apothecary until 1798, when he was appointed Professor of Natural History in the Medico-Chirurgical College. He did not entirely give up the practice of pharmacy until 1801, in order to undertake the direction of the botanic garden, and in 1810 he was appointed Professor at the newly-founded Berlin University. Many of his most important contributions to the science date from the period when he was engaged in the practice of pharmacy; for instance, the 'Prodromus Floræ Berolinensis,' written at the age of twenty-two, the monograph on 'Amaranthacæ,' the 'Flora Cochinchinensis von Loureiro,' and the 'Photographia Plantar. Rarior.'

The younger of the two brothers Nees von Esenbeck, Theod. Fried. Ludwig, also began life as an apothecary, and remained in

that occupation until 1820, when he was appointed professor of pharmacy at the University of Bonn and joint director of the botanical garden. His works were no less valued than those of Willdenow, especially the 'Genera Plantar,' 'Floræ Germanic.' and 'The System der Pilze,' illustrated by A. Henry (1837). In addition to these works, relating to purely systematic botany, the Plantæ Officinalis, commenced in 1828 and the 'Handbuch der medicinisch-pharmaceutischen Botanik,' issued in conjunction with Ebermeyer, which are better known to pharmacists, were at the time indispensable aids in the study of pharmacognosy and pharmaceutical botany.

Leaving for a moment the continent of Europe in our search for pharmaceutical promoters of natural science, we find in a neighbouring island William Allen, a modest as well as able and energetic personality who has hitherto been but too little known on the Continent, although in the English metropolis he exercised an eminently encouraging influence in regard to the development of natural science. There is, moreover, a special reason that William Allen should not be overlooked, as he was a predecessor of the accomplished pharmacologist, Daniel Hanbury, in the well-known firm of Allen and Hanburys, and contributed no less than he did to the celebrity of the Plough Court Pharmacy, an apothecary's establishment which in the earlier decades of the present century furnished abundant evidence "of the possibility of combining the prosecution of abstract scientific work with the ordinary business occupations appertaining to the practice of pharmacy."*

Three other apothecaries who flourished towards the end of the last century must still be mentioned, on account of their contributions to chemical science—Sertürner, Pelletier, and Caventou. The first-named, though throughout his life engaged in the practice of pharmacy, was a zealous investigator, to whom we are indebted for the discovery of morphine, meconic acid, quinoidine, sulphovinic acid, etc. The other two were apothecaries in Paris, and to them we are indebted for the discovery of the cinchona bases and many other analogous active principles of drugs. We have long been accustomed to regard these three men and other apothecaries of that period who took part in the discovery of the alkaloids—Vauquelin, Fourcroy, Robiquet, Derosne, Geiger, Merck—only as excellent pharmacists who advanced pharmaceutical chemistry, and that view would be justified so long as the importance of the alkaloids was considered to depend mainly upon their application as medicines and poisons. But at the present time, when they are known to be typical representatives of an interesting group of nitrogen compounds, when the study of their innumerable derivatives and of their constitution forms the chief occupation of many chemists, we may venture to say that those apothecaries, working during the earlier part of the century in their primitively equipped laboratories, opened up a field of inquiry of illimitable extent and thus at least indirectly contributed to the advance of natural science. In fact, Sertürner's recognition of morphine as a naturally formed salifiable base, analogous to ammonia, may be regarded from a scientific point of view, as parallel with Wöhler's theoretically more significant synthesis of urea.

The last year of the eighteenth century is notable as that in which a celebrated countryman of Pelletier and Caventou was born, Jean Baptiste Dumas. At the age of eighteen he was placed in the pharmaceutical establishment of Le Royer, at Geneva, and during the following four years he published a series of interesting investigations partly in conjunction with Le Royer and with the physician Prevost. The discovery of iodine in the spongiæ ustæ employed in the treatment of goitre was made during that period, and while at the time it led Coindet to employ for that purpose preparations of iodine, it may be regarded as the first step towards the discovery of thyro-iodin and the use of thyroid gland preparations. After returning to Paris Dumas was employed as demonstrator in the Polytechnic School and there assisted his friends Pelletier and Caventou in the analysis of the alkaloids. From that time he devoted his attention to chemical investigation but without ever losing his special interest for pharmaceutical subjects.

Here on the threshold of the nineteenth century let us conclude this retrospect, not because the past years of that period have been wanting in pharmacists who could be regarded as cultivators of one or other branch of natural science, but because it would not be easy to discriminate with justice between the dead and those still living who should be included in the scope of our consideration. The names of some few apothecaries, however, may be mentioned as having been connected with Strasburg or quite recently removed by death: Fried. Aug. Flückiger, for many years the head of the Pharmaceutical Institute, Friedrich A. Musculus, chief apothecary at the Civil Hospital, Ernst Jahns, university apothecary at Göttingen, Remigius Fresenius, and Cornelius Plugge, the pride of scientific pharmacy in Holland—for all these grateful remembrance will not be wanting in pharmaceutical circles.

The facts recalled through a period of more than three centuries speak for themselves so distinctly as to need no comment. They convey an eloquent and impressive exhortation to all of us who represent pharmacy and no less to those whose occupation brings them into association with pharmacy, or have to watch over it for regulation and protection in the interests of the public.

"Caveant Consules, ne quid detrimenti scientia capiat."

Let not the scientific art of pharmacy degenerate under adverse conditions of any kind, or you will choke a spring from which have flowed encouragement and security for the pure sciences, aid both direct and indirect and not unfrequently material support.

Let us, however, when fatigued by the duties of our business, when depressed in spirits by apprehension for the future of our calling, follow the example of our illustrious Scandinavian predecessor, and taking a vessel from our shelves, try whether we cannot extract from its contents, for the satisfaction of ourselves and of others, some new scientific fact, and thus partake of the pleasure conferred by the discovery of truth; for to our occupation and to pharmacy may well be applied the words—

Vivitur ingenio; caetera mortis erunt.

* See *Pharmaceutical Journal*, lviii., 166.

Detection of Resin Oil in French Turpentine Oil.—Since French oil of turpentine is lævogyre, and resin oil, which is often added to it as an adulterant, is dextrogyre, any considerable admixture of the one with the other can be readily detected by simply observing the optical rotation. This was first pointed out by Aignan, who now states that by distilling off the greater part of the sample the presence of only a very small amount of the adulterant can be detected. Thus, taking 250 C.c. of turpentine oil containing 3 per cent. of added resin oil and distilling it until the residue amounted to 70 C.c., the rotation of this was found to be only $-36{\cdot}21$ in a 200 Mm. tube. The rotation of the same amount of residue from the unmixed oil was $-51{\cdot}5$. If the distillation be conducted under reduced pressure, as small a quantity as 0·5 per cent. of resin oil will give a dextro-rotatory residue, while that for pure French turpentine oil will remain strongly lævo-rotatory.—*Comptes rendus*, cxxiv., 1367. [This test is only applicable to the left-handed French oil. It obviously will not apply for right-handed American turpentine, which constitutes the greater part of the oil used in this country.—Ed. *P. J.*]

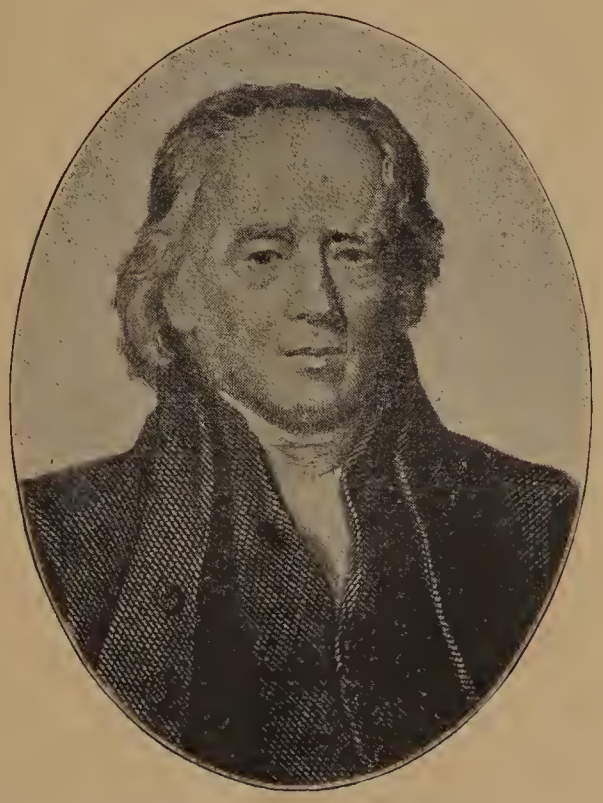
The Pharmaceutical Society and its Presidents.

INTRODUCTORY.

SIXTY years ago chemists and druggists in Great Britain were extremely miscellaneous as a class and absolutely devoid of organisation. Early in 1841, however, on a determined attempt being made by certain medical practitioners to subject chemists to the jurisdiction of a body in the composition of which they would not be represented, steps were immediately taken, which led to the formation of the Pharmaceutical Society. A public meeting of the craft was held at the Crown and Anchor Tavern, Strand, on February 15, with Joseph Gifford in the chair. William Allen, of Plough Court, had been requested to preside at the meeting, but circumstances prevented his attendance. Nevertheless, he sanctioned his appointment as a member of the Committee then formed for the purpose of watching and opposing the progress of the obnoxious Medical Bill before Parliament, and his name appeared first in the list of those appointed on the Committee. Exactly two months later, *i.e.*, on April 15, 1841, another public meeting of "members of the trade" was held at the Crown and Anchor, Richard Hotham Pigeon occupying the chair on this occasion, and it was resolved on the motion of William Allen, seconded by John Bell—

"That for the purpose of protecting the permanent interests and increasing the respectability of Chemists and Druggists, an Association be now formed under the title of the 'Pharmaceutical Society of Great Britain.'"

A hundred chemists signed the roll of membership at this meeting, and a Committee of forty members of the infant Society was appointed to draft bye-laws and make other necessary arrangements. At a later meeting, held on June 1, 1841, a special resolution was passed constituting that Committee the first Council of the Society, with authority to act until the following May, when the first elected Council of twenty-one members would assume responsibility. At the same meeting William Allen was elected President; Charles James Payne, vice-president; Richard Hotham Pigeon, treasurer; and George Walter Smith and Robert A. Farmar, joint honorary secretaries of the Society.



WILLIAM ALLEN.

WILLIAM ALLEN, F.R.S.—1841–44.

The first President of the Pharmaceutical Society was born August 29, 1770. He was a member of the Society of Friends like many other of our founders. Having shown a taste for chemical and other pursuits connected with medicine, he was placed as an apprentice in the establishment at Plough Court, then belonging to Joseph Gurney Bevan, whom he eventually succeeded. On Luke Howard becoming his partner, the style of the firm became Allen and Howard, and in addition to the retail business they established a laboratory for the manufacture of chemicals. When the partnership expired the Plough Court business reverted to Allen, and Luke Howard took over the manufacturing business. It is hardly necessary to say that both concerns occupy leading positions in their respective departments at the present day.

Allen became lecturer at Guy's Hospital in 1804, having accepted the chair of Chemistry and Experimental Philosophy, and he acquired the friendship of Dalton and Sir Humphry Davy. He was elected a Fellow of the Royal Society in 1807, having previously been honoured with the Fellowship of other learned bodies at home and abroad. He was the author of numerous scientific papers, the first relating to carbon and the nature of the diamond; he also took great interest in astronomy, possessing, as he did, an observatory and some valuable instruments. A large portion of his life was devoted to objects of a philanthropic character; he was conspicuous in his endeavours to accomplish the abolition of slavery, and thus became the friend and associate of William Wilberforce; he was also a zealous advocate for the alteration of the laws respecting capital punishment, and busied himself in educational reforms.

Specially is he noticeable as the personal friend of Alexander I., Emperor of all the Russias, and as the confidential adviser of the Duke of Kent, who placed his financial affairs in the hands of his well-trusted administrator. It was due to the integrity and special ability of William Allen that the Duke was freed from his embarrassments. Later, in order to promote his varied schemes of benevolence, William Allen withdrew from personal attendance on the business in Plough Court, but when chemists and druggists united to establish a permanent Society, he acceded to the unanimous request of the members of the trade, and became its first President. His portrait, painted by H. P. Briggs, R.A., said to be an admirable likeness, adorns the Council Room at 16, Bloomsbury Square, W.C. He died during his term of office, on December 30, 1843, in the seventy-fourth year of his age.

At a meeting of the Council, on January 3, 1844, deep and unfeigned regret was expressed "at the loss which the Society had sustained on the death of the late revered President," and testimony was borne to the zeal the deceased pharmacist had ever manifested in all the concerns of the Society. The body corporate, as it now was, had prospered marvellously during the time he had presided over its destinies, but it is unnecessary here to do more than summarise very briefly what was accomplished during William Allen's occupancy of the presidential chair. The facts most worthy of record are that the Society had acquired permanent premises, increased greatly in numbers, and been granted a Royal Charter (February 18, 1843). The educational work of the Society had also been fairly started by the establishment of the School of Pharmacy, and a system of examination was in operation.

CHARLES JAMES PAYNE.—1844.

The election of a new president being rendered necessary by Allen's death, the Council proceeded at the February meeting to raise the vice-president—Charles James Payne—to that position. This excellent and unobtrusive pharmacist, who was born January 28, 1794, had a distinct share in the original establishment of the Pharmaceutical Society, and indeed might be said to have been identified with its interests at its foundation. During his apprenticeship with Mr. Burkitt, of Fleet Street, he attended Abernethy's lectures; subsequently, taking up his freedom, he became a member of the Apothecaries' Company, and went as an assistant to Mr. Winstanley in the Poultry. In May, 1817, he opened a chemist's shop in St. Martin's Court. The premises have long been devoted to other purposes, and the whole neighbourhood has been changed.

By universal report Mr. Payne was an admirable speaker and the genius of common sense. His first public efforts were directed to Sunday closing, a practice he had for years adopted. At the meeting of the trade held at the Crown and Anchor Tavern, on February 15, 1841, his remarks met with general approbation. He was described as "an eloquent and zealous advocate of the independence and established privileges of chemists and druggists." After characteristic hesitation on his part he was persuaded to become Vice-President of the Society, and three years afterwards he was elected President. This honour was due to his intrinsic merit and his sterling worth, for neither his business position nor his unassertive nature was calculated to gain him influence. He appears to have been a constant invalid, so that his official duties, joined to the benevolent occupations in which he was engaged, overtasked a mind sensitive in the extreme. He died September 5, 1844, deeply regretted, the Society thus losing the services of two presidents within less than twelve months. Payne however, unlike Allen, did not die in office but resigned just before his death.

CHARLES JAMES PAYNE.

So retiring had he been through life, that when at first it was wished to present the collective portraits of our Presidents no print or photograph of Charles James Payne could be discovered, and he seemed to have left no trace behind. By an almost accidental circumstance it became possible to complete the series, and Payne's portrait is now published for the first time. He came upon the scene, so far as pharmaceutical polities are concerned, at the Crown and Anchor meeting referred to above, as little appears to have been known about him prior to that by the leaders of the agitation to secure the independence and established privileges of the craft. The clear, sound reasoning and judgment evinced in his remarks at that meeting made a deep impression, and he was a decided acquisition to the Committee which developed into the first Council of the Pharmaceutical Society. He was unanimously elected Vice-President when the Society was formed, and he is described as having been one of the most indefatigable members of the early Council. The estimation in which he was held by those who were associated with him on that body is well expressed in a testimonial engrossed on vellum, which is still suspended in the Council chamber. In that document, the Council for the year 1844 expresses its deep sense of the loss the Society had sustained by the decease of Mr. Payne, "whose unremitting zeal, indefatigable and disinterested exertions, urbanity of manners, judgment, and moral worth, so eminently manifested in the discharge of the several offices of President, Vice-President, and Member of the Council," had conferred on the Society a lasting and substantial benefit. Mr. Payne is referred to as having been ever the advocate of the cause of chemists and druggists, and in an especial manner interested in the welfare of the less fortunate members of that body. Grateful acknowledgment is also made of his arduous labours in connection with the establishment of the Pharmaceutical Society, the foundation of the Benevolent Fund, and the educational objects of the Society.

The reference to the Benevolent Fund directs attention to the fact that although it was coeval with the Society very little interest appears to have been taken by chemists and druggists generally in their special insurance fund during the early years of its existence. It was agreed at the outset that it was not desirable the Fund should come into operation until its income amounted to £300 per annum; but at the time of Payne's death the total amount accumulated was less than £2000, and of that £1500 had been granted by the Council from the General Fund of the Society. The first two annuitants on the Fund were not elected until 1865, only casual relief having been granted until that year, and even then the capital of the Fund did not amount to £7000, whilst the total income from subscriptions, donations, and interest did not exceed £350 per annum. In labouring as he did, therefore, on behalf of the Benevolent Fund, Payne had evidently undertaken what was regarded at the time as a thankless task. Short as his term of office had been, important matters had occupied the attention of the Council during the time Charles James Payne occupied the presidential chair. The bye-laws were in course of revision, and the question was under consideration of fitting up and extending the Library, Museum, and School, so as to make them creditable to the Society, and adequate to the carrying out of the objects contemplated when they were established. The idea of obtaining an Act of Parliament was also being discussed, and the necessary steps were taken to fit up a small laboratory in which to give practical instruction to students, under the direction of the professor of pharmacy. Accommodation was provided for ten students and the laboratory was opened the month after Payne's lamented decease. This and other arrangements made by the Society for providing an efficient system of education and examination in Pharmacy had produced a reaction in favour of chemists and druggists, who had previously been looked upon as an uneducated and disunited class of men, unworthy to be ranked as a portion of the medical profession, but were now beginning to be recognised as the legitimate representatives of a special department of the healing art. In this process of gradual enlightenment Payne took a prominent though unobtrusive part, as indeed he did in connection with every active measure for the benefit of Pharmacy.

JOHN SAVORY.—1844-48.

On Payne's resignation, it again became necessary for an old Council to elect a new president, and this time the choice fell upon John Savory. That accomplished gentleman was born in 1800 and originally apprenticed to his uncle as an apothecary. After a residence in Paris, where he studied pharmacy, he passed the examination of the Society of Apothecaries. He, however, relinquished any idea of practice, and became a partner in the firm of Savory and Moore. Mr. Savory was associated with William Allen, Jacob Bell, Morson, Payne, and others, in the foundation of the Pharmaceutical Society, but on the passing of the Pharmacy Act in 1852 he was compelled to break off his official connection with the Society, though he always retained a lively interest in its welfare.

After taking the Presidential chair he signalised his tenure of office by an elaborate and carefully prepared discourse, delivered at an anniversary meeting from which the students of the school were excluded, to the no small annoyance of their Professor (Redwood). The Address, May 18, 1847, is a fair example of Mr. Savory's style, and shows literary cultivation. One of his papers communicated to an Evening Meeting, on the Preparation of Syrups and Oxymels (December 14, 1842), attracted much attention; in it he gave suggestions for improved methods of manufacture, and bestowed special commendation on Continental practice. He died in the seventy-second year of his age.

JOHN SAVORY.

At the time of his election to the presidential chair, a Bill had recently been introduced into Parliament by Sir James Graham, the purpose of which was to regulate the practice of medicine and the qualifications of those practising the healing art. This Bill proposed to repeal the Apothecaries Act and all other enactments which empowered any authorities to inflict penalties for irregular practice. In fact, free trade in medicine was to be permitted, and the public left to decide for themselves whether qualified or unqualified practitioners should be employed. Titles alone were to be protected, but registered men were to be exempted from liability to serve on juries, and they were also to enjoy the exclusive right to recover professional charges by legal process, to hold certain appointments, and to fill official positions of honour and profit. As originally drafted, this Medical Bill was not calculated to interfere in any way with the privileges of chemists and druggists, or with the practice of pharmacy. But an attempt by the Apothecaries' Company to incorporate a clause which seemed likely to press hardly on the trade, brought the chemists and druggists together once more at the Crown and Anchor, where it was decided to oppose the Bill. A deputation from the Council waited upon the then Home Secretary, petitions were poured into the House of Commons, and the result of this opposition was complete success, a clause being introduced exempting chemists and druggists from the operation of the proposed Act, whilst shortly afterwards the Bill was withdrawn altogether.

Another Bill was successfully opposed in 1846, when the Government sought to vest powers in the excise, which would have had the effect of exposing chemists and druggists to inspection of a highly objectionable nature. To such an extent, indeed, was the Bill modified, that in order to facilitate the practical working of the Act, it became necessary, some years after it had passed the Legislature, to obtain further powers in order to nullify some of the concessions granted on the petition of chemists and druggists at the earlier period. The next two years (1847-48) were prolific in the discussion of projects of pharmaceutical and medical legislation, though little progress was made in either direction. A proposal by the Council of the Pharmaceutical Society to found a College of Pharmacy for England and Wales—with power to register as pharmaceutical chemists and druggists all who passed its examinations—came to nothing, the prevailing idea being that the objects contemplated might be effected through the medium of the Society itself, if only powers could be obtained to render its examinations compulsory and to constitute it the registration and authority. A Bill was drafted, therefore, which provided for the registration by the Society of all persons then engaged in business as chemists and druggists, and for the examination and registration of those who proposed to practise pharmacy in future. Unfortunately, the Government of that day, whilst sympathising with the objects of the promoters of the Bill, felt that medical legislation should precede pharmaceutical legislation, so the matter was perforce dropped for the time being.

Meanwhile the Society was persevering steadily with its educational schemes. The new laboratory had not been opened many months when the demand for practical instruction became so great that it became necessary to provide further accommodation. A larger laboratory—capable of accommodating twenty-five students—was therefore fitted up in the basement. In making this provision for carrying out a system of practical instruction in chemistry, the Society set an example which was shortly afterwards followed by the College of Chemistry and University College, London, these being the first three institutions where practical instruction in chemistry could be obtained in this country.

A Scientific Committee of the Pharmaceutical Society also came into existence during John Savory's term of office, with the promotion of pharmacological knowledge for its aim, the immediate object in view being the solution of problems connected with the origin and natural history of substances used in medicine. This early "Research" Committee, which did some good work, was appointed on the recommendation of Dr. Pereira, and consisted of John Savory, President; T. N. R. Morson, Vice-President; Robert Alsop, Jacob Bell, Henry Deane, Daniel Hanbury, Thomas Herring, Edward Horner, Robert Howard, William Ince, J. S. Lescher, R. H. Pigeon, Peter Squire, and George Waugh. Professor Redwood was the Hon. Secretary, and the list of honorary members of the Committee included the names of W. T. Brande, J. F. Daniell, George Fownes, Thomas Graham, Richard Owen, and seven other eminent Fellows of the Royal Society, in addition to Dr. F. J. Farre.

Scats on the Pharmaceutical Council appear to have been as carefully avoided by members of the Society in Savory's time as they are at the present day. In the *Pharmaceutical Journal* for April, 1846, a complaint was entered that during the past two years the members at large had taken scarcely any part in the nomination of candidates, and it was urged that, though it was customary to attribute this state of affairs to the confidence felt by the Society in its existing Council, and however satisfactory it might be for that confidence to prevail, it was equally desirable for the members to exercise their privilege in the nomination and election of representatives. "If they neglect this duty the Council becomes a self-elected body, as it is their duty to make the needful arrangements for the election, which includes the preparation of balloting papers, and if no other names are proposed the list nominated by the Council must of necessity be elected. This is not in accordance with the constitution of the Society, which is framed on the most liberal representative principles." Further, it was pointed out that to ensure the welfare of the Pharmaceutical Society, as of any other institution, it was necessary that a certain number of elected representatives acquainted with the routine of the business should remain in office at each period of election, but that as a result of the indifference shown by the members almost the whole twenty-one practically remained in office, and though fourteen nominally went out, there was little or no opposition when they offered themselves for re-election. But no effect appears to have been produced by this appeal, for it was repeated in more forcible terms during the following year. There had then been no contest for three years, and though several members of Council had retired on each occasion in order to make way for others, the number of fresh candidates nominated and willing to serve had only been sufficient to fill the vacancies. Indeed, in some instances, the individuals proposed had been with difficulty prevailed upon to accept office, and the Editor therefore emphasised his former observations, under the not unnatural impression that the importance of the privilege of voting was not generally appreciated by the members. Almost without modification these observations might well have been penned in this present year of grace. The lapse of half a century has not greatly changed the condition of affairs, and were Jacob Bell alive to-day, he might feel inclined to employ still more forcible language to condemn this strange apathetic position.

To return, however, to John Savory. He introduced the practice of giving addresses at the Anniversary Meetings, and the presidential addresses delivered during his four years of office are marked by the evident care he took to keep himself abreast of the science and technology of his time. He was also a good classical scholar, and deeply impressed with the importance of advanced education to the pharmacist. "The chemist and druggist," he remarked on one occasion, "must be required to know something more than the price of a drug. He must be acquainted with its composition and properties, with the preparation to which it may require to be subjected, and the decompositions which this preparation may involve." Moreover, he pointed out, "this knowledge is to be bought, not with gold alone, but at the expense of much perseverance, study, observation, and research. The philosopher's stone and the transmutation of metals into gold are yet to be attained—not in the literal sense, it is true, but in education. Education is the philosopher's stone. Education is the secret of transmutation." In the same address pharmacists were urged to become practical chemists, and not to rest content with a position inferior to that of their brethren on the Continent. Returning to this topic at a later date, he deplored the fact that—having regard to the importance of the position held by the chemist, and how useful a member of Society he is destined to be—the name of "chemist" was in so many parts of the country associated with individuals whose shops were pharmacies in little but name. Even now the craft is not quite freed from the individual "half of whose shop is stored with butter, bacon, cheese, or tape, while in the other half he dispenses preparations of mercury, arsenic, opium, etc." Things have altered somewhat, undoubtedly, but the old tendency to unadulterated commercialism still preponderates, and is a considerable check upon the progress of pharmacy.

SELENIUM IN COMMERCIAL SULPHUR.*

BY T. D. REED, M.D.

Query 25 of the American Pharmaceutical Association asks to what extent selenium is found in "flowers of sulphur"? This query is somewhat indefinite, to the "extent" that the "extent" may be taken as the equivalent of "quantity" or "frequency."

The sulphur coming into Canada is wholly from the Mediterranean, and known in the trade as Sicily sulphur. Six samples, from as many different dealers, were examined by the cyanide process of the U.S.P., all failed to give coloration within the limitations. Two samples of American sulphur authenticated by Dr. Remington were tested, and also failed to give any indication of selenium.

To test the U.S.P. process and also to obtain a colorimetric standard, a sample of fused selenium, Merck, was obtained and treated with cyanide according to the official process. The test was found to be delicate and available to 1/500th of a grain. This test depends on the formation of seleno-cyanide of potassium, and the precipitation from the solution of red selenium on the addition of hydrochloric acid.

To make a more thorough test, double the quantity of the Pharmacopœia test, 1 gramme, was taken, and the quantity of cyanide increased to 2 grammes, the boiling was continued one hour, some of the sulphur was still undissolved, a further addition of cyanide (Merck's 98 per cent.) of 0·5 gramme was then made, and the boiling continued half an hour. A few particles of sulphur still remained undissolved. On cooling, the clear liquid was strongly acidulated with hydrochloric acid, C.P., but no trace of selenium was obtained. The reason for increasing the quantity of cyanide was a desire to dissolve the whole of the sulphur, if possible, into sulpho-cyanide. The quantities being practically 2 to 1, thus KCN = 65, S = 32.

The U.S.P. test is as follows :—If 0·5 Gm. of precipitated sulphur be boiled with a solution of 0·5 Gm. potassium cyanide in 5 C.c. of water, and after filtration the clear liquid be acidulated with hydrochloric acid it should not assume a reddish colour, even after standing for an hour (absence of selenium).

On boiling the cyanide and sulphur together in pure water a colourless solution is obtained; on the addition of hydrochloric acid slight effervescence occurs and a faint yellow cloud appears; this is due to persulphocyanic acid.

The operator must be on his guard against iron, as the sulpho-cyanide formed is extremely sensitive to this metal, and iron is an element very difficult to completely get away from. In some of the experiments made a red colour was promptly obtained; this reaction was finally traced, in one case, to the filter paper, in another to dust, and the sulphur also was found to give faint traces of iron.

The answer that I feel disposed to make to the query, admittedly an incomplete one, is:

There is no difficulty in obtaining sulphur, which will meet the requirements of the U.S.P. in absence of selenium.

* Read at the Minnetonka meeting of the American Pharmaceutical Association, August 26, 1897.

In preparing this communication, some facts have been learned which it may be permitted here to state. The nomenclature "flowers" as "flour" has been discussed. "Flowers" is the term quite properly applied to substances like sublimed sulphur, as is indicated by the Latin and German equivalent. In commerce much of the powder of sulphur is ground lump, and to this the term "flour" would properly apply.

For disinfection, and agricultural purposes, dealers send out the ground, as it is a little cheaper than the sublimed. The lighter tint of the ground is noticeable when the two are compared.

A curious misprint was noticed in the U.S.P., under sulphur. The statement is made: "Carbon disulphide dissolves a portion of it, but leaves a residue of 'crystalline' sulphur."

It should read "amorphous." The various crystalline forms of sulphur are all soluble in CS_2, only the gamma or amorphous sulphur is insoluble. The attention of the text-book writers who have reproduced only too carefully the wording of the national authority is respectfully called to the statement made in this paragraph.

The colouring power of precipitated selenium is very great, one grain making a pint of water look like arterial blood. (Sample shown.) The tint also is to be noted as different from that of sulpho-cyanide and iron.

Chicashige describes, in *Chemical News*, April, 1897, a red sulphur occurring in Japan, and containing 1·16 per cent. of selenium. This fact is here noted to allow the remark that even in the case of a native sulphur, sufficiently rich in selenium to be distinguishable at sight, the quantity present—less than 5 grains per pound—might well be considered therapeutically negligible.

The spectroscope was tried, but did not furnish any aid in the recognition of selenium.

SULPHUR PRECIPITATUM.*

BY T. D. REED, M.D.

Query 24 of the American Pharmaceutical Association is as follows:—Precipitated sulphur seems to be grossly adulterated. Is it possible to obtain it pure in the open market? This query is somewhat ambiguous, and its meaning must be assumed. In the first place the expression "grossly adulterated" may be taken as the equivalent of "not up to the standard of the Pharmacopœia."

The processes of manufacture of the British Pharmacopœia and United States Pharmacopœia are similar, up to the point of the addition of hydrochloric acid. The U.S.P. requires the acidulation to be stopped while the calcareous solution is still alkaline. The B. P. allows the addition of acid up to slight acidity; the product in the former case being greenish-yellow, in the latter almost white.

In the quantities used the resulting compound in solution is CaS_4; as, however, this tetrasulphide is not well known, text-book writers assume that the combination is $(CaS_5)_2 + CaS_2O_3$. This assumption is plausible, but the equation given in some text-books, as representing the result of the Pharmacopœial process = $(CaS_2)_2 + CaS_2O_3$, is not tenable, as in it less than half of the sulphur is accounted for.

The product known as "Lac Sulphur," was formerly official, and from recent inquiries made is still extensively sold, and frequently dispensed for sulphur precipitatum. This product, the result of a former pharmacopœial process, in which sulphuric acid is used as the precipitant, contains the whole of the calcium that was in the solution, amounting in the finished product to 58 per cent.—as gypsum—$CaSO_4$ being practically insoluble.

This undesirable mixture, though not to be classified as wilful adulteration, clearly comes under the legal classification of "sophistication" or "adulteration," and "not according to the Pharmacopœia." It is in reference to this mixture doubtless that this query is framed.

The second sentence of the query, "Is it possible to obtain it pure in the open market?" is susceptible of answers in two directions. It may be answered in the matter of the pharmacist, as a buyer from the wholesaler, or in the matter of the public buying from the retail pharmacist. An answer is attempted to meet each supposition.

That the pharmacist may procure a proper article of sulphur precipitatum in the large commercial centres is evident, for pure samples were obtained from wholesalers in Montreal, New York, and Philadelphia. The retail drug trade of the Province of Quebec gets its supplies almost entirely from seven large houses in Montreal. The stocks of these were examined: Two had both the calcareous and pure in stock, three had only the impure, one only the pure, and one "hadn't any in stock" at the time of inquiry.

Investigation of retail stocks was then made. Samples were obtained from fifty-five reputable pharmacies in Montreal, Brooklyn, Baltimore, New York, St. Louis, and Chicago, twenty-six of these were pure, twenty-nine were calcareous.

Samples of Sulphur Precipitatum.

	Montreal.	Brooklyn.	Baltimore.	New York.	Chicago.	St. Louis.	Montreal hospitals.	
Pure ...	6	1	6	9	—	3	1	26
Calcareous	14	1	1	—	7	5	1	29

Total samples examined, 55.

In Montreal it was generally stated that the article was in small demand, a pound serving for several years in some cases. It was also held that occasionally preference was expressed for the "sparkling" powder when "lac sulphur" was wanted.

The willingness of the public to accept an impure article, the result of early experience, is, however, no excuse for the pharmacist carrying only the impure article in stock. In buying, the pharmacist should specify: sulphur precipitatum pur., and examine every lot with a lens. All that is necessary is to rub a little smooth on paper with a spatula, and examine with good light. Any sample showing shining particles with a lens, or even to the naked eye, is to be rejected. It is not really necessary for the buyer to estimate the quantity of calcareous matter. In the cases in which the quantitative estimate was made, the lime was "all there." For the U.S.P. article the simplest method is to extract with carbonic disulphide and weigh residue as impurity. For the B.P. article, which may contain some gamma sulphur, I prefer to extract the sample with water, dry, and weigh residue, burn this and deduct ash (sand, etc.).

To make anything like a survey of the stocks throughout the United States would be a work of time, labour, and expense; this answer could only be taken *pro tanto*, but may serve by the publicity given the subject through the American Pharmaceutical Association to call the attention of pharmacists to the desirability of every retailer overhauling his stock of "sulphur precipitatum."

I am indebted to Messrs. Alpers, Bacon, Gallagher, Whelpley, and Hallberg for obtaining for me samples for tabulation.

* Read at the Minnetonka meeting of the American Pharmaceutical Association, August 26, 1897.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Oils, Saponification of (*continued*).—If the saponification be conducted quantitatively we can easily determine the amount of alkali required to saponify the quantity of oil treated. This is accomplished by using a known quantity of KHO for saponification, and when saponification is complete, determining the residual KHO by titration with standard acid. The amount varies with different oils, etc., and furnishes valuable indications of their purity. It is usually stated in grammes of oil saponified by 1 litre (1000 C.c.) of normal KOH solution, this figure being known as the "saponification equivalent." The "saponification equivalent" for butyrin (glyceryl butyrate) is 100, while that for olein, the chief constituent of olive and almond oils, is 294. Spermaceti has a very high figure, about 480, since its chief constituent, cetin, is the palmitic ester of cetyl alcohol, a monohydric alcohol of high molecular weight. This will be rendered quite clear by examining the equations which represent the saponification of these three bodies.

1. Butyrin, $\underbrace{(C_3H_7COO)_3C_3H_5}_{302} + \underbrace{3KHO}_{3\times56} = 3C_3H_7COOK + C_3H_5(OH)_3$

2. Olein, $\underbrace{(C_{17}H_{33}COO)_3C_3H_5}_{884} + \underbrace{3KHO}_{3\times56} = 3C_{17}H_{33}COOK + C_3H_5(OH)_3$

3. Cetin, $\underbrace{(C_{15}H_{31}COO)C_{16}H_{33}}_{480} + \underbrace{KHO}_{56} = C_{15}H_{31}COOK + C_{16}H_{33}OH$

From which one sees that one molecular weight in grammes of potassium hydrate saponifies $\frac{302}{3}$ grammes butyrin, or $\frac{884}{3}$ grammes olein, or 480 grammes cetin, hence the saponification equivalents for these three substances are 100·6, 294·6, and 480 respectively. Paraffin wax, mineral oils, and bodies of this description composed of hydrocarbons, are not affected by boiling with potash solution; hence adulteration of animal and vegetable fats and waxes with these bodies is revealed by the diminished quantity of potash required for their saponification.

Iodine Absorption.—It was mentioned (see above) that the fatty acids whose esters constitute almost entirely the whole of the fixed oils, fats, and waxes belong with very few exceptions to three series—the acetic, acrylic, and propiolic. The members of the acetic series are saturated compounds, *i.e.*, they do not form additive compounds, whereas the acids of the other two series are unsaturated, and will combine respectively with two and four atoms of hydrogen or iodine (or other halogen) passing thereby into the corresponding acids of the acetic series in the case of addition of hydrogen or into iodine derivatives of these saturated acids if iodine be employed. For example, stearic acid, $C_{17}H_{35}COOH$, does not combine with iodine; oleic acid, $C_{17}H_{33}COOH$, combines with 2I to form $C_{17}H_{33}I_2COOH$; and linoleic acid, $C_{17}H_{31}COOH$, with 4I to form $C_{17}H_{31}I_4COOH$. Compare the behaviour of ethane, C_2H_6, ethylene, C_2H_4, and acetylene, C_2H_2, with the halogens. Iodine is usually employed since the amount absorbed by an oil admits of fairly easy determination. The process is usually carried out in the following manner:—The oil dissolved in chloroform is treated with excess of alcoholic solution of iodine, and then, after standing several hours, water is added and the uncombined iodine determined by titration with volumetric solution of sodium thiosulphate. In practice some mercuric chloride is also added, the formation of the additive compounds being much expedited thereby. In this case the halogen addition product will contain chlorine as well as iodine, but this makes no difference from an analytical point of view, since the chlorine given up by the mercuric chloride is replaced by an equivalent amount of iodine. Consider the following equations for linoleic acid:—

1. $C_{17}H_{31}COOH + HgCl_2 + 4I = C_{17}H_{31}Cl_2I_2COOH + HgI_2$.
2. $C_{17}H_{31}COOH + 4I = C_{17}H_{31}I_4COOH$.

The amount of free iodine absorbed in the two cases is precisely the same. The iodine absorption is, therefore, indirectly a measure of the unsaturated fatty acid esters in an oil, and like the saponification test, a valuable means of determining the purity or extent of adulteration of oils, etc.

Eläidin Test.—When olein is treated with nitric acid it is converted into a solid isomeric substance called eläidin. The nature of the change is not well understood. An acid solution of mercuric nitrate has the same effect, as is seen in making unguentum hydrargyri nitratis.

The following is a brief account of the official oils, fats, and waxes, and some of their derivatives:—

Oleic Acid and the Oleates.—The oleic acid of pharmacy may be obtained by the action of superheated steam on oils or fats containing olein, as stated above. Since none of these substances consist of pure olein, but always contain beside other bodies such as stearin, etc., the fatty acid so obtained will not be pure oleic acid. A product sufficiently pure can, however, be obtained by cooling the mixed acids when the accompanying stearic and other acids separate for the most part in the solid state, while the oleic acid remains fluid and may be separated by pressure. The iodine-absorption is a valuable indication: when pure, oleic acid absorbs 90 per cent. its weight of iodine. Titration with standard alkali enables one to detect the presence of oils (*i.e.*, esters of fatty acids or hydrocarbon oils), since these diminish the amount of alkali required for neutralisation. The presence of acids of lower molecular weight would be indicated by an increase in the quantity of acid required. For example, oleic acid pure requires 19·9 per cent. of KHO to form neutral potassium oleate—

$$\underbrace{C_{17}H_{33}COOH}_{282} + \underbrace{KHO}_{56} = C_{17}H_{33}COOK + H_2O,$$

Now 282 : 56 :: 100 : 19·9.

Lauric acid, however, neutralises 28 per cent. KHO—

$$\underbrace{C_{11}H_{23}COOH}_{200} + \underbrace{KHO}_{56} = C_{11}H_{23}COOK + H_2O.$$

and 200 : 56 :: 100 : 28.

The formation of the lead salt and determination of its solubility in ether is intended to exclude the presence of more than small quantities of other fatty acids. This test depends upon the fact that the lead salt of oleic acid (and the other acids of the same series) dissolves in ether, while the lead salts of the acids of the stearic series are insoluble in ether. The metallic oleates present in official preparations are:—

Mercuric	Oleate	in	Oleatum Hydrargyri.
Zinc	,,	,,	,, Zinci.
Lead	,,	,,	Emplastrum Plumbi.
Calcium	,,	,,	Linimentum Calcis.
Potassium	,,	,,	Sapo Mollis.
Sodium	,,	,,	,, Durus.
Ammonium	,,	,,	Linimentum Ammoniæ.

The metallic oleates, with the exception of those of potassium, sodium, and ammonium, are insoluble in water. Hence, on the addition of ordinary soap to hard waters, which contain soluble calcium and magnesium salts, insoluble calcium and magnesium oleates are precipitated in the form of curds, and no lather can be obtained until sufficient soap has been employed to precipitate the whole of the calcium and magnesium salts present. Curd soap being made from animal fat—chiefly tallow—which contains a large proportion of stearin, consists chiefly of sodium stearate.

Almond Oil.—This is very similar in composition to olive oil. It contains usually a rather larger proportion of olein (as is indicated by its higher iodine-absorption), but no chlorophyll.

Olive Oil.—This consists chiefly of olein with some palmitin and stearin. Free fatty acid is nearly always present in small quantity, even in the finest qualities. In inferior or old and rancid oil the proportion is often very high. Sophistication with cotton-seed oil is very common, and is detected by Becchi's test. This depends upon the production of a brown or black colour, according to the extent of adulteration, when the oil is treated with a dilute alcoholic solution of silver nitrate acidulated with nitric acid. The green colour of fresh olive oil is due to chlorophyll.

Castor Oil.—This is distinguished physically by its viscosity and high density, as well as by its solubility in alcohol and insolubility in petroleum ether. Its chief constituent is ricinolein, the ricinoleic acid of which contains an atom of oxygen more than oleic acid, but like this latter it absorbs two atoms of iodine per molecule.

(*To be continued.*)

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THE CHEMIST'S DISCRETION.

Discretion is a virtue that no one is the worse for possessing in a fairly advanced degree, and business men in particular are not likely to prosper without it. Some, however, require to exercise more discretion than others, and of chemists it may truly be said that they need a double measure. Not even medical men nor lawyers feel the necessity of assuming this saving virtue to a greater extent than the chemist and druggist, whose range of activity is wider whilst his responsibility is at least as great. His sympathetic co-operation is needed by the physician or surgeon who would attain the best possible results from the course of treatment adopted, and at the same time he stands between the patient and the risk of injury or even death. That he does not invariably act as an intermediary between doctor and patient is his and their misfortune, not his fault. At his best he stands prepared to bring the latest outcome of chemical and botanical science to bear upon the problem of warding off or combating disease, and at his worst he is probably seldom incapable of rising to the occasion if he be offered the opportunity that should be his as a matter of right. In other words, the chemist and druggist of to-day is what the medical profession and the general public have helped to make him. Let them but intimate the manner in which he may best assist them and make it worth his while to do so, and there is not the least doubt that he will surpass himself in the attempt to attain the desired goal.

But the chemist must be treated in the first place as a human being and provided with the means of livelihood; like most others of his species, he desires a moderate degree of comfort in life, such as can perhaps best be attained in his particular case by enabling him to support his pretension to be regarded as a professional man. This claim is as fully justified in his case as in many others, and is allowed without question in France, Germany, Austria, and other countries of importance. In Great Britain, unfortunately, the chemist, in arranging his affairs, has been hampered from the outset by the provision he has been compelled to make for a large number of what may best be described as the pharmaceutically unfit. But he is gradually outstripping such hindrances to progress, and it is undeniable that his present-day training, if fully taken advantage of, quite entitles him to special consideration at the hands of the public. In the interests of this public the State has protected the chemist to an extremely limited extent, but the public demands its pound of flesh in return, in the way of protecting its own safety. The modern tendency appears to be too much in the direction of throwing the onus of this protection entirely upon the chemist, but though he is both fit and prepared to accept that obligation, he has an impression that he ought not to be expected to give all and receive nothing but responsibility and the care which kills. To put the matter briefly, in regard to certain substances scheduled as poisons, which the chemist only may sell, he is expected, from the popular point of view, to overflow with gratitude for this small mercy, and to take care that no one hurts himself or anyone else with those poisons. And, furthermore, he must not charge proportionately for what he sells. Now, the chemist does not complain so greatly as he might at the extent of what is required of him in this somewhat one-sided bargain, even though he spends much substance and many weary hours in fitting himself for acting in a capacity he may never be enabled to fill with satisfaction to himself. What he does justly complain of is that he may be ousted from his position without the slightest consideration on the part of the public, if but seven unqualified individuals unite forces and offer to do at a lower rate what he, as a qualified man, can scarcely afford to do at the higher one. In spite of this and other drawbacks the chemist is expected to exercise discretion such as is never possessed by ordinary mortals; he must prevent suicides, foresee and frustrate possible accidents, do all he can in the public interest, and yet be prepared to be openly snubbed for not having done more, even to achieving the impossible.

These reflections are induced by the increasing number of allusions by coroners, and juries, to the necessity of taking further precautions in regard to the sale of poisons than are now required by the law. More often than not the substance in question is not a scheduled poison—as in the case of carbolic acid—and the chemist has probably done much more than the law requires of him by carefully labelling the article and warning the purchaser of its lethal properties. Or again, as frequently happens, the seller has no right to the title of chemist, yet chemists are reflected upon in the remarks of coroners, the verdicts of juries, and the comments of newspaper writers, apparently on the erroneous assumption that the articles sold are never supplied by any but chemists. It is quite right that the chemist should be discreet in an inordinate degree, and it is even reasonable to expect that he should take precautions no other tradesman is required to take. But, in return for this, he is entitled to public support. He exists as a specialist in the public interest, pure and simple, for in some other walk of life he would almost beyond doubt be infinitely better remunerated for his peculiar services. That pharmacy has been incorrectly assumed to be the mere handmaid of medicine is no sufficient reason for treating the pharmacist as a sort of superior servant, if so high as that, and before coroners, juries, and newspapers condemn him unheard it would be as well if they assured themselves of his complicity in matters we all deplore. The public must take care of itself in at least an equal degree with the chemist, and whilst sharing the responsibility it may be well also for the public to secure to the chemist a just remuneration for his services. He does not ask much, taking it in the gross, though as a rule he gets much less; and at the very least he has a right to expect the public to assist him in fulfilling duties which are none too light or too well-paid at the best of times.

ANNOTATIONS.

Once Again a Coroner's Jury has appended a rider to its verdict, to the effect that some further legislative restrictions should be placed on the sale of poisons, observes the *Morning*, and it is also pointed out that hardly a case of poisoning or of suicide by poison comes into court without this recommendation being made by the jury, but yet nothing is done. It is very sensibly remarked that it cannot be held that injury would be done to anyone were the sale of poisons made more difficult to the general public, as poisons, even when legitimately employed, are very dangerous in incompetent hands, and accidents are always liable to occur from their use. At the same time it is using somewhat exaggerated language to assert that at present anyone can buy a quantity of virulent poison sufficient to make away with a regiment with but very few and insufficient formalities, and it is questionable if the British public will take kindly to the suggestion that strychnine or arsenic, and even laudanum, should only be allowed in the hands of duly qualified practitioners. It is unfortunately too true that hardly a week passes without some case of poisoning being reported in the London or provincial papers, but it is doubtful whether a short Act would put an end to the great risk caused by the indiscriminate sale of dangerous drugs. Our contemporary assumes that "there should be no opposition to such an enactment, on the necessity for which all men seem to be agreed. But it is just this consensus of opinion which is the stumbling block. No measure is ever passed unless it is strongly opposed by one party or other in Parliament, so that in all probability juries will go on adding these riders to the end of time without any result."

Olive Oil is a Drug if sold by a chemist, but not if retailed by a grocer. So Mr. D'Eyncourt, at the North London Police Court. The justice of this discrimination is not quite apparent, but the fact remains. The Islington Vestry had prosecuted a shopkeeper, of Newington Green Road, for selling as olive oil an article which was found to be nothing but cotton-seed oil, and the case was argued at considerable length before Mr. D'Eyncourt, adjourned to enable the defence to show that olive oil is not a drug, and again argued. Dr. Harris, medical officer and public analyst of Islington, was called to state that olive oil is essentially a drug, as it is a component part of fourteen different medicines mentioned in the British Pharmacopœia, and, in its pure state, is administered as a laxative to infants. He granted that the oil is a food as well as a drug, and did not dispute the fact that it is extensively used as a salad dressing. The solicitor for the Vestry said the object of the prosecution was not in the interests of people who bought the oil as a salad dressing, but in the interests of those who might want it for use as a drug—for internal use, or for an external burn. Most people, however, would probably be more particular about having pure oil in a salad dressing than in a liniment. Finally, Mr. D'Eyncourt, in deciding the case against the Vestry, said that in the face of the evidence of the medical officer, and the fact that the Vestry had pinned themselves to the oil being a drug, he must hold that it was a food and not a drug, more especially considering that it was bought at a grocer's shop. If a medical gentleman wanted to make up a prescription it was to be hoped he would go to a druggist, and not purchase a fivepenny bottle at a grocer's. The summons was therefore dismissed, with a guinea costs. Let us hope that medical gentlemen and their patients will act upon Mr. D'Eyncourt's hint, and buy drugs and medicines from chemists only.

The Grocers of Merthyr Tydvil assembled last week to form an association for the district, and the proceedings were enlivened by the Secretary of the Grocers' Federation reading a letter he had received from a firm of grocers at Hull. The writer complained bitterly that his firm had been called upon by the Pharmaceutical Society's solicitors to pay two penalties of five pounds each for selling poison contrary to the provisions of the Pharmacy Act. The poisons were contained in two proprietary preparations, and the grocers acknowledged that they stocked and had sold them. So clear were the facts, indeed, that their own solicitor advised them to pay the penalties without delay, to avoid worse befalling them. The grievances mainly urged were that the holders of a licence to sell dutiable medicines should have been fined for dealing in certain articles of that description, and that "a law which was designed to protect the people has been twisted in an unscrupulous way to defend a class of traders who are already too much protected monopolists."

Little Sympathy was Shown, curiously enough, with this firm, which claimed that as it possessed a "patent medicine licence," it had "a right to sell all patent medicines." For, the Secretary of the Grocers' Federation pointed out that had the writer of the letter of complaint read the trade papers diligently, he would have known that the law on the point in question had been clearly defined some years ago. Moreover, the proprietors of one of the articles referred to had sent out special notices, warning others than registered chemists that they were not legally entitled to sell the same. The reason for writing the letter appeared to be to warn grocers against joining the P.A.T.A, as it concluded with the remark that "if the official body of the chemists is going to persecute grocers like this, then we, for one firm, say that the pet scheme of the chemists to increase their revenue in another form, namely, the Proprietary Articles Trade Association, will be fought tooth and nail." So far as can be judged grocers as a class do not accord with this view of the matter, but it is to be feared that the lack of logic displayed by the writer of the letter will prevent him ever becoming a convert to the latest anti-cutting scheme.

The Conversion of Silver into Gold, by chemical or physica means, should afford a simple means of solving the problem of bimetallism, though one hardly expects to find anyone claiming the ability to effect such conversion at this time of day. But, as stated in these pages ten months ago, Dr. Stephen H. Emmens, of New York, is responsible for a revival of the transmutation idea, the facts being that Dr. Emmens claims to have produced from Mexican silver dollars a metallic substance, "argentaurum," which possesses the physical properties of gold. In a recent letter to the *Chemical News* he states that last March he sent the halves of four Mexican dollars to the United States Assay Office, New York, to have them tested for gold. No gold was found, however, by the official assayer. The remaining halves of the same dollars were then subjected to Dr. Emmens' process, without the addition of gold in any form, and "the result was a relatively considerable production of a metal which answered to all the usual tests of gold, and was subsequently purchased as gold by the U.S. Assay Office." A specimen of the so-called "argentaurum" has been sent to Sir William Crookes, and, after examining it in the spectrograph, he declares it to consist of gold with a fair proportion of silver and a little copper. No lines belonging to any other known element, and no unknown lines, were detected. Dr. Emmens suggests that either some of the silver or copper in the dollars has been changed into gold or its simulacrum by his treatment, or that the gold already existed in the dollars and was separated by that treatment, though

not by the process in use at the U.S. Assay Office. But there are other probabilities, and many links are required to complete the chain of evidence needed to convince a sceptical world. Granted that silver dollars were operated upon, and granted equally that the metal examined by Sir William Crookes was gold, we yet remain ignorant of the intermediate stages in the transaction.

The Deterioration of Paper is a subject of primary importance in view of the desirability of preserving permanent records, and it is well-known that the material employed for many books and periodicals is, perhaps fortunately in some cases, not of such a nature that it may be expected to survive constant handling during many years. Care ought to be exercised, therefore, in selecting paper for printed matter that may require to be frequently referred to during a prolonged period. The Council of the Society of Arts is awake to these facts, and has appointed a Committee to investigate the causes of the deterioration of paper. Pharmacy is represented on this Committee by Mr. Michael Carteighe, the other members being Sir Owen Tudor Burne, Sir William Anderson, Mr. C. F. Cross, Sir John Evans, Dr. Richard Gamett, Dr. Hugo Müller, Dr. W. J. Russell, Mr. W. L. Thomas, Professor J. M. Thomson, Mr. Henry R. Tedder, Dr. Quirin Wirtz, and Sir Henry Trueman Wood. This is a goodly company, and the result of the investigations to be pursued should be of world-wide interest.

The Committee on Indexing Chemical Literature has presented its fifteenth annual report, which states that a bibliography of the metals of the platinum group, 1748-1896, by Professor James Lewis Howe, and a review and bibliography of metallic carbides, by Mr. J. A. Mathews, are ready for publication. A bibliography of basic slags has also been completed by Mr. Karl T. McElroy. The second edition of Dr. H. Carrington Bolton's catalogue of scientific and technical periodicals, 1665-1895, which contains 8603 titles, will shortly be published, and a supplement to the select bibliography of chemistry, by Dr. Bolton, has been completed. The latter contains about 9000 titles, including those of many chemical dissertations, and is brought down to the end of the year 1896. Progress is also being made with indexes to the literature of thorium and tantalum, a bibliography of oxygen, and a bibliography of the constitution of morphine and related alkaloids.

A Plea for the Prison Dispenser, addressed to the Editor of the *Daily Graphic*, is an admirable statement of the case for a most efficient body of officers in the public services. To quote from this letter, the grievances of prison dispensers are, briefly, small pay, insufficient allowance for quarters, insufficient leave, and the fact that they are compelled to wear the same uniform as chief warders, whereas other officials engaged in clerical rather than disciplinary duties are granted a cash allowance in lieu thereof. As regards the duties of the prison dispenser, they are much more important and varied than those of a dispenser in a metropolitan hospital, for, "in addition to dispensing medicine for Bill Sikes, he has custody of the medical comforts and surgical appliances, assists the medical officer in his operations, performs important clerical work of a medical nature, and acts as a sort of clinical assistant to the doctor when visiting the hospital wards. In addition to these multifarious duties he conducts chemical analyses under the supervision of the visiting surgeon, extracts teeth, and even acts as nurse in the wards when necessary." Add to this that he is on duty from nine to six daily and every other Sunday, sleeps in the hospital alternate nights, and is only allowed one afternoon a fortnight for recreation and sixteen days' leave a year, and there is no question of the desirability of improving his position. This seems the more called for, inasmuch as the maximum rate of pay is only £125 a year, with an allowance of £15 a year for quarters, whereas naval dispensers and post office pharmacists are paid at the rate of £225 a year. Finally, prison dispensers have no prospects of promotion.

The Action of Light on Yeasts has occupied the attention of W. Lohmann, who finds that exposure to electric light of more than eleven thousand candle power exerts a distinctly retarding action on the multiplication of the cells of *Saccharomyces cerevisiæ*. But the sun's rays are even more detrimental in their effects, for after several hours' direct and uninterrupted exposure to those rays during May and June the cells were entirely destroyed. A moderate amount of light produces no such effect, multiplication taking place as vigorously in that case as in the dark. According to *Nature* a microscopic examination revealed a striking morphological difference between cells kept in the dark and others which had been insolated. The former preserved a perfectly normal appearance, but the cells acted upon by the sun's rays looked shrunken, exhibited irregular contours, and the plasma was drawn together in lumps, chiefly in the direction of the poles of the cells.

Various Species of Cypripedium have an irritant action on the human skin, and the effect is shown by Mr. D. T. MacDougal, in the "Proceedings of the Indiana Academy of Science," to result from contact with glandular hairs on the leaves. Those hairs bear a secretion on the outside of their globular tips, and that is apparently the cause of irritation. The irritant action increases with the development of the plant. and is most marked during the formation of the seed-pod, from which it is inferred that this is a device for the protection of the reproductive bodies during the period between pollination and maturity of the seeds. As described in *Nature*, persons experimented upon by having the leaves rubbed lightly upon the skin of the wrist, arm, face, or ear, were usually "poisoned" in a degree corresponding to the manner of application, and in a time varying from ten to twelve hours. The symptoms manifested are not specified.

The British Association Meeting in Canada is further commented on by a Toronto correspondent in this week's Journal. He complains, by the way, that the press accommodation has been most unsatisfactory, and in support of his complaint encloses a cutting from a newspaper which is described as being "always the last to complain of anything like discourtesy." In the newspaper referred to the hope is expressed that when next the Association meets on that side of the Atlantic some improvement may be made in the press arrangements. The permanent Secretaries of the Association, it is suggested, do not understand or do not fully appreciate the difficulties of properly reporting proceedings so highly technical as those of the Association, and have not always displayed the consideration that might have been expected. That, indeed, is said to be a most notable characteristic of the more eminent members of the Association. The work of the press appears to have been done under somewhat adverse conditions on that account, and the local officials are also alleged to be not entirely blameless in the matter. In conclusion the writer says: "One is almost driven to the conclusion that snobbery is not altogether extinct among the paid officers of the Association and some of the members of the local committee who have had dealings with the press."

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 204.)

Oberdörffer (Alcohol in Essential Oils).—Expose the oil under a bell-jar, together with a watch-glass containing platinum black, over which is a strip of moistened blue litmus paper. The paper is reddened by the acetic acid formed if alcohol be present.

Obermeier (Indican).—Treat urine with lead acetate, filter, and shake the clear filtrate with a 0·5 per cent. solution of ferric chloride in fuming hydrochloric acid (sp. gr. 1·19). Then extract with chloroform, which will be coloured blue if indican be present.

Ogston (Chloral Hydrate).—The addition of ammonium sulphydrate to a solution containing chloral hydrate causes a brown coloration, and on heating a red precipitate is formed.

Ohlmacher (Formaldehyde Staining).—Formalin in a 2 to 4 per cent. solution is used as a mordant for tar colours. The tissues may be mordanted separately by treatment for 1 minute or longer, or the formalin may be added to the stain. Dissolve 1 Gm. of fuchsine in 10 C.c. of absolute alcohol, and add to 100 C.c. of 4 per cent. formalin solution. Or, add saturated alcoholic solution of gentian violet or methyl violet 5 B. to the formalin solution, in the proportion of 1:10. In the case of methylene blue, dissolve 1 Gm. in 100 C.c. of the formalin solution. Sections stain in half a minute, and are said to resist alcohol much more than if formalin were not used.

Oliver (Albumin and Sugar).—Filter paper is saturated with well-known reagents for albumin and sugar in urine. For albumin: picric and citric acids; sodium tungstate and citric acid; potassium mercuric iodide and citric acid; potassium ferrocyanide and citric acid, separate. For sugar: indigo carmine and sodium carbonate, separate. See Geissler.

Oppitz (Silver Staining).—Reduction is very rapidly affected by placing the preparations for 2 or 3 minutes in a 0·25 to 0·5 per cent. solution of chloride of tin.

Opwyrda (Turmeric in Rhubarb).—An alcoholic solution of boric acid produces a red colour with turmeric, which changes to greenish-black on the addition of solution of potash.

Orlowski (Qualitative Analysis).—Use ammonium thiosulphate instead of hydrogen sulphide as a group reagent. See *Journ. Chem. Soc.* (Abstracts), 1884, p. 363.

Orth (Lithium Carmine).—Digest 2·5 Gm. of carmine in 100 C.c. of saturated aqueous solution of lithium carbanate (1 Gm. in 70 C c. of distilled water), and filter.

Orth (Methyl Violet Stain).—Soak sections in water, then place in solution of 1 part of aniline violet in 300 parts of acetic acid. Do not wash, but simply drain, and mount in solution of 1 part of potassium acetate in 2 parts of water.

Oser and Kalmann (Alkalimetry).—The product of the action of potassium permanganate and sulphuric acid on gallic acid is fused with caustic potash. The red colour of the compound thus obtained is changed to yellow by acids.

O'Shaughnessy (Opium).—On adding a persalt of iron to a solution containing opium the red meconate of iron is formed. The colour of this is not affected by alkaline solutions, whereas sulphocyanide of iron is decolorised when similarly treated.

Ost (Sugar).—A solution containing 23·5 Gm. of copper sulphate, 250 Gm. of sodium carbonate, and 100 Gm. of potassium bicarbonate per litre is used for the determination of sugar. Compare Soldaini's solution.

Oster (Arsenic in Hydrochloric Acid).—On boiling the acid with pure tinfoil, a brown stain is formed on the metal, if arsenic be present.

Otto (Fehling's Solution).—In this modification a clear solution is formed by adding a sufficiency of caustic soda solution to a solution of 1 part of copper sulphate and 3 parts of tartaric acid in 20 parts of water.

Otto (Morphine).—On adding hydrochloric acid, ferric chloride, and potassium ferrocyanide to a morphine solution, a precipitate of Prussian blue is formed.

Otto (Picrotoxine).—The yellow solution of the base in concentrated sulphuric acid shows a reddish-brown coloration at the zone of contact with a drop of potassium bichromate solution, and when the solutions mix a green coloration is produced.

Otto (Strychnine).—The alkaloid gives a violet colour with sulphuric acid and potassium bichromate.

Otto-Stas (Alkaloids).—Extract with alcohol containing tartaric or oxalic acid, then use alcohol and ether. See *Am. Journ. Pharm.*, 1874, p. 120.

Oudemans (Quinamine).—When a drop of the liquid containing quinamine is allowed to flow on the surface of sulphuric acid containing a trace of nitric acid, a chestnut-brown to orange-red colour is produced, which changes to purple on adding water.

Overbeck (Cotton in Woollen).—Soak the fabric in an aqueous solution of alloxantin (1 in 10), and after drying expose to ammonia vapour and rinse in water. Woollen material is coloured crimson, cotton remains white.

Overbeck (Iodine).—A blue colour is produced on passing a current of hyponitrous acid gas into the liquid, if the latter has previously been mixed with starch paste.

Overton (Bleaching Osmic Objects).—Bleaching is completed in a few minutes in a mixture of 1 part of commercial hydrogen peroxide with 10 to 25 parts of 70 per cent. alcohol.

Overton (Iodine Fixing).—Heat iodine in a test-tube till vapour is given off, then incline the tube so that the vapour may flow over the objects arranged on a slide. Afterwards warm the slide to about 40° C. for 2 or 3 minutes, in order to drive off the iodine, prior to mounting or further treatment.

Pacini (Preservative Solutions).—These are employed to preserve microscopic sections: (1) Mix 1 part of mercuric chloride, 2 parts of sodium chloride, 13 parts of glycerin (25° B.), and 113 parts of water; (2) Mix 1 part of mercuric chloride, 2 parts of acetic acid, 43 parts of glycerin (25° B.), and 275 parts of water.

Pagel (Phosphorus in Phosphoric Acid).—A white opalescence or precipitate is formed upon warming the acid with an equal volume of mercuric chloride solution (1 : 60) to about 180° C.

Pagenstecher (Hydrocyanic Acid).—Filter paper is soaked in freshly-prepared tincture of guaiacum (3 to 4 per cent.), dried, and moistened with copper sulphate solution (0·25 per cent.). Hydrocyanic acid colours the prepared paper blue.

Pal (Bleaching Solution).—Dissolve 1 Gm. each of oxalic acid and potassium sulphite in 200 C.c. of distilled water.

Pal (Hæmatoxylin Method).—Proceed at first as in Weigert's process for nerve fibre, omitting the copper bath, and stain in Pal's hæmatoxylin solution (see below) for 5 or 6 hours. Then wash the sections in distilled water (containing a trace of lithium carbonate if the sections are not deep blue), next treat for 15 to 30 seconds with a 0·25 per cent. potassium permanganate solution, rinse in water, and decolorise in Pal's bleaching solution. (If black spots appear replace in the permanganate solution, again bleach, and wash for 15 minutes in water.) The grey substance of the sections is decolorised in a few seconds; the sections should then be well washed out, and may be double-stained with picrocarmine or acetic acid carmine (see Schneider), Magdala red, or eosine. The nuclei may be stained with alum carmine. Finally dehydrate, clear, and mount.

Pal (Hæmatoxylin Stain).—Dissolve 0·75 Gm. of hæmatoxylin in 90 C.c. of distilled water and 10 C.c. of absolute alcohol. Just before use add saturated solution of lithium carbonate in the proportion of 3 drops to each 10 C.c. of hæmatoxylin solution. See Weigert.

Paladino (Palladium Iodide Stain).—Pieces of nerve fibre hardened in bichromate, chromic acid, or corrosive sublimate, and not more than 5 to 8 Mm. thick, are immersed for 2 days in a large quantity of 0·1 per cent. palladium chloride solution (prepared by dissolving 10 Gm. of the salt in 1 litre of water, with the aid of 4 to 6 drops of hydrochloric acid, and diluting as required). Next treat for 24 hours with a 1 per cent. potassium iodide solution, dehydrate, imbed if necessary in paraffin by the chloroform method, and mount in balsam.

Pal-Exner (Osmic Acid Method).—Spinal cord or brain in 0·25 inch cubes is immersed in 0·5 per cent. osmic acid solution for 2 days, the solution being changed each day; then wash in water, transfer to absolute alcohol, and imbed in celloidin or paraffin. Place sections as cut in glycerin, then wash in water, treat with potassium permanganate and Pal's solution, as in Pal's hæmatoxylin

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

method, counter-stain with carmine, dehydrate, clear, and mount in balsam.

Palm (Alkaloids).—(1) Sodium sulphantimoniate gives milky to yellow or red-brown precipitates; (2) Lead chloride dissolved in sodium chloride solution gives colourless crystalline precipitates. See *Chem. News*, 1883, p. 65.

Palm (Nicotine).—On heating gently with a little hydrochloric acid, a violet colour is produced, which changes to orange-red on the addition of nitric acid.

Palm (Picrotoxine).—An insoluble salt is formed by treatment with an ammoniacal solution of basic lead acetate.

Paneth (Weigert's Stain).—In this modification 1 part of commercial extract of logwood is dissolved in 90 parts of water and 10 parts of alcohol. Then filter and add 8 drops of concentrated solution of lithium carbonate for each 100 C.c. Sections require from 18 to 24 hours in this stain at the normal temperature.

Panum (Albumin).—A coagulum is formed on boiling a liquid containing albumin (urine) with an equal volume of a saturated solution of sodium sulphate or chloride.

Papasogli (Cane Sugar).—See Reich's reaction.

Papasogli (Cobalt).—A blood-red coloration is produced on adding a solution of potassium cyanide till the precipitate formed is re-dissolved, then adding a few drops of yellow ammonium sulphydrate.

Papasogli (Nickel).—On dissolving nickel in a solution of potassium cyanide and immersing a strip of zinc, the solution turns red, and the zinc is covered with a black deposit.

Papasogli and **Poli** (Citric, Succinic, and Malic Acids).—On precipitating with calcium chloride, decomposing with dilute sulphuric acid, and boiling the filtrate with potassium bichromate, a yellow colour indicates succinic acid; green, without odour, citric acid; green, with fruity odour, malic acid.

Papasogli and **Poli** (Malic Acid).—An odour of over-ripe fruit is given off when malic acid is heated with potassium bichromate and sulphuric acid.

Parietti (Extraneous Organisms Among Typhoid Fever Bacilli).—To prevent typhoid fever bacilli being crowded out by extraneous organisms, add to the tubes of broth to be employed about 5 drops of a mixture of sterilised water, 100 parts; hydrochloric acid, 4 parts; and carbolic acid, 5 parts.

Parker (Methylene Blue).—This stain is fixed in sections or pieces of tissue, in the form of a finely grained purplish precipitate, by cold concentrated aqueous mercuric chloride solution. Next dehydrate the preparations in a solution of 1 Gm. of mercuric chloride in 5 C.c. of methylal, then treat with a mixture of 2 parts of xylol, 1 part of methylal, and 1 part of the dehydrating mixture. Subsequently leave in pure xylol for 4 or 5 days to remove all trace of mercuric chloride, and finally mount sections in balsam or imbed tissue in paraffin prior to cutting sections. Fix sections to slide with Schällibaum's collodion.

Parker (Turpentine Cement).—Dissolve true Venice turpentine in sufficient alcohol to enable it to pass through a filter, and after filtering the mixture evaporate to about three-fourths its original bulk, or until a little becomes hard and breaks with a vitreous fracture when dropped into cold water. This cement is useful for closing glycerin mounts with square covers. After clearing off superfluous glycerin apply the cement with a piece of copper wire bent at right angles. This can readily be heated in a spirit lamp flame, and after plunging into the cement is brought down flat on the slide near the edge of the cover. The cement distributes itself and hardens immediately, so that the slide can be cleaned as soon as the four sides are finished. See Csokor.

Parker and Floyd (Formaldehyde for Hardening).—A mixture of 2 volumes of formol (formalin) with 98 volumes of water is said to harden a sheep's brain in 7 to 10 days. To obviate the tendency to increase the volume of the mass, mix 6 volumes of 95 per cent. alcohol with 4 volumes of the above mixture. Brains may be kept for months in the mixture.

Partsch (Cochineal Alum-Carmine).—Boil cochineal for some time with a 5 per cent. alum solution, filter, and add a little salicylic acid to preserve from mould.

Pasteur (Cinchona Alkaloids).—These bases are distinguished by their action on polarised light. See *Pharm. Journ.*, 1857-58, p. 463.

Pasteur and **Wurtz** (Fuchsine in Wine).—Add baryta water till the wine is faintly alkaline, then filter, acidify with acetic acid, and shake out the fuchsine with fusel oil.

Patrouillard (Arsenic in Alkaline Salts).—Boil the suspected salt with 4 per cent. of oxalic acid, and identify the arsenious acid by some recognised test.

Paul (Biliary Colouring Matter).—Urine containing biliary pigments is coloured blood-red by methyl violet, whereas normal urine retains the colour of the dye unchanged.

Paul (Cinchonidine in Quinine Sulphate).—Dissolve 5 grammes of the sample in 150 C.c. of boiling water. Cool and filter; press out as dry as possible, re-dissolve the crystals, and again crystallise. Filter, mix the filtrates, and add just enough ether to give a visible layer after shaking, then add a slight excess of ammonia, and let stand overnight in a well-corked flask. Collect the crystalline cinchonidine on a tared filter, dry and weigh.

Paul and **Cownley** (Cephaeline).—Dissolve the ipecacuanha alkaloids in dilute hydrochloric acid; add caustic soda, and shake with ether. Separate the ethereal layer containing the emetine alkaloid, then acidify the soda solution and shake with ether and ammonium hydrate. The cephaeline will crystallise out from the ether in a few hours in a mass of white light crystals.

Paul and **Cownley** (Cephaeline and Emetine).—To determine these bases mix 50 Gm. of the powdered root with 10 Gm. of lime, moisten with water and extract by percolation with amylic alcohol. The alkaloids are extracted from this percolate by shaking out with dilute sulphuric acid. The acid solution is then mixed with excess of ammonia and shaken with ether. The separated ethereal solution is evaporated, and the residue titrated with semi-normal hydrochloric acid, the number of C.c. required being noted. The solution of hydrochlorides is then mixed with excess of caustic soda solution, washed out with ether, the separated ether again treated with acid and with caustic soda, and the process repeated until no precipitate is formed on adding ammonium chloride to the alkaline liquor. The ether solution of emetine is then evaporated and the residue titrated with semi-normal acid, the alkaloid being expressed as emetine. From the alkaline liquors cephaeline is precipitated by adding ammonium chloride and shaking out with ether, the residue of the ethereal solution being titrated as before. The sum of the two titrations should approximate to that of the two alkaloids determined together.

Paul and **Cownley** (Cupreine in Cinchona Alkaloids).—Dissolve the mixed alkaloids in weak acid, and agitate with ether and soda; separate the ether, then acidify the soda liquor, and shake with ether and ammonium hydrate. Cupreine if present will separate in the form of heavy crystals in about 12 to 24 hours.

Pavy (Albumin).—Sodium ferrocyanide and citric acid are made into pellets which, when dissolved, produce a white cloudiness in urine containing albumin. See *Am. Journ. Pharm.*, 1883, p. 200.

Pavy (Glucose).—Dissolve 4·158 Gm. of crystallised copper sulphate, 20·4 Gm. of potassium-sodium tartrate, and 20·4 Gm. of potassium hydrate in water, add 300 C.c. of ammonia solution (sp. gr. 0·88), and dilute with water to 1 litre. Each 10 C.c. of this solution represents 0·005 Gm. of Glucose. The solution becomes colourless when the whole of the cupric salt has been reduced to the cuprous condition. Compare Fehling's solution. Pavy's cupric test pellets consist of copper sulphate, potassium-sodium tartrate, and potassium hydrate in the proper proportions.

Pegna (Nitrobenzol in Almond Oil).—Mix the oil with alcohol, add some potash solution and a few drops of ferric chloride solution, then distil after standing for a few hours. If nitrobenzol be present in the oil, a dark colour will be manifested on pouring the distillate on caustic potash and heating, whilst on adding chlorinated lime solution the colour will change to violet.

Peligot (Glucose).—This test depends upon the solubility of lime in the presence of glucose. The latter is destroyed on boiling, and on making two assays of lime, one with the cold solution of glucose, the other with the same solution after boiling, the difference between the two assays will represent glucose.

Pellagri (Alkalimetry).—Prepare a solution of phyllocyanin and add sufficient of any acid to turn it purple. Alkalies change the colour to green, then yellow, and finally almost black.

(*To be continued.*)

The British Association for the Advancement of Science.

MEETING AT TORONTO.

THURSDAY, AUGUST 19.

THE legend, "This is our busy day," was not posted in any conspicuous spot at University College to-day, yet there was not lacking evidence that such was the case with the scientists—activity everywhere. Long before 10 o'clock, the hour of meeting, the corridors and reception rooms were crowded with members comparing notes and exchanging opinions. When the Sections got to work in the different buildings surrounding University College an animated scene was presented as the members passed from one to the other, seeking that on which their interest centred.

How limited human knowledge is, and how circumscribed its sphere is clearly illustrated in listening to papers read by men whose whole lives have been given to research on a single line of science, and hear them declare pathetically and with startling unanimity that they "have been able to do so little." Nature preserves her secrets and hides her mysteries so cunningly as frequently to baffle the most vigilant searchers. In every section one is struck with the preponderance of young men, whether presidents of sections, authors of papers, or leaders in discussions.

Most of the presidential addresses (see *ante*, p. 222, *et seq.*) were delivered to-day, Canadian topics being kept well to the front and receiving, perhaps, more than their proportion of attention. The Geological Section, under Dr. Dawson, and Geography, under President Scott Keltie, confined their attention almost exclusively to Canada. Dr. Dawson gave a brief history of geological research in Canada; diagrams showing the distribution of the various formations were exhibited, and were carefully followed by the company. Many of the members for the first time realised the enormous extent of the gold, copper, and nickel-bearing regions of the Dominion. In view of the interest shown all over the civilised world just now in Canadian goldfields, the proceedings of the Geological Section were extremely timely and well conceived. One of the chief events of the day was the lecture on Kafiristan by Sir George Robertson, the hero of Chitral. Of the Kafirs, whose territory adjoins the state of Chitral, Sir George spoke with the knowledge born of ripe experience. His lecture gave one an idea of how easy it is for any firebrand in these highlands of India to set the frontier in a flame.

The devotees of pure mathematics worshipped at the shrine where Professor Forsyth officiated. Professor Ramsay, in the Chemical Section, told us of the probable existence of a new gas, in the search for which the haystack has been found too large and the needle too inconspicuous. Professor W. W. Andrews proposed a change in our methods of teaching chemical facts, which was discussed under four headings. It was an attempt to find the path of least resistance for the student. He proposed first a better organisation of the facts on lines suggested by the natural classification of the elements. The periodic law should be introduced as soon as an idea of difference of reacting mass and some knowledge of the difference between acid and alkaline properties has been attained. Tables and diagrams showed how the presentation of many groups of facts might be simplified. He argued that we should begin the study with the heavy metals, already somewhat familiar to the students, and yielding very marked reactions, instead of introducing at first the odourless, tasteless, invisible, and almost weightless gases. Second, a larger use of the ideas and measurements of physics, as many of these can be transferred at once to the field of chemistry. Third, simplification of apparatus permitting more thorough-going research methods. A description was given of the plaster of Paris method in blow-pipe work, and it was shown that without gas or water piping, pneumatic troughs, test-tubes, stills, retorts or special desks and tables a very wide and fruitful elementary course could be given. Thirty of the elements could be studied, and many of their compounds formed with ease. It was shown that there was no loss of time in preparing for work, but that two minutes after a class enters a room they may all be at work and noting their observations in their note-book. "In no other form of laboratory work do the compelled acts of judgment follow each other so rapidly." Fourth, a method of writing chemical equations was described, which noted the changes of the states of aggregation during a chemical reaction and the associated energy shifts.

Mr. G. F. Deacon, the great hydraulic engineer in Section G, or mechanical science, spoke on the methods which should be adopted in training men to be mechanical engineers. Professor Michael Foster, in the Physiology Section, departed from the customary course at the present time of indulging in a Victorian era retrospect, and confined himself to the happenings of the thirteen years which had slipped away since the scientists met in Canada before. Zoology as presented by Professor Miall, is a fascinating study. Touched by his skilful hand it reveals points of interest previously hidden from the eye and mind of the uninitiated.

FRIDAY, AUGUST 20.

In the Botanical Section, the delivery of the presidential address, by Dr. H. Marshall Ward, was followed by the reading of the following papers:— "On the species of Picea in North-Eastern America," by Professor Penhallow; "Descriptions and Measurements of Coniferous Trees, grown from Yosemite Valley seed," by G. P. Hughes; "Contribution to the Life History of Ranunculus," by Professor Coulter; "Distribution of Nebraska Trees," by Professor Bessey; "Vegetation of the Region of the Prairie Province," by Roscoe Pound and F. E. Clements. "The Zonal Constitution and Distribution of Plant Formations," by F. E. Clements; "The Transition Region of the Caryophyllales," by F. E. Clements; "Note on Pleurococcus," by Dorothea F. M. Pertz. Chemistry to-day was highly technical, papers read were:— "Helium," by Professor Ramsay; "Contributions to the Chemistry of the Rare Earth Metals," by Professor Brauner; "The Atomic Weight of Thorium," by Professor Brauner; "The Atomic Weight of Cobalt and Nickel," by Professor T. W. Richards; "The Occurrence of Hydrogen in Minerals," by M. Travers; "Spectroscopic Examination of Minerals and Metals," by Professor W. N. Hartley and H. Ramage.

Masterly and brilliant are the terms descriptive of the address delivered by Sir William Turner, President of the Anthropological Section, "Some of the Distinctive Characteristics of the Human Structure" being the subject discussed. Professor Anderson Stuart dealt with "The Utility of the Spinal Curves in Man," Professor A. Macalister followed with "Notes on the Brain of Some Australian Natives," and Dr. W. J. McGee's paper on "Some Uses of Trepanning in Early American Skulls" was profusely illustrated and followed with interest by the audience.

"Oysters and the Oyster Question" was discussed in the Zoological Section by Professor W. A. Herding, of Liverpool, the bearing of oysters on the spread of disease being the main topic. There are three ways in which disease may be communicated to the consumer through oysters. The first is by the presence in the oyster of inorganic, usually metallic, poison; the second is by the presence of organic poison, and the third by the existence of a pathological organism or "definite disease germ, such as that of cholera or typhoid fever." Two recommendations were made, first that the beds from which oysters were sold should be properly inspected by a Government official, and that suitable places for the cultivation of oysters should be placed under licence, and second, that, as in France, oysters should be kept a short time in perfectly clean tanks before being sent to market, in order that they may be given an opportunity of freeing themselves from all impurities.

The other papers read before this section were:—"On a Restoration of Phenacodus Primaevus," by Professor H. F. Osborn; "On Skeletons and Restorations of Tertiary Mammalia," by Professor

H. F. Osborn; "The Blind Fishes of America" (with a living exhibit), by Dr. Carl H. Eigenmann; "The Origin of Mammalia," by Professor H. F. Osborn; "Description of Specimens of Sea Trout, Capelin, and Sturgeon from Hudson Bay," by Professor E. E. Prince; "The Esociadæ of Canada, with Description of a New Species of Pike Found in Ontario," by Professor E. E. Prince; "Theories of Mimicry as Illustrated by African Butterflies" (with lantern illustrations), by Professor E. B. Poulton: "On the Surface Plankton of the North Atlantic," by W. Garstang; "Remarks on *Branchipus stagnalis*," by A. Halkett; "On Large Specimens of Unionidæ From Lake Huron" (with exhibit), by A. Halkett.

"Economics," "Geography," "Mathematics and Physics," and "Geology" were treated in their different sections to fair audiences, principally of members, anthropology drawing the outsiders. In geology the following papers were read:—"The Asar of Finland," by Prince Krapotkin, a paper which was none the less interesting that it was written in the fortress prison of St. Petersburg while the Prince was imprisoned as an Anarchist. "The Pre-Glacial Decay of Rocks in Eastern Canada," by Professor Robert Chalmers; "A Group of Hypotheses Bearing on Climatic Changes," by Professor T. C. Chamberlain; "Distribution and Succession of the Pleistocene Ice-Sheets of the Northern United States," by Professor T. C. Chamberlain; "The Chalky Boulder-Clay and the Glacial Phenomena of the Western-Midland Counties of England," by H. B. Woodward, F.R.S.; "On the Continental Elevation of the Glacial Epoch," by Dr. J. W. Spencer; "The Champlain Submergence and Uplift, and their Relations to the Great Lakes and Niagara Falls," by F. B. Taylor; "Remarks Introductory to the Excursion to Niagara Falls and Gorge," by G. K. Gilbert; "The Southern Lobe of the Laurentian Ice-Sheet," by C. H. Hitchcock; "Glacial Geology of Western New York," by Professor H. LeRoy Fairchild; "On the Origin of Drumlins," by Professor N. S. Shaler.

The events of the day received a fitting climax in the brilliant lecture on the "Metals of Canada," delivered in Massey Hall by Professor Roberts-Austen, of the Royal Mint, London; the man of all men who should be, and is, most capable of treating the subject of minerals. The weirdness of the illustrations, the importance of the topic, and the distinguished nature of the audience all combined to make it a notable event. The lecturer's opening words of unqualified eulogy of this country's capabilities opened the eyes of Englishmen who, despite their many attainments, were yet ignorant of its wealth and importance. Whether it be the inexhaustible deposits of iron, nickel, silver, and copper of Ontario, or gold and coal of Nova Scotia and British Columbia, everywhere are riches unbounded to supply every need of the Empire.

SATURDAY, AUGUST 21.

Saturday's holiday appeared as acceptable to the visiting scientist as to ordinary mortals. There was a practical cessation of work to-day, only the Section of Geology holding a session, and that a brief one. The following papers were presented: "Note on Certain Pre-Cambrian and Cambrian Fossils Supposed to be Related to Eozoon," by Sir Wm. Dawson; "On the Possible Identity of *Bennettites*, *Williamsonia*, and *Zamites gigas*," by A. C. Seward, M.A.; "Notes on a Dendrodont Fish-tooth from Silurian Rocks of Nova Scotia," by J. F. Whiteaves; "On Some New or Hitherto Little-known Palæozoic Formations in North-Eastern America," by H. M. Ami, D.Sc.; "Palæozoic Geography of the Eastern States," by Dr. E. W. Claypole; "Some Characteristic Genera of the Cambrian," by Dr. G. F. Matthew; "Report of the Committee on the Fossil Phyllopoda of the Palæozoic Rocks," by Professor T. Rupert-Jones; "Report of the Committee on the Secondary Fossils of Moreseat, Aberdeenshire," by J. Milne and A. J. Jukes-Browne; "Influence d'un Eboluement sur le Régime d'une Rivière," by M. l'Abbe J. C. Laflamme; "Report of the Coast Erosion Committee of the East Kent and Dover Natural History Societies," by Captain S. G. McDakin; "Report of the Committee on the Fauna of Caves near Singapore," by H. N. Ridley. In the evening Professor H. O. Forbes, LL.B., F.R.S., lectured to a moderately-sized audience in the Pavilion. The subject was "Borneo and New Guinea," islands of which but little is known, either as to their physical features or inhabitants. The illustrations thrown on canvas were interesting and appreciated by the listeners.

Two points of interest drew the bulk of the visitors to-day, Niagara Falls and Gravenhurst. The opportunity of visiting and viewing the world's great wonder was taken and enjoyed by many who, though often reading of the Falls, had never gazed upon their bewildering grandeur or come within the fascinating influence of their whirling, seething, stupendous power. While these received their due proportion of attention, other points drew the scientific mind, and it is doubtful if so many intelligent questions were ever before asked in one day as the members of the British Association put to the patient officials in charge. Special arrangements had been made by the Town Council on the Canadian side to make the visit of the scientists a pleasant one. The park officials were deputed to afford information to those desiring. No badge-decorated, basket-ladened excursionists ready to admire things as they were pointed out to them had they to deal with to-day, but men desirous of seeing for themselves. Among those who went over on the 7 a.m. boat were the members of the mechanical science and chemical sections, who left the main body at Lewiston, and, taking the Gorge electric cars, proceeded straight to the power house of the Niagara Power Company, which they investigated with great thoroughness. They were the guests jointly of the Cataract Construction Company and the Niagara Falls Power Company. The chief officers of these companies and the full staff of engineers of the Power Company met the visitors at the doors of the immense power house and escorted them in groups through every portion of the works. To say that the visitors were interested and delighted would be but a feeble way of expressing it. They drank in every word of their guides, questioned them about direct and alternating currents, and the hundred and one technical terms of the electrician, and made little notes on their programmes. Sir John Evans, Mr. G. F. Deacon, and Prince Krapotkin seemed to be about the most interested of all the visitors.

The arrangements for conveying the power to Buffalo were inspected with great interest, and the visitors instead of saying politely, "I see," and "how wonderful," as the discreet ordinary visitors, asked countless questions about two-phase systems, transformers, high voltage and other mysteries. Lord Kelvin, who visited the power house a short time ago, made the following entry in the register:—"Very much pleased to see the great success here achieved as a result of courageous undertaking, and originality of invention and skilful design and construction. K." The following entry in the book shows what the visitors thought of their visit:—"The members of Section G of the British Association desire me to record their deep appreciation of the kindness of Mr. Coleman Sellers during a visit to the power house to-day, and to express their thanks for the explanations given by Dr. Sellers of the intricate machinery. They also desire to record their admiration of this magnificent undertaking. Henry T. Bovey, Montreal." The company also stopped at the Mathieson Alkali Works, almost completed, with a 2000 horse-power plant, which will have a capacity of ten tons of caustic and fifteen tons of bleaching powder per day. The process is a novel one, the caustic being produced by means of an electric current acting on certain chemicals. At present the works look like an immense lunch room with marble-topped tables. The carborundum works were also visited. Here an artificial corundum is made by fusing carbon and sand by a 5000 horse-power current, which works up into the hardest grind stones and other abrasive stones. From here the visitors went to the Dufferin Café on the Canadian side for luncheon. All were simply delighted with the beauty of the falls and the two parks. A more perfect day could not have been wished for, but it is useless to attempt a description of Niagara.

MONDAY, AUGUST 23.

The relaxation afforded by Saturday's excursions and Sunday's rest was most grateful to the wearied scientists. The strain of ocean and railway travel followed by business meetings and social functions had produced a condition to make rest enjoyable. This morning they return to the consideration of papers with renewed vigour and industry. Interesting and erudite papers were read in the different sections by men eminent in the different departments of science. "Economics" secured the lead and easily held it throughout the day. "National Policy and International Trade," by Mr. Edward Carman, developed an interesting and well-sustained discussion during which the Right Hon. Jas. Bryce contributed a very important speech. The author of the paper contended that the true national policy was to take as much advantage of the division of labour as possible. The individual who gets most advantage from this is the one who is able to do the most skilled work in the same way, and the same holds true of a

nation. What ought therefore to be done is to aim to improve the finest individual qualities in the population. Among the many ways of promoting this aim, the most important is to allow free importation of the most ingenious and cheaply produced products of other countries. During the discussion, several members from the United States argued that protection is a necessity in a young country, and therefore justifiable, and that manufacturers had prospered under it. Mr. Bryce combated the assumption that all the prosperity enjoyed by manufacturers was due to Protection, but rather to the application of physical science to the processes of manufacture. Neither were the high wages of workmen due to Protection. The miners in Witwatersrand received the wages given in any other country. The remarkable development of manufacturing industries in Germany, he believed, was due more to the accumulation of capital, and the development of physical science had led the capitalists to devote their attention largely to manufactures. The chief argument advanced in favour of Protection was that it built up industries. It also brought into existence a powerful force, which became dangerous to the community when the manufacturers used the money thus secured to retain their privileges; all told that the results of Protection had not been satisfactory.

TUESDAY, AUGUST 24.

Interest to-day was pretty evenly divided between the different sections in session. If either could claim an advantage, geography had it, with economics a good second. In the morning, these two branches joined in a special session to hear Mr. F. C. Selous, the African explorer and hunter, read his paper on the "Economic Geography of Rhodesia." Africa to the average American has always been an unknown land of darkness and mystery. Sheba's Queen and Ophir's gold of ancient days savour more of mythical than real. Livingstone and Stanley, Rhodes and Jameson, like characters from a strange romance, produce unreal impressions, but Mr. Selous presented a distinct locality, and everyday conditions of low-lying swamp-land with ever-present miasma and fevers; high level plateaus, and open downs of immense area, with salubrious climatic conditions. When touching upon the agricultural prospects he drew a vivid picture of the scourge of rinderpest, which like a destroying angel has swept through Eastern Africa from north to south, almost completely extinguishing the vast herds of buffalo and the various forms of antelope which graced the plains and forests of Africa, and without which the country becomes a dead and dreary wilderness. This with the plague of locusts and other evils coincident to new countries will pass away and leave South-Eastern Africa a desirable field for immigration.

The anthropologists discussed the origin of the French-Canadian race. Physiologists and botanists united to consider the "Chemistry and Structure of the Cell." Other papers read were:—"On the Rationale of Chemical Synthesis," by Professor Meldola; "On the Existence in Yeast of an Alcohol-Producing Enzyme," by Professor Green; "New Views on the Significance of Intracellular Structures and Organs," by Professor Macallum; "On the Presence of Copper in Animal Cells," by Professors Boyce and Herman; "On the Distribution of Iron in Animal and Vegetable Cells," by Professor Macallum; "On Intestinal Absorption of Hæmoglobin and Ferratin," by F. W. G. Mackay; "(i.) On Secretion in Gland Cells," "(ii.) The Morphology and Physiology of Gastric Cells," by R. R. Bensley; "Visual Reaction to Intermittent Stimulation," by O. Grunbaum.

In the Botanical Section Professor Saunders, of the Experimental Farm, Ottawa, read a paper on "Cross Fertilisation," in which he gave the results of efforts to secure fruits from the Canadian North-West. Other papers read were:—"(i.) Insemination in Ferns," and "(ii.) On more than one Plant from the same Prothallium," by E. J. Lowe. "On a Hybrid Fern, with Remarks on Hybridity," by Professor J. B. Farmer. "Morphology of the Stele in Vascular Plants," by E. C. Jeffrey. "Descriptions and Measurements of Coniferous Trees Grown from Yosemite Valley Seed," by G. P. Hughes.

In the Chemistry Section the papers were mainly of a technical character, but in some cases gave rise to animated discussions. Following were the papers read:—"Demonstration of the Preparation and Properties of Fluorine," by Professor Meslans; "The Properties of Liquid Fluorine," by Professors Moissan and Dewar; "Demonstration of the Spectra of Helium and Argon," by Professor Ramsay; "The Permeability of Elements of Low Atomic Weight to the Röntgen Rays," by Dr. J. Waddell; "Continuation of Experiments on Chemical Constitution and the Absorption of X Rays," by Dr. J. H. Gladstone and W. Hibbert; "On the Action Exerted by Certain Metals on a Photographic Plate," by Dr. W. J. Russell; "Titanic Oxide," by F. P. Dunnington; "Deliquescence and Efflorescence of Certain Salts," by F. P. Dunnington; "Notes on Concentrated Solutions of Lithium and Other Salts," by J. Waddell; "The Formation of Crystals," by W. L. T. Addison; "A Compound of Ozone and Mercury," by E. C. C. Baly; "The Interaction of Hydrobromic and Bromic Acids," by T. W. Walher.

Apart from the work of the sections, a function of a semi-social character took place to-day. In the afternoon there was a Convocation of Trinity University, at which the degree of D.C.L. was conferred on eminent visitors, Sir John Evans, Lord Lister, Lord Kelvin, Sir William Turner, Sir George Robertson, and Mr. Bryce were the recipients. The degrees were conferred by Provost Welch, who addressed the recipients in Latin in true orthodox style, and each of the latter responded in a happy manner, again expressing the pleasure which the visit was affording.

(*To be continued.*)

NEW REMEDIES.

Amyloform.—It will be remembered that amyloform is a chemical compound of formaldehyde and starch, introduced last year by Classen. The results obtained by the use of amyloform in place of iodoform speak very highly in favour of the former. Amyloform is a white, very fine, odourless powder, insoluble in all solutions. Living organs decompose it entirely, gradually liberating its components, formaldehyde and starch. The principal advantages of amyloform over dextroform are the absolute safety and non-irritability of the former, while its antiseptic properties are quite equal to those of iodoform. There is no restriction whatever on the quantity of amyloform to be used, as the most lavish application does not produce any irritation or injurious effect on the general well-being of the patient.—*Munich Med. Woch.*, xliv., 585.

Sodium Sulphate as a Hemostatic.—Reverdin states that small doses of sodium sulphate, two grains every hour, are of great service in certain cases of capillary hæmorrhage, and are also useful in graver cases. Subcutaneous administration does not produce the same result.—*Thérap. Gaz.* [3], xiii., 408, after *Rev. Méd. de la Suisse Rom.*

Salicylic Creosote Paste.—The following combination has been found very effective in lupus:—Acid. salicyl. cryst., 4; creosoti, 8; cerati. simpl., 6; ceræ alb., 2.—*Zeit. d. Allg. Ost. Apoth. Ver.*, xl., 457.

Medicated Soap (Savonal) in Skin Diseases.—Muller and Graube (*Dermatol. Zeitschr.*) prepare a pure soft soap, which they term savonal, as a basis for the application of numerous drugs. Savonal is thus prepared:—Pure olive oil is first saponified in the cold by agitation with alcoholic potash solution; a portion of the clear alkaline solution which results is removed, cooled by means of ice, and the fatty acids precipitated from it by the cautious addition of hydrochloric acid. The precipitate is collected and again returned to the original alkaline alcoholic solution until perfect neutrality is reached. The alcohol is evaporated off, leaving the savonal in an unctuous condition. Liquid savonal is prepared by adding a few percentages of glycerin to the soap and sufficient water to bring the specific gravity to 1·050-1·055. This serves as a basis for many combinations, such as with salol, 5 to 10 per cent.; phenol, 5 per cent.; cresol, 0·25 to 2 per cent.; sozoiodol, naphthol, sublimate, iodoform, and many others. Among the special formulæ recommended are Naphtholated savonal, prepared from naphthol, 5; sulphur and vaseline, of each 30; savonal, 35. Liquid resorcin savonal: Resorcin, distilled water, of each 5; hydrous woolfat, 2; liquid savonal, 88. Unctuous resorcin savonal: Resorcin, 5; distilled water, 5; savonal, 87; wool-fat, 3. Chrysarobin savonal: Chrysarobin, 10; lanolin, 10; savonal, 80. Tannin savonal (liquid or unctuous): Tannin, 5; glycerin, 10; savonal or liquid savonal, 85. Iodine and potassium iodide savonal: Iodine, ½ to 1; potassium iodide, 5; savonal, to make 50. Quinine dihydrochloride savonal: Dihydrochloride of quinine, distilled water, glycerin, of each 5; liquid savonal, 85.—*Nouveaux Rem.*, xiii., 437.

EXTRACTS FROM CONSULAR REPORTS.

A Nitrate Combination.—As nitrate is the chief source of the wealth of Chile, every effort is made to increase the demand for it in foreign markets, and at the same time to keep prices up. With this object in view a combination of the various nitrate "Oficinas" was formed in 1884, in order to limit the output. It broke up in 1887, but was re-organised in 1891, and in 1894 the "Asociacion Salitrera de Propaganda" was formed, its object being to advertise the article and increase the demand for it by every possible means. The amount expended with this aim in 1895 was 167,980 dollars, and in 1896, 144,565 dollars. The combination still holds together, but, in the opinion of Acting-Consul-General Croker, sooner or later it is bound to fall through, as those "oficinas" which have brought out the latest machinery, and those with the richest deposits are certain to break away, and nitrate will find in consequence a much lower level of price in the European markets.

The Nitrate Export from Chile fell from 1,201,207 tons (£7,208,680), in 1895, to 1,099,170 tons (£6,955,847) in 1896. During the last five years there has been a steady increase in the world's consumption of nitrate, but at the close of 1896 the trade was in a very depressed condition. The quantity of iodine sent out in 1895 was 142 tons, realising £228,400, and in 1896, 203 tons, value £326,792.

Sponge Fishing at Cyprus is carried on in boats licensed for the purpose. In 1895 thirty boats were licensed, of these seven were taking sponge by means of diving apparatus and nineteen with harpoons and water-glasses only. The year previously one had diving apparatus and eleven had harpoons and water-glasses.

Petroleum Emulsion has been used in the treatment of the scale disease on the lemon and orange trees at Karava (Cyprus) with such beneficial results that there is now every hope that the danger which threatened to devastate the fruit gardens at that village has been averted. The lemons grown at Karava in 1895 are estimated to have been about 2,000,000.

Outdoor Dispensaries in Cyprus, during the year ending March 31, 1896, were attended by 16,159 patients. In order to prevent an undesirable rush on these establishments patients were required to produce a certificate that they were poor and had no means of obtaining medical advice and medicines, but notwithstanding this precaution, the number of patients attending showed no material decrease on previous years.

Fresh Phosphate Beds have lately been discovered in different parts of the French colony in Algeria, besides those already existing in the district of Tebessa. The administration proposed putting up for contract those beds which were considered rich enough for working, in consequence, however, of certain complications which have arisen no contracts have as yet been concluded. The three workings in the district of Tebessa produced during 1895 a total of 156,857 tons, and during the first ten months of 1896 the phosphates from them amounted to 122,037 tons. About 75,000 tons of phosphates were shipped for England from Bône during 1896, the price being £1 per ton delivered on board. The total amount of phosphates shipped was 152,878 tons, an increase of 40,407 tons compared with 1895.

The Olive Oil Crop in Lecce is estimated to have amounted to 15,000 tons, the medium price of the year being 72 lire 85 c. per 100 kilos. of oil, prices varying between 69 lire 38 c. and 75 lire 75 c. The production of soapstock which is extracted by chemical process from the refuse of olives and kernels was, during 1896, approximately 960 tons.

The Camphor Export from Tamsui and Kelung in 1896 shows an increase in value over the previous year of £95,316, or 95 per cent., though the quantity exported was only 13,553 cwts., or 60 per cent. more than 1895. The great difference in the price of camphor was due entirely to speculation, as it was thought that owing to the restrictions imposed by the Japanese authorities and the unsettled state of affairs in the camphor districts, the supplies would be considerably short.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Advertisements and Orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

Articles and Reports sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

Correspondents should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

LETTERS TO THE EDITOR.

Impressions of a Student on the School of Pharmacy.

Sir,—After a careful perusal of last week's educational issue of the Journal I have thought that, in the interests of pharmaceutical progress and of the success of the Society's School, it might be useful to place on record the impressions of a student of the School under the new dispensation. It may be that these impressions are founded on a misapprehension, in which case they will probably be corrected by the views of other "Square" students. I entered the Pharmaceutical Society's School last October with great expectations, and it may be owing to the magnitude of these that I was, I must confess, somewhat disappointed. To economise space I shall take the subjects "seriatim," beginning with botany. The teaching in this subject was certainly excellent, but altogether wide of the mark for a chemist and druggist. For instance, a great deal of time was spent on the life history of Cryptogams, the explanation of the alternation of generations, the "stele" theory, and other such hard nuts for the beginner to crack, and of very little use indeed to the chemist in business, however great their importance may be from a scientific point of view. The little classification and plant recognition on the Schedule was, on the other hand, crowded into two or three lectures and demonstrations at the end of the course in a manner which savoured somewhat of cram, and yet no one will gainsay that these are of the very highest importance to the practical druggist. The aim in botanical teaching, at least for the pharmacist, should not be, it seems to me, the preparation of the candidate for the B.Sc. degree but rather that of training him up in the methods of the identification of plants and plant products.

In materia medica, which can be taken most conveniently next, the student was at once bewildered by a multitude of terms in botany, of which he knew very little at this point of his botanical course. He was also told that the active principles of such and such a drug were an alkaloid or a glucoside, etc., before he had the faintest idea as to what these bodies were. In fact, he was being taught to run before he could walk, and it seems unfortunate that he should be trained in the applied sciences before he knows anything of the pure sciences themselves. This remark is especially applicable to pharmacy, where he was told that Hoffmann's anodyne was made by first preparing ethyl hydrogen sulphate, and subsequently mixing it with alcohol and ether; that sweet spirit of nitre was a mixture of ethyl nitrite, aldehyde, alcohol, etc.; and so on, while he was still labouring through his inorganic chemistry. It would be as reasonable to expect him to learn mixed mathematics before he has begun to learn pure mathematics.

Now for the chemistry and physics. I have left these subjects to the last, as it is with the teaching of these that I have, rightly or wrongly, the most fault to find. The theoretical chemistry I shall not dwell upon, as, under the circumstances, it was perhaps as satisfactory as could be expected, but the practical, I am sorry to say, was certainly not so. The student was left almost entirely to his own devices, doing what pleased him best, and the closing sentence in the School syllabus—"Only operations sanctioned by the professor may be performed"—is one to excite derision from those "in the know." There was also more tomfoolery in the laboratories than there should have

been, in the participation of which, I regret to say, I cannot but plead guilty to some extent. I do not wish to charge our worthy professor with neglect, for I may say that he has always been most painstaking and kind whenever I have sought information from him, but the "laisser-aller" and want of method in this department, due probably to an excess of leniency from the powers that be, can hardly pass without mention.

Physics was perhaps the most unsatisfactory subject of all, inasmuch as at the very start algebraical equations were necessarily introduced, and a large number of the students knew nothing or next to nothing about them, the consequence was that after the first few lectures the larger proportion of these students ceased to trouble themselves about this portion of their curriculum, and if it were not for the slenderness of the physical knowledge required from "Minor" candidates, their position would indeed have been a precarious one. I presume, however, that the inadequate standard of our Preliminary examination is in some degree responsible for this state of things. There seems to be, in a word, a tendency to assume too much previous knowledge from the student, and until the purely scientific subjects, such as botany, chemistry, and physics are taught before those in which these sciences are applied, such as pharmacy and materia medica, the above defects will probably exist, to some extent. In conclusion, I would earnestly emphasise the fact that I have not made these remarks in any carping spirit, but rather in a hopeful one, and that I have done so as an "iota" amongst those who have passed through our School, and who wish it every success.

Jersey, September 13, 1897. P. E. F. Perrédès.

Membership of the Society.

Sir,—The question is often asked "What does the Pharmaceutical Society give as a *quid pro quo* for the guinea annual subscription"? Apart from the moral support which the Society gives, I think it may be taken for granted that it gives value. In the first place, it supplies the *Pharmaceutical Journal* to its members post free, which represents at least sterling value for half this amount, but the remaining amount is not so keenly appreciated. Secondly, there is the advantage of a library containing a varied and up-to-date literature on every conceivable topic connected with the trade. For London and Edinburgh chemists and their pharmaceutical schools that is worth at least five shillings a year, but for country chemists it is not so valuable. If the Council would pay carriage both ways provincial chemists would be put on a par with their metropolitan brethren. I find that the amount expended for carriage at present is not in keeping with the other expenses connected with the Library. The usefulness of it would be greater by a more liberal policy. Thirdly, there is the Museum. I do not know whether specimens could be sent like books to applicants for purposes of study and research, if so, it would no doubt popularise this institution. What sum should be set apart for the protection of the interests of chemists involved in conducting legal cases through the land? Surely 5*s.* would not be too much to set apart for this? The annual fee may be thus divided: Journal, 10*s.* 6*d.*; Museum and Library, 5*s.* 6*d.*; legal interests, 5*s.*; total, £1 1*s.*

September 14, 1897. A Provincial Chemist.

Local Organisation in Pharmacy.

Sir,—I have read with considerable pleasure your remarks upon the above subject, as well as the splendid letter of Mr. Darton Gibbs, from the Federation standpoint. This is a topic which has again and again been brought forward in the trade journals under various titles, and one is tempted to ask if something practical cannot be done. Is it not possible to advance beyond the stage of talk? I think it is, Mr. Editor, or I would not trouble you with these few lines. We in Nottingham know something of association work. We have a local society which was inaugurated the same year that the Pharmacy Act was passed, and it has been in constant active work ever since. It has not always been so vigorous as might be, but I can say, without fear of contradiction, that there is not one year, during the long period of its existence, in which good and substantial work for the trade has not been done. I do not write in this strain to praise the work of our local society, but to point out that what has been done in Nottingham can be done elsewhere. The success of our Association has been due mainly to the foresight and energy of a very few men. Three persons were the founders of this Association—Mr. J. H. Atherton, Mr. J. Rayner, and Mr. FitzHugh, and their interest never flagged. The first two have passed away, but the latter gentleman occupies the position of President of the Association to-day. He takes a lively interest in its doings, being as active a worker of the Association now as he was in its earliest days, notwithstanding the many greater honours which have been conferred on him by his fellow-citizens. What is needed in a town where there is no association is for two or three men with an ordinary amount of perseverance, and really interested in the scheme, to take the matter in hand. Difficulties there would be, no doubt, but they would be partly overcome by consultation with the Hon. Sec. of the Federation, who would, I am sure, be glad to give them the benefit of his large experience, and to render them any help in his power. It would be of great assistance to the movement, Mr. Editor, if you could publish a correct list of the existing local associations, with the names of the president and secretary of each. A visit of a deputation from one society to another would be both pleasant and profitable, and we in Nottingham would be delighted to see at our meetings a deputation from, say Derby, Leicester, Chesterfield, Lincoln, Newark, or Grantham associations, all of which towns are within easy reach of us. As far as my knowledge is concerned, however, associations may not exist in those towns. The important point to my mind is to meet and talk over the Federation topics, and then take some united action which will be of benefit to all. I do sincerely hope, with Mr. Gibbs, that, having set the ball rolling at such a suitable time of the year, you may have the encouragement of seeing the associations during the coming winter increase in number and enthusiasm, and that the Hon. Sec. of the Federation may find plenty of work in binding together the associations into one united body.

Nottingham, September 14, 1897. C. A. Bolton.

ANSWERS TO QUERIES.

Chinese Tallow Tree.—The tree is the *Stillingia sebifera* (Euphorbiaceæ), the leaves of which afford a black dye. See the 'Treasury of Botany,' vol. ii., p. 1100, for further information. [*Reply to* Caerdyddian.—109/3.]

Student of the Society.—You cannot be registered as a "Student" unless you pass the First examination of the Society or one of the equivalent examinations, a list of which was given in last week's Journal, pp. 233-4. [*Reply to* S. H.—109/11.]

Combined Toning and Fixing Bath.—You say you have been told that a very good combined toning and fixing bath for ordinary P.O.P. is prepared with silver nitrate, gold chloride, and hypo. We do not recommend such a bath, because it is not certain that the prints are permanent, but the following formula can be used:—Silver nitrate, 20 grs.; gold chloride, 2 grs.; sodium hyposulphite, 1 oz.; water, 8 ozs. This will tone one sheet of paper 24 by 17½ inches. [*Reply to* Fœx Sacch.—108/35.]

Grease Eradicator.—The formula you mention did not appear in our pages. There are many recipes similar to the one you name. The following gives very good results, being the compound which obtained the prize in a competition for grease eradicators in the *Pharmaceutical Era*:—White Castile soap, in shavings, 4; ether, 4; glycerin, 4; strong ammonia, 1; distilled water, 128. To 32 fl. pts. of water add the glycerin, ammonia, and ether. Shake well, and add the rest of the water. To this mixture add the soap and shake occasionally for a few hours. Place the article to be cleaned on a flat surface, with a fold or two of cloth underneath, wet a sponge with the fluid and rub the article hard for a few seconds, then wash with clean water. [*Reply to* Puzzled.—107/38.]

OBITUARY.

Harrison.—On September 6, John Moore Harrison, Chemist and Druggist, Derby. Aged 71.

Higgins.—On September 7, John Brook Higgins, Chemist and Druggist, Pontefract, Yorks. Aged 79.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs, Allen, Andrews, Bolton, Davis, Dobbin, Evans, Hogg, Kirkby, Passingham, Peirson, Perrédès, Picken, Rose, Thomas, Thompson, Welford.

ROYAL COLL. OF SURGEONS OF ENGLAND
27 SEP 97
LIBRARY

ORTHOFORM, A NEW LOCAL ANÆSTHETIC *

BY PROFESSOR A. EINHORN AND DR. R. HEINZ.

Under this name a new synthetic product related in constitution to cocaine has been introduced into use for the production of local anæsthesia, as the result of an extended inquiry into the cause of the anæsthetic action conducted by the authors. From the account given by those authorities orthoform appears to be a substance of great interest on account of its being without toxic character, but at the same time a powerful antiseptic and, consequently, well adapted for use in the treatment of wounds. Orthoform will be manufactured by the company which has taken over the business formerly carried on by Meister, Lucius, and Bruning at Höchst, in the neighbourhood of Frankfurt, and it appears likely to be an exception to the many evanescent synthetic products that are forgotten soon after being introduced.

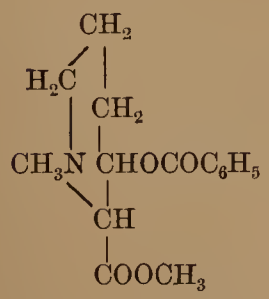
Orthoform is described as a white, voluminous, crystalline powder, is not hydroscopic, melts at 120° C., slightly soluble in water, and has on that account an advantage over all other anæsthetic agents that are known, inasmuch as it is but slowly absorbed in consequence of its sparing solubility, and thus a durable effect is produced. The crystallisable orthoform hydrochloride is readily soluble in water; it produces anæsthesia like the free ester, but as the solution has an acid reaction it is not always applicable.

The remarkable anæsthetic action of orthoform is manifested very decisively when occasion requires the tranquillisation of exposed nerve ends. The otherwise painful operation of transplanting living skin may be carried out under the influence of orthoform without any sensation. Orthoform has a remarkable effect upon burns, contusions, and painful abscesses, and it has been found very beneficial in the treatment of ulceration of the throat or stomach and in cancer. It is, moreover, so free from poisonous action that comparatively large quantities amounting to nearly two ounces may be applied in the course of a week for dusting wounded surfaces without any danger. Internally it has frequently been administered to the extent of from eight to fifteen grains daily.

From a chemical point of view the account given by the authors of the investigation by which the characters of orthoform were ascertained is of considerable interest.

Starting on the assumption that cocaine is constituted of a double ring—in which a benzoyl oxy-piperidine carboxylic methyl-ester (having a methyl group attached to the nitrogen), as shown in the formula I., is associated with a benzoyloxyhexa-hydrobenzoic

I.



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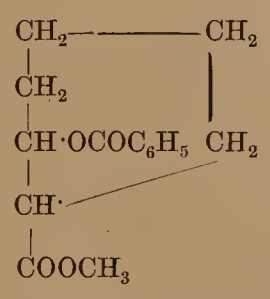

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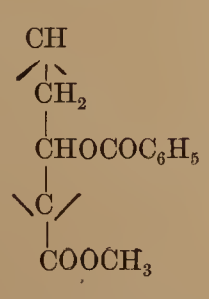
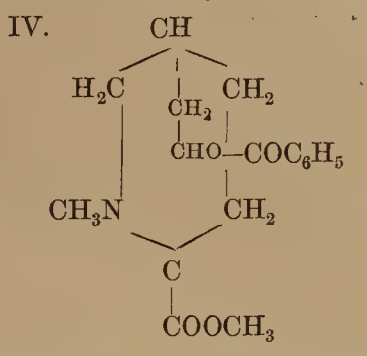


methyl-ester II., in such a manner that both rings contain the atomic group III., and that consequently benzoyl-ecgonine methyl-ester, or cocaine, would have the constitution represented by the structural formula IV.—the authors applied themselves to the task of synthetically building up a compound of that nature which should possess, together with anæsthetic properties, the equally necessary characteristics of being non-toxic and not readily absorbed into the system, and thus preferable to cocaine, which is too poisonous to be freely used, and insufficiently durable in its effects, in consequence of being so freely soluble and so readily absorbed.

IV.



The observations of Stockmann,* Filehne,† Ehrlich,‡ and Poulsson§ have shown that none of the products obtained by splitting up the cocaine molecule are capable of producing local anæsthesia —as, for instance, neither ecgonine methylester, the debenzoylated cocaine, the benzoyl ecgonine produced from cocaine by saponification of the group $COOCH_3$, nor ecgonine itself. The circumstance that benzoylated alkaloids, having no similarity in constitution to cocaine do produce local anæsthesia also led Filehne to the conclusion that the presence of a benzoyl group was an essential condition of the anæsthetic action of those bodies.

The physiological experiments made by Liebreich, Poulsson, and Ehrlich with natural and synthetic cocaine derivatives that are ecgonine esters containing in the place of the benzoyl group other acid residues, showed that most of them are destitute of the power to produce local anæsthesia, and the results obtained justified the conclusion that the anæsthetic action belongs only to those compounds, analogous to cocaine, in which ecgonine esters are combined with particular (anæsthesiophoric) acid radicals. In that respect the group, $COOCH_3$ appears to play a very important part. It thus became a question whether the anæsthetic character was due to the peculiar double-ring constitution of cocaine, or to the ring of benzoyl-oxy-piperidine-carboxylic acid, having a methyl group attached to the nitrogen, as suggested by Merling's production of eucaine,‖ or again to some peculiarity of the hydro-aromatic ring of the hydr-benzoyl-oxybenzoic methyl ester present in the molecule, and one of the authors has been for some years engaged in the study of salifiable derivatives of hydro-aromatic oxyestors from that point of view, though as yet without success.

However, since other compounds of the aromatic series, such as methylene blue,¶ have the effect of allaying pain, it therefore became desirable to study the action of benzoylated oxy-amido-benzoic esters in that respect. It turned out that this capacity was found to be characteristic of all amido-oxy esters belonging to the aromatic series, but that the body from which these benzoyl compounds are derivable—the amido-oxy-benzoic ester—has a greater capacity of producing anæsthesia than the benzoylated derivatives.

A large number of these compounds were submitted for trial by the authors, and details given in regard to thirty-seven of them. They were obtained by reduction of nitro-oxy esters with zinc and hydrochloric acid, or by esterification of amido-oxy acids. Among the isomeric amido-oxybenzoic esters the *m*-amido-*p*-oxybenzoic-methyl ester and the *p*-amido-*m*-oxybenzoic methyl ester were found to be anæsthetic without causing any irritation, and the latter is most rapid in its action. It is to this compound that the name orthoform has been given.

* *Münch. med. Wochensch.*, xliv., 931.

* *Pharm. Journ.* [3], xvi., 897.
† *Berlin klin. Wochensch*, 1887, p. 107.
‡ *Deutsche med. Wochensch.*, 1890, No. 32.
§ *Archiv. für exper. Path. und Pharm.*, 1891, p. 301.
‖ *Pharm. Journ.*, lvii., 337.
¶ Ehrlich and Leppmann, *Deut. med. Wochensch.*, 1890, p. 23.

PRACTICAL PHARMACOGRAPHY.

CALUMBÆ RADIX.

Calumba Root, Engl.; Colombo, Fr.; Kolombo-wurzel, Germ.

Macroscopic Characters.—The root of *Jateorrhiza columba*, Miers, occurs in commerce in the form of more or less circular disks, or sections of the root, which are usually about 30 to 40 Mm. in diameter, and 6 to 12 Mm. in thickness. The circumference of the sections is coated with a dark brown, thin corky layer, covering a firm, starchy bark, which occupies about one-fifth of the diameter of the root. This is usually of a rather deeper yellow tint than the central column of the root, and is separated from the latter by a thin, dark, cambial line. The central portion is more or less shrunken and depressed. The whole is seen to be marked with radiating lines, which are more apparent in the larger and older pieces (Fig. 1). The fracture is short and starchy, and the taste is mucilaginous, very bitter, and the odour faint and earthy.

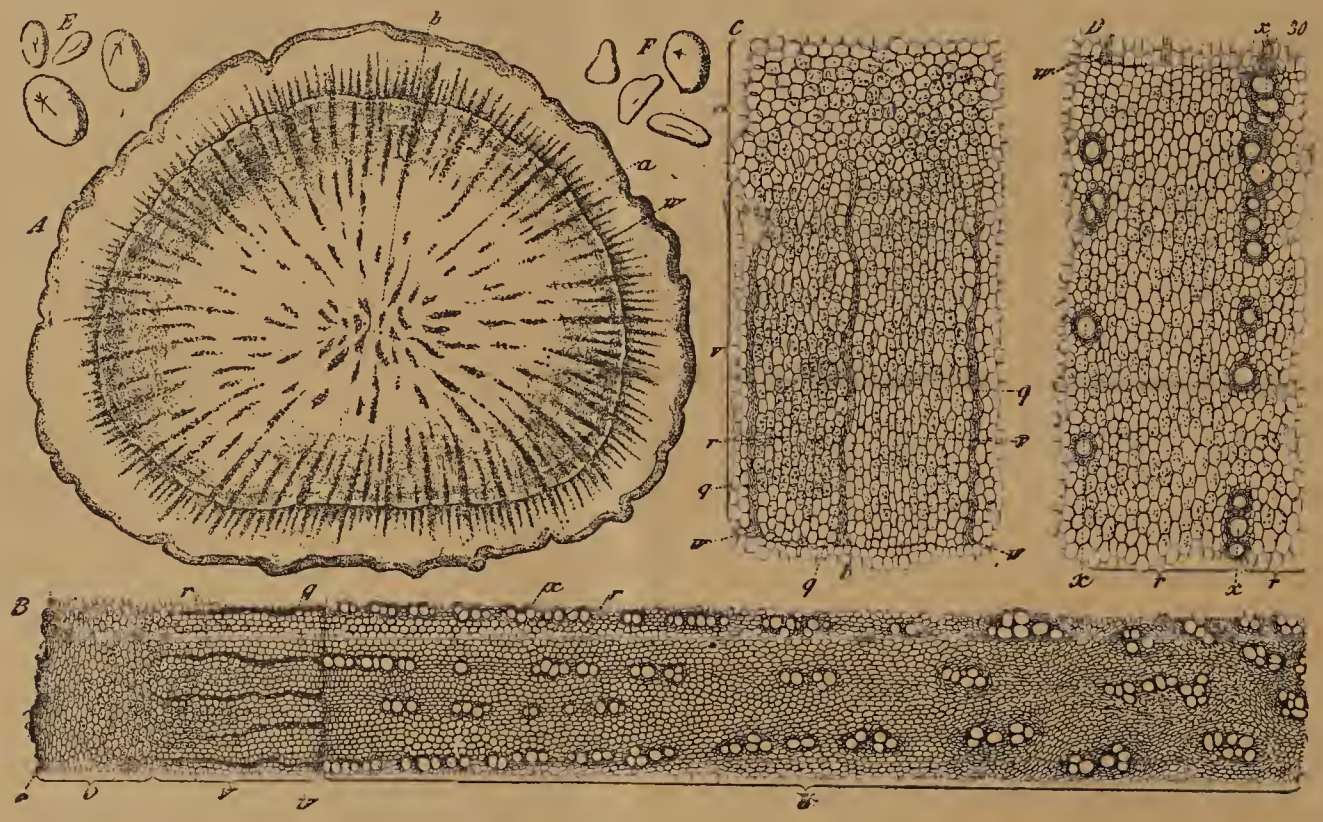


Fig. 1. Calumba Root.—A. Transverse section (nat. size). B. Transverse section showing microscopic structure. C. Transverse section of bark. D. Transverse section of column. E. and F. Starch granules. B., C., and D. magnified. After Berg and Schmidt.

Microscopical Characters.—In this root the lignified tissue is very sparingly developed. The outer or corky layer of the bark consists

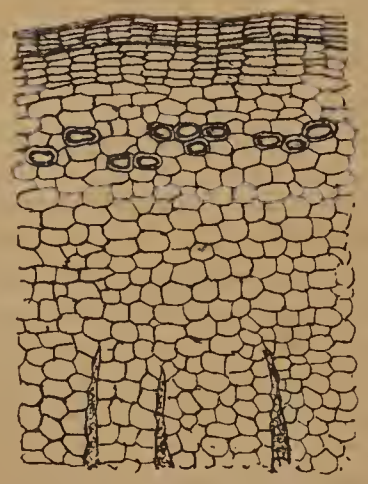


Fig. 2. Calumba Root.—Section of bark, showing cork cells and interrupted layer of stone cells, magnified. After Planchon and Collin.

of flattened cells elongated tangentially. Below this is a nearly single interrupted layer of yellowish stone cells, containing large crystals of calcium oxalate in their cavities (Fig. 2). (These are not shown in Berg's figure, but both by Planchon and Collin's in 'Drogues Simples,' ii., p. 871, and Herail and Bonnet in 'Bot. Med.,' p. 172.) The remainder of the bark consists of polygonal thin-walled cells, intersected with radiating lines of liber tissue consisting principally of compressed sieve tubes without vessels (Fig. 1, B and C). The central portion of the root consists of thin-walled polygonal cells, which, like those of the bark, are arranged in a more or less radial manner, the woody bundles consisting of nearly simple lines of large punctated vessels surrounded by a thin layer of lignified fibres. These lines are broken up towards the centre of the root into isolated groups of vessels and fibres (Fig. 1, B and D). The whole of the parenchymatous tissue is filled with starch granules, which are oval-oblong, irregularly obovate, or rounded in form (Fig. 1, F). The starch, the liber tissue, and the presence of berberine in the root form the chief characteristics of the powdered root. The only root in commerce likely to be mistaken for it is bryony root, which may be distinguished by its white colour, thin bark (occupying only about one-tenth of the diameter), by the concentric rings, and the numerous projecting woody rays, which are easily seen under a good lens to consist of isolated bundles enclosing numerous large vessels. Under the microscope the liber is seen to contain numerous rayed (vaisseaux rayés) vessels, with

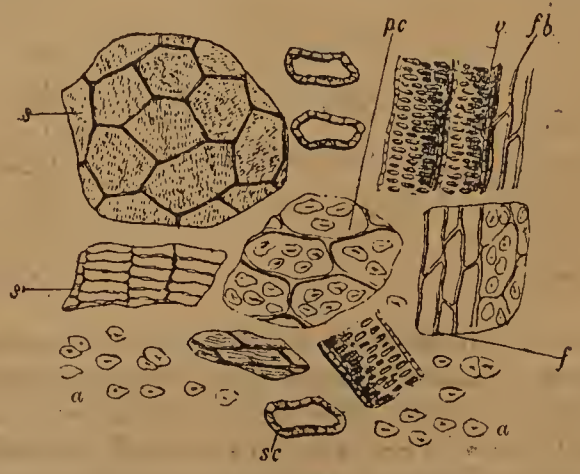


Fig. 3. Calumba Root Powder.—*s*, showing the cork cells, face view; *s'*, ditto in section; *pc*, cortical parenchyma; *v*, porous vessels; *a*, starch; *f*, liber fibres; *fb*, wood fibres. All magnified. After Collin.

scattered yellow idioblasts, which in a longitudinal section present a tubular appearance. The rayed vessels of the wood,

and the smaller, more rounded starch granules, with a well-marked stellate hilum, and the absence of crystals of calcium oxalate, will

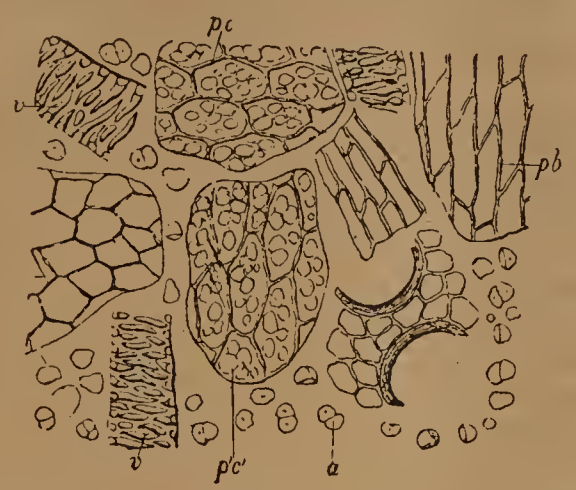


Fig. 4.—BRYONY ROOT POWDER.—*v*, Rayed vessels; *pc*, cortical parenchyma; *a*, starch granules; *s*, cork cells viewed on the surface. All magnified. After Collin.

serve to distinguish the powder of the two drugs (see Collin's 'Guide Pratique,' pp. 93, 94, Figs. 58, 59).

CANELLÆ CORTEX.

Canella Bark, Eng.—Canelle blanche, Fr.—Weisser Zimmt, Weisser Canel, Gr.

Macroscopic Characters.—The official drug consists of the bark of *Canella alba*, Murr., after the periderm or corky layer has been removed. It is met with in pieces varying from 2 to 8 inches (5-20 Cm.) in length and from ½ to 1½ or 2 inches (12 Mm.-36 Mm. or 5 Cm.) in breadth, more or less inrolled into quills. The outer surface is of a pale buff colour, and the inner surface usually of a

Fig. 5.—CANELLA BARK.—Showing fragments of the cork adhering to the bark (natural size).

chalky white, or more rarely a very pale buff. Externally the surface is either closely and finely wrinkled transversely or rough

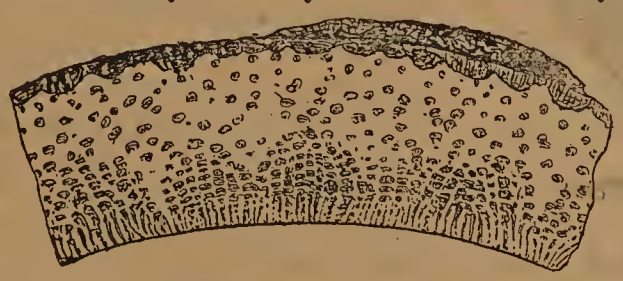


Fig. 6.—CANELLA BARK.—Transverse section, magnified.

with numerous depressions, with here and there a darker circular scar about four lines (3-5 Mm.) in diameter. The inner surface is smooth and finely striated. The transverse section exhibits on the outer surface a yellowish horny line (lignified phelloderm) often absent in the smaller pieces; then a white, starchy layer of cortical parenchyma, divided into wedge-shaped segments by the projecting liber, and containing numerous dark yellow dots (oil cells). The liber is indicated by numerous fine, oblique, undulated lines, with smaller dark yellow dots (oil cells) amongst them, separated by paler lines (medullary rays). The odour recalls those of cloves and orris, and the taste is somewhat clovelike, hot and biting.

Microscopic Characters.—The outer or corky layer, where fragments are present, consists of thin-walled tabular cells with an undulated outline, immediately beneath which is an unequal layer of lignified cells and large oil glands, radially arranged but of unequal size. Below this is the cortical parenchyma, consisting of thin-walled polygonal cells, containing starch and sphæraphides. This layer is rich in large rounded oil glands. In powdered canella the large characteristic yellowish stone cells, with an irregular lumen and dilated canals, form distinctive features, as well as the large rounded starch grains. The liber contains reticulated vessels condensed into a horny tissue, mixed with smaller oil cells than the cortical parenchyma and isolated groups of cells of irregular form, containing starch and sphæraphides of oxalate of calcium. The medullary rays consist of a single row of cells, which also contain sphæraphides. The inmost portion of the liber

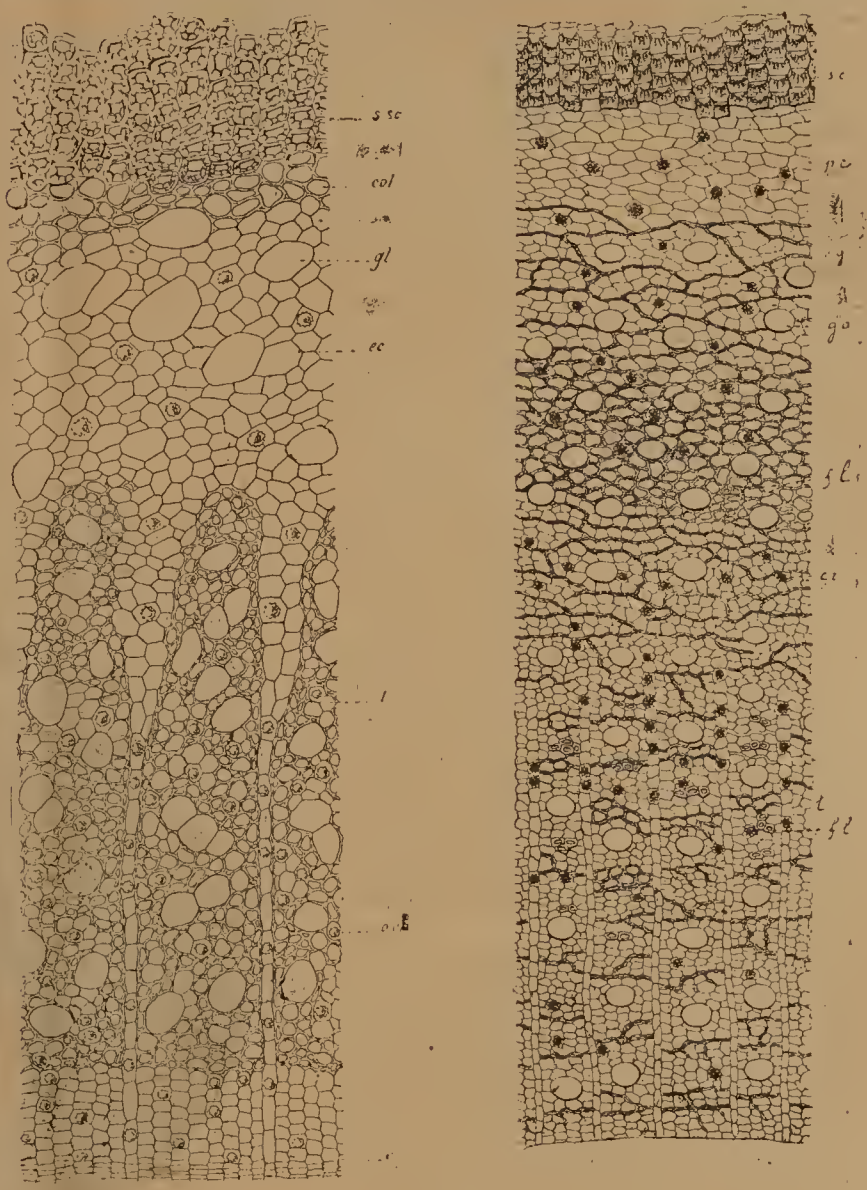


Fig. 7.—TRUE AND FALSE CANELLA BARKS.—C.—*Canella alba*, transverse section of bark, showing larger oil cells, *gl*, in the cortical parenchyma, and the characteristic sclerenchymatous cells at *s sc*. D.—*Cinnamodendron corticosum*, false Winter's bark, transverse section of bark showing network of reticulated vessels. Both magnified. After Planchon and Collin.

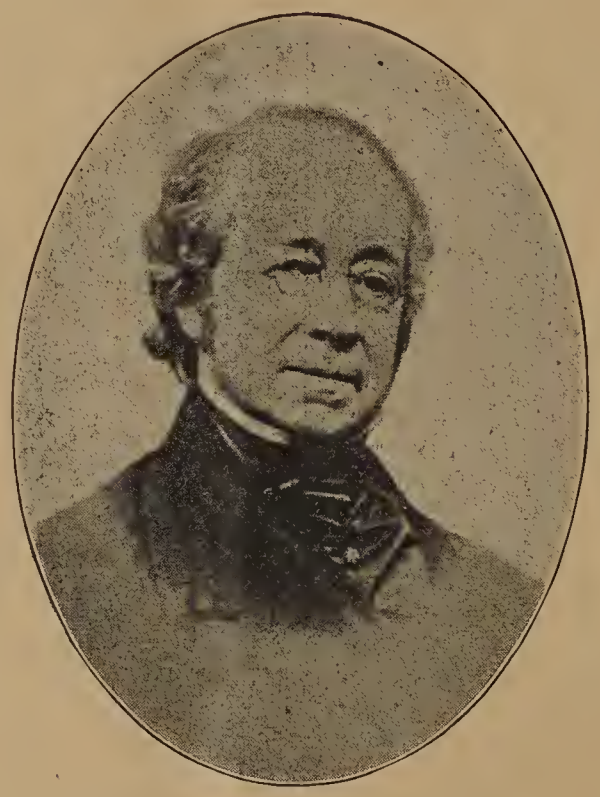
consists of several rows of small cells, regularly arranged in lines in a radial direction and containing sphæraphides. The only bark likely to be confounded with canella is that of *Cinnamodendron corticosum*, which closely resembles it in appearance and flavour. It is, however, darker in colour, of a dull, dark brown in transverse section, and under the microscope shows the oil cells of uniform size throughout, and the reticulated vessels form a distinct network in the transverse section. A full description of the structure of this bark is given in Planchon and Collin's 'Drogues Simples,' vol. vi., p. 897.

ANILIPYRINE A AND B.—By heating together to liquefaction acetanilide and antipyrine in the proportion of 1 or 2 molecular equivalents of the former to 1 of the latter, two bodies have been obtained by Gilbert and Yvon, which they term anilipyrine A and B respectively. They are both very soluble in water; more so than antipyrine. From physiological experiments on animals it is found to possess the usual antipyretic and analgesic effects. It is indicated in the same affections as its components, such as influenza, acute rheumatism, neuralgia, etc. The daily dose should be 1 to 2 grammes given in quantities of half a gramme at a time.—*Revue Medico-Pharm.*, iv., 196.

The Pharmaceutical Society and its Presidents.

THOMAS N. R. MORSON.—1848-49 AND 1859-61.

At a meeting of the Pharmaceutical Council, held June 7, 1848, Mr. Thomas N. R. Morson was elected President for the first time, and twelve years later the choice of his brethren upon the Council again fell upon him. More than an ordinary meed of praise should be awarded to this typical pharmacist, who was equally well known at home and abroad. Essentially a chemist who aimed at a high standard of manufacturing excellence, he was one of those by whose influence a new era was inaugurated, and his personal acquirements raised the position of British pharmacy. He was an admirable French scholar, having made that language his own; remarkable for his conversational talents, his knowledge was by no means limited to chemistry, and he was an energetic promoter of all that related to the consolidation of the Society. In the latter capacity he was instant in season and out of season, a constant attendant on all public occasions, more particularly at evening meetings, and he watched over the internal—one might say the domestic—arrangements of "the House," as if the premises at Bloomsbury Square were his own private property.



THOMAS N. R. MORSON.

Early in life Mr. Morson was thrown entirely upon his own resources. Originally apprenticed to an apothecary in Fleet Market (now Farringdon Street), his predilection lay in the direction of chemistry, and this was favoured by his being thrown into companionship with men of kindred tastes, who formed an association of their own in his immediate neighbourhood. There he met Faraday, a circumstance which proved the turning-point in his career. Freed from his apprenticeship, he went to Paris and entered the establishment of M. Planche, under whose guidance he acquired a knowledge of French pharmacy and a command of general French literature. Mr. Morson is, perhaps, best known amongst ourselves in connection with the unpretentious pharmacy in Southampton Row. In a little room at the back of his shop was produced the first commercial specimen of sulphate of quinine made in this country. The same may be said of morphine. The quinine was priced at 8*s.* a drachm, the morphine at 18*s.* a drachm. Both were originally made in a small shop which he had for a short time in Farringdon Street. A laboratory was built in Hornsey Road for the manufacture of creosote, morphine, and other chemical products. Other developments were ventured upon in his own time; in short, his name will always be held in honour as a foremost scientific manufacturer.

But it would be altogether a misconception to view Morson solely as a successful producer of rare chemicals. He surrounded himself with a circle of men of talent and high position in various walks of life. He was a member and regular frequenter of the meetings of the Royal Institution; also a prominent member of the Society of Arts; his house in Queen's Square was a sort of rendezvous for his distinguished guests, among whom were Graham and Fownes; Robert Brown, Bowerbank and Gray; George Cruikshank, Solly, and others, who found ample scope in his company for the discussion of their several topics. One evening at the dinner-table of Professor Redwood, when a small party had been invited to criticise the final proof of a forthcoming pharmacopœia, Mr. Morson varied the proceedings by giving a graphic summary of the Talmud, founded on a brilliant article which had just appeared in a quarterly review. His European reputation as a scientific chemist brought him into relationship with many Continental celebrities, who enjoyed his hospitality during their London visit. Guibourt, whom he in many respects resembled; Cap, Liebig, Mitscherlich, and Heinrich Rose, were amongst the number who owed their knowledge of the Pharmaceutical Society, its provisions and proceedings to his friendly aid.

Thomas Morson's first term of office was not a very eventful one. The question of introducing a Pharmacy Bill into Parliament was still under consideration; but the value of the Society as a means of defence had been proved in connection with proceedings taken by the Inland Revenue authorities and by the Medical Protection Society, the latter being a body which was inclined to attack chemists for interfering with what was held to be the exclusive prerogative of medical apothecaries. The lectures at the School of Pharmacy were not being attended to the extent anticipated at the outset, but the number of students in the laboratory was greater than ever. The Benevolent Fund was being steadily augmented, and as yet there had been no applicants for permanent relief. The three objects of the Society—protection of the craft, improved education, and benevolence—were thus being realised to a fair extent. Meanwhile, however, prominent supporters of the Society were being removed by death, notably, John Bell and George Fownes, F.R.S.

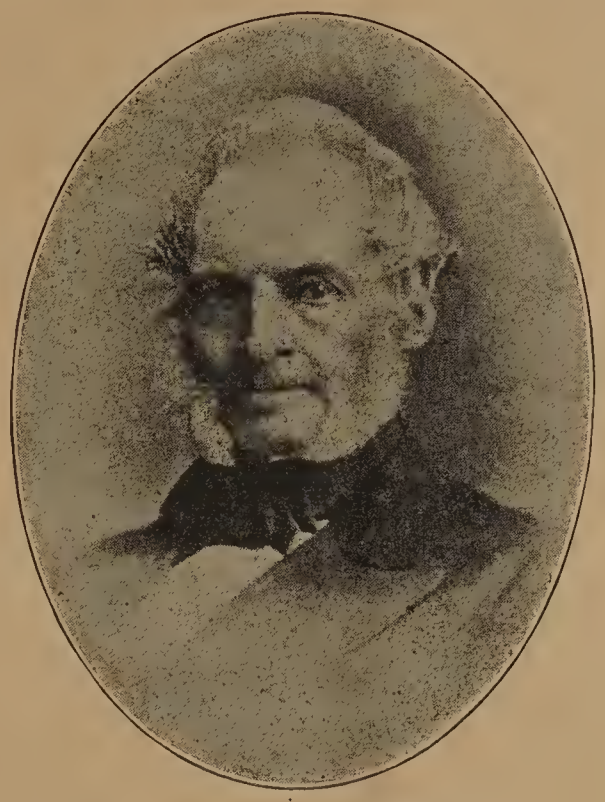
As the friend and frequent adviser of Jacob Bell, it fell to Morson's lot to fill the gap left by that apostle of pharmacy when his death caused a premature vacancy in the presidential chair in 1859. The *Pharmaceutical Journal* had just previously become the property of the Society by transfer, and it now became necessary to make suitable arrangements for carrying on the work Bell had so well performed as Editor. The Bell Memorial Scholarships were also founded about this time, that being the manner in which Jacob Bell's brethren in the craft decided to honour his memory. More important still was the erection of the existing suite of laboratories on the top floor of the Society's premises, the expense of so doing being partly met by a legacy of two thousand pounds left by Jacob Bell

for the purpose. Apart from these important changes and incidents, Morson's second term of office was characterised by the absence of any great excitement or activity in the world of pharmacy. He died March 3, 1874, in the seventy-fifth year of his age, and may rightly be classed among the most distinguished of the pharmacists of this country.

PETER SQUIRE.—1849-50 AND 1861-63.

Immediately following Thomas Morson, at the expiration of both his terms of office, came Peter Squire, a pharmacist blessed with an iron constitution, an infinite capacity for work, and marked individuality. To him is due the introduction of practical laboratory manipulation and dispensing in our examination system. Dying so recently as 1884 at the advanced age of eighty-six, his long services to pharmacy and its literature can never be forgotten. His career is coincident with the rise and progress of pharmacy in Great Britain. "Keen of intellect, vigorous of habit, indefatigable in work, pungent in speech, and a thoroughly capable business man" was the description given of him at the time of his death.

Apprenticed at Peterborough, he had his full share of the discomforts which at that date were supposed to be the right introduction to pharmacy, and the best preparation for a business life. In spite of long hours, the apprentice had a taste for botany, a science which he cultivated as far as the drudgery of his other occupations would allow. Coming to London, he had various engagements—the first as director of a laboratory at Snow Hill; then he took charge of the "dry" department in Thames Street; after which he spent eight years with Mr. Alexander Garden, of Oxford Street. Mr. Squire then went to Paris, where through an introduction by M. Bertin, physician to Prince Polignac, he had the privilege of attending the pharmacy of M. Béral in the Rue de la Paix.



PETER SQUIRE.

The business in Oxford Street with which his name is inseparably connected, was established about 1831. Mr. Squire turned his attention to medicinal extracts, his experiments being conducted after business hours, and prolonged frequently till early morning. Few of us are endowed with a constitution able to stand such herculean labours. The result was a series of preparations of true therapeutic value, possessing the physical characteristics of colour and odour of the plants from which they had been extracted. Carefully prepared plant-juices were his next care. These researches brought him under the notice of Sir James Clark, by whose influence his name appeared in 1837, as chemist in ordinary on the royal establishment. In that post he was succeeded by two of his sons in 1877, having completed his fortieth year of service.

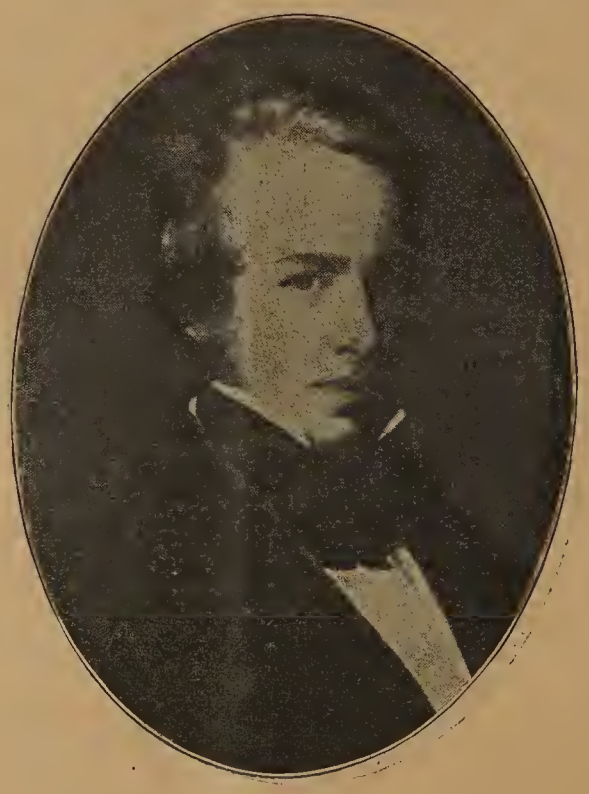
Mr. Squire, as it is well known, took an active part in the organisation of the Board of Examiners. For twenty-seven years he zealously discharged the duties of an examiner, and when he retired from the Board in 1869, his colleagues placed on record their high appreciation of his administrative aid. In 1849 he was elected President of the Society, and again, after an interval of twelve years in 1861. His personal exertions in endeavouring to secure the exemption of pharmaceutical chemists from jury service cost him a severe illness. He was the inventor of the ether apparatus by which the first capital operation was performed by Mr. Liston at the University College Hospital. He was one of the founders of the College of Chemistry, as also of the Royal Botanic Gardens in the Regent's Park.

Mention should be made of his place in pharmaceutical literature. Mr. Squire rendered signal service when he brought out, in 1851, 'The Three Pharmacopœias Compared.' The work showed conclusively the alarming differences in strength of preparations bearing the same name, and it paved the way for the production of a British Pharmacopœia. 'The Companion' to the above is a classic, and has been universally accepted by the medical profession and by pharmacists. The idea of classification was also extended to the pharmacopœias of the principal London hospitals. At the Fifth International Pharmaceutical Congress held in London in 1881 Mr. Squire contributed an able paper on the equalisation of the strength of preparations of potent drugs. On that occasion he seemed to renew his strength, and highly gratified the foreign visitors by reading his own contribution, though at an age when he might well have been spared the strain. He died April 6, 1884.

Shortly after Peter Squire became President the Pharmaceutical Society sustained a grave loss by the death of Dr. Anthony Todd Thomson, one of the first professors appointed by the Society's Council. This and previous losses in the ranks of those who had largely contributed, by active work and the influence of their reputation, to promote the advancement of the Society could ill be afforded at the time. It is recorded that an uneasy feeling appeared to exist among many of the members, and there were frequent murmurings of complaint. Sometimes it was urged that nothing was being done towards getting an Act of Parliament, "without which the Society could be of no real benefit to those who were contributing to its support." Or, by way of variation on this, objection was taken to the alleged "useless expenditure of the Society's funds in rearing up a class of young men who were inspired with high-fangled notions that placed them above their occupations." A third grievance was that the Council, "being principally drawn from the great drug houses of London, had little knowledge of, or sympathy with, the requirements of country trade." Already, in fact, what we are now in the habit of regarding as stock grievances were beginning to vex the souls of chemists and druggists who were contented to grumble rather than enter heartily into the task of ameliorating the adverse conditions under which pharmacy laboured. Twelve years later, when Peter Squire for the second time was at the head of affairs, the chronic irritation manifested at the earlier period had become crystallised, as it were, by the formation of the "United Society of Chemists and Druggists," which soon began to operate in active opposition to the Pharmaceutical Society." The latter body, however, thrived on this opposition, and the year 1862 has been regarded, with good reason, as constituting an

epoch in its history. Whilst the Juries Bill was before the House of Lords, an amendment was made on the petition of the Council of the Pharmaceutical Society, which would have the effect of exempting registered pharmaceutical chemists from serving on juries. It was acknowledged in the House that there was as good reason for exempting pharmacists as physicians and surgeons, for as one member remarked, they were employed in very responsible and delicate duties—in making up prescriptions—and it was desirable that they should not be called away from those duties to attend at distant places as jurymen. The reason given for not exempting chemists and druggists as well as pharmaceutical chemists was that the former did not, at that time, undergo any examination, nor were they members of a registered society. The Commons had not been willing that even pharmaceutical chemists should secure exemption at this particular time, but the Lords insisted, and the Bill became law as amended. This was an unqualified triumph for the Pharmaceutical Society, the Council of which, aided by the Secretary, Mr. Elias Bremridge, displayed great energy, and brought much influence to bear when and where it was most required. In fact, the incident was a striking example of what may be achieved by organisation, supported by qualification and registration.

Two decades had now elapsed since the starting of the Society in Bloomsbury Square, the commencement and ending of each of which had been signalised by an important event, the granting of the Charter in 1843, the passing of the Pharmacy Act in 1852, and the attainment of enfranchisement, or freedom from service on juries, in 1862, by those who had then become recognisably identified with the practice of pharmacy. In the words of Professor Redwood, "These may be represented respectively as the epochs of recognition, of designation, and of enfranchisement." If, therefore, Mr. Squire's early acquaintance with the supposed sweets of office was somewhat embittered by a sense of ingratitude on the part of the rank and file of the craft towards their leaders, his later experiences in the presidential capacity were such as to more than compensate for much that had gone before.



WILLIAM INCE.

Reverting to Mr. Squire's pharmacopœia work, it seems desirable to point out that he took a prominent part in originating the idea of a single British Pharmacopœia, and in his address delivered in May, 1862, he was able to announce that the idea had been practically realised, as manuscript copy of the first British Pharmacopœia was then complete, and the work was in course of being produced. At the same time he remarked that the Metric System was by no means "unpopular" with the Pharmacopœia Committee. He also advocated the appointment of a permanent committee for the purpose of eliciting information as to the extent to which rarely used materia medica and official preparations were really employed, or what non-official remedies might with advantage be included in the national medicine book. This will probably come about before long; meanwhile, it is not encouraging to reflect that such a proposal, by one so closely connected with the first British Pharmacopœia Committee, has not yet found acceptance.

WILLIAM INCE.—1850-51.

The successor of Peter Squire in 1850 was the bearer of a name which has been well to the fore in matters pharmaceutical ever since. William Ince was born on January 15, 1795, at Northwich, Cheshire. He served an apprenticeship of seven years with Robert Shearing, of Chester, the trade being of a mixed character, with a faint suspicion of pharmacy. Here his health was injured by trying to combine a severe course of study with protracted business hours, and he went home for nine months. On coming to London, his first situation was in Barbican, which he left to enter the establishment of Messrs. Godfrey and Cooke, in Southampton Street, Strand, which proved the occupation of his life. He became Vice-President under the leadership of Peter Squire, having been an active Member of Council for many years. He had the good fortune to be elected President during the Great Exhibition of 1851, which was to him a source of deep satisfaction. Singularly diffident in manner, Mr. Ince enjoyed and sedulously cultivated the society of young men; he was given to hospitality and may be said to have kept open house for the stranger within his gates. He was a frequent attendant at the lectures at King's College and the Royal Institution. As one of the Founders of the Pharmaceutical Society, his chief aim was the amelioration of the existing state of pharmacy, and he promoted educational facilities to the utmost of his power. To him were due many improved methods of chemical and galenical manufacture connected with the firm with which he was associated, while during the closing years of his life he endeavoured by diligent reading to repair, not the neglect but the deficiencies of the past; thus he succeeded, not only in gaining a practical knowledge of the chemistry of the day as taught by Daniell and Brande, but in being well versed in general literature. He died shortly after retiring from the presidential chair, on March 26, 1853.

In the course of his address as president, delivered on May 20, 1851, Mr. Ince referred to the fact that two new pharmacopœias—Dublin and London—had recently been published. Whilst he acknowledged that they showed much advancement in a right direction, he took the opportunity to deplore the fact that the Royal College of Physicians, London, should not have called to their assistance a few well-known chemists and druggists, "whose long experience and extensive knowledge in practical pharmacy would have guaranteed them (the physicians) from some of the errors and inconsistencies which are so palpable in their last production." In this department, he urged, there could be no doubt that men whose everyday employment is the compounding of medicine and the improvement of pharmacy, have vastly the advantage over professional men whose time is almost exclusively occupied in the investigation of disease.

An important allusion in the Annual Report which was read at the conclusion of Mr. Ince's address, was that which bore on the cost of maintaining the School of Pharmacy. Though, at that time, every place in the laboratory was occupied, the lectures

had not been so well attended, and the regret of the Council was expressed that so important a means of education was not appreciated as it deserved. The average deficiency of £100 per annum during the six years the School had existed was not regarded as a source of discouragement, but in view of the lack of support by students, the loss on the lecture account of £400 per annum was considered to be a much more serious matter. Notwithstanding this heavy expenditure, however, no thought of materially curtailing the Society's educational arrangements was entertained, the Council recognising that establishments such as the School of Pharmacy "cannot, even under the most favourable auspices, realise a pecuniary return, or even defray their current expenses out of the fees received from the students." It was pointed out that the most flourishing colleges could not be maintained unless liberally endowed, and that even medical schools were fostered by the artificial stimulus of legislation, which made the attendance of pupils compulsory. Such institutions on the Continent are generally established and maintained by the governments of the respective countries, whereas in Great Britain they are dependent "either on the voluntary liberality of the public or on the combined support of the promoters of scientific education and the recipients of its advantages."

As already mentioned, the Great Exhibition was open during the time William Ince was at the head of affairs, and in the Annual Report already referred to it was stated that the efforts of British chemists in support of this national undertaking afforded a satisfactory indication of practical skill and commercial enterprise. Several past students at the School of Pharmacy were among the exhibitors, and their productions were held to reflect credit on the Society with which they were connected. A satisfactory improvement was recorded in the pharmaceutical meetings, the attendance having been more numerous, and the supply of scientific communications such as to keep up a lively interest in the proceedings. The Benevolent Fund had been instrumental in affording relief in several cases, although it had not yet come into extensive operation; indeed, a portion of the income of the current year had been added to the capital of the Fund. In conclusion, it was stated that, although the sanguine hopes of some of the Founders in regard to the sanction of the Legislature had not yet been realised, the influence of the Society had been extended and its character raised by the successful efforts made to promote pharmaceutical advancement, and to establish a system of education. The Council congratulated the members on the comparative freedom they had lately enjoyed from those attacks and hostilities that were prevalent in former years.

The opinion was firmly held by the Council of that day that the Society's efforts would be even more successful under the compulsory provisions of an Act of Parliament, and the opportunity was soon to be afforded for putting this hypothesis to the test. A cause of popular excitement at the time was the occurrence of numerous cases of poisoning, and especially of poisoning by arsenic. As a result, a Bill for regulating the sale of that substance was introduced by the Secretary of State, and passed without any serious opposition. By the provisions of that Act, the retail sale of arsenic was restricted to chemists and druggists and medical men, and an important step was thus taken towards securing the much-desired legislation to regulate the practice of pharmacy. The business of the chemist and druggist was at last recognised in Great Britain as being more than a mere trade, and it was felt that the time was now ripe for making further efforts to introduce a Pharmacy Bill into Parliament. Jacob Bell had secured a seat in the House as member for St. Albans, and though the borough was disfranchised shortly after, he retained his seat to the end of that Parliament. Everything, therefore, was propitious for the attempt to secure due recognition of pharmacy on the part of the State. Meanwhile, however, William Ince's year of office arrived at its close.

VALUATION OF DIGITALIS LEAVES.

Dr. G. Fromme* has carried out for Messrs. Cæsar and Lorentz an examination of numerous samples of digitalis leaves according to the method recommended by Keller,† which is intended to determine the amount of digitoxin present in the leaves on the assumption that it is the really active medicinal constituent. Instead of extracting the leaves by percolation with spirit (70 per cent.), Fromme macerates the leaves (28 grammes) with the spirit (280 grammes) for at least three hours, with frequent shaking meanwhile, and then takes 207 grammes of the filtered alcoholic liquor (representing 20 grammes of leaves) for treatment as directed by Keller. By that means much time is saved, and the extraction is stated to be complete. The results obtained are as follow :—

Date.	Description of Drug.	Moisture.	Crude digitoxin.		Pure digitoxin.	
			Moist.	Dry.	Moist.	Dry.
1894.	Fine powder	9·51	·395	·437	·245	·271
1895.	Fine powder	8·26	·350	·385	·180	·196
1896.	Leaves gathered in the Harz:—					
,,	July	6·51	·410	·439	·305	·326
,,	August	7·37	·312	·337	·292	·315
,,	September	8·64	·410	·449	·320	·350
,,	Stalks removed :—					
,,	November	10·27	·230	·256	·230	·256
,,	Thuringian leaves :—					
,,	July	9·11	·595	·655	·355	·391
,,	October	8·25	·285	·311	·140	·153
,,	Fine powder	6·45	·462	·492	·310	·331
,,	Leaf stalks	6·00	·305	·325	·210	·224
,,	Leaf stalks, older	6·56	·250	·268	·135	·145
1897.	Harz leaves without stalks :—					
,,	June	6·19	·300	·320	·220	·235
,,	Harz entire leaves	9·05	·275	·302	·245	·266
,,	Harz leaves without stalks :—		·295	·318	·215	·231
,,	First year plants, July	7·11				
,,	Leaf stalks, July	5·00	·440	·462	·280	·294
,,	Harz leaves without stalks	8·43	·315	·344	·235	·257
,,	Second year's plants, July	8·68	·175	·192	·095	·104
,,	Harz flowers :—					
,,	Second year's plants, July	9·12	·395	·435	335	·369
,,	Harz entire second year's plant :—					
,,	Without roots, July	11·12	·135	·152	0·105	·118
,,	Harz woody stalk of second year's plant :—					
,,	July	8·86	·155	·170	·080	·88
,,	Harz entire leaves :—					
,,	July	5·98	·360	·383	·285	·303
,,	August	6·56	·305	·327	210	·225
,,	Thuringian leaves without stalks :—					
,,	June	4·98	·410	·431	·340	·358
,,	July	8·17	·370	·403	·295	·321
,,	Thuringian whole leaves :—					
,,	July	5·74	·395	·419	·275	·292
,,	Spessart leaves without stalk :—					
,,	June, early	4·15	·365	·381	·225	·268
,,	June, middle	8·60	·375	·410	·325	·356
,,	July, early	11·36	·325	·379	·255	·286
,,	August, early	5·45	·410	·434	·300	·318
,,	Tannus leaves without stalk :—					
,,	June, end	7·92	·260	·282	·175	·190
,,	English selected leaves :—					
,,	July	3·25	·350	·362	·180	·186

Bacterial Disease of Cotton.—Mr. J. M. Stedman describes a disease which attacks the capsules of the cotton-plant, due to an undescribed microbe which he names *Bacillus gossypinus*. It consists of short straight rods, abruptly rounded at the ends, about 1·5 by 0·75μ, usually solitary, but sometimes united in pairs or in chains of three or four. The bacillus is motile and aerobic, forms spores, and does not liquefy gelatin.—*Bulletin* (No. 55), Agricultural Experimental Station, Alabama.

* Caesar and Lorentz, *Geschaftsbericht*, September, 1897.
† See *Pharm. Journ.*, lix., 62.

THE NATURE AND PURPOSE OF THE BRITISH PHARMACOPŒIA.*

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(*Concluded from page 230.*)

But when, in addition to the name opium, we read in the Pharmacopœia, not only a definition of the substance and a description of its physical characters, but also the details of a test which, when applied, will prove opium to contain 10 per cent. of morphine, we learn that we are compelled by law to understand by opium not merely the inspissated juice of the unripe capsule of the *Papaver somniferum*; not merely a substance having certain physical characters; but further, a substance with a definite medicinal value in consequence of the presence of an exact proportion of active principle, viz., 10 per cent. of morphine. This is the meaning of opium in the official sense of the term, and it is the meaning by which the physician and the pharmacist alike are bound. This one substance of the definite strength indicated, is the one substance to be employed in the preparing and dispensing of medicines when the word opium appears in the designation.

The task of the Pharmacopœia, however, even with this provision of descriptions and tests, is still incomplete, and for this reason:—The great majority of the substances used as medicines—*e.g.*, poppy capsules, gentian root, etc.—are obviously, in their natural state, not in a form convenient for administration to patients. Each of them doubtless contains a small proportion of some medicinal principle, but with this is associated a large amount of material useless for the purposes of the physician. Hence, it is the custom to obtain from the crude drugs various preparations such as infusions, tinctures, extracts, etc.; and these contain the medicinal constituents of the drugs apart from useless matter and in forms convenient for use as medicines. It can only be as a result of observation and experiment that it can be determined what are the preparations which, in the case of each particular drug, most accurately represent its medicinal value. But such knowledge has gradually accumulated by experience, and it is expressed in the Pharmacopœia in the shape of the various groups of official preparations. Thus, to return to our original example, if we look in the Pharmacopœia at the page in which poppy capsule is named and described, we shall find, after the detailed description of the remedy, a list of its preparations; and in this particular case the list includes a decoction, an extract, and a syrup. And now, if we turn to the part of the volume dealing with (say) decoctions, we shall find detailed directions for making decoction of poppy—the ingredients used, their proportions, the length of time they are to be boiled, and, indeed, all the minutiæ necessary to complete the process of manufacture. To these directions the pharmacist is compelled by law to adhere, so that the decoction of poppy is of the same nature and same strength in every part of the kingdom. The same principle applies to all the other official preparations. Therefore, both as regards remedies in their crude state, and as regards also the forms or preparations in which they are prescribed, the authority of the Pharmacopœia is provided to secure uniformity in the definition and interpretation of the terms in which medicines are named. The sense in which these terms are to be understood and acted upon in this country is the sense defined in the British Pharmacopœia, and none other is recognised or acknowledged. And the justification of this legal definition is, that without it, medicinal preparations bearing the same name might have different strengths, and thus the public safety and welfare would be imperilled.

The main function of the Pharmacopœia, then, is to secure an authoritative definition of the substances used as remedies, and authoritative strengths and methods of making the various medicinal preparations. If it is to fulfil this function, it is manifest that the Pharmacopœia must name and define all the substances generally employed as remedies. Otherwise the remedies omitted will have no official descriptions or tests, and the dispenser meeting with the name of any of these remedies in a prescription will have no infallible guide to the interpretation of this name. Consequently there will be room for variety in the interpretation adopted. No doubt the rule here stated must be applied within the limits of practical commonsense. It cannot be expected that every odd substance which some small number of medical men persist in regarding as a remedy shall be introduced into the pages of the national Pharmacopœia. But it is for the public interest—for which the Pharmacopœia exists—that an official description and official tests shall be supplied for every medicine which is ordered at all frequently, or by any reasonable number of medical men.

The question to be considered then in connection with the discussion whether any particular substance shall or shall not be introduced into the Pharmacopœia is—Is it used to such an extent as to make it advisable in the public interest to provide an official definition and description? The question, I say, is not, Is it useful? but, Is it used? The answer to the former question is, no doubt, to medical practitioners all important. But it is not the business of the General Medical Council to supply that answer, nor indeed has the Council any special competence to do so. It is no doubt desirable that medical men shall employ as remedies only those substances which possess undoubted therapeutic efficacy. The Pharmacopœia, however, does not exist for the purpose of attaining this end. It has to take professional practice as it exists, and by providing adequate definitions and tests for remedies actually in use, to do what is possible to secure that the dispenser shall supply the substances actually intended by the physician. Hence the fact that any substance is named in the Pharmacopœia is not an official guarantee that it possesses medicinal virtues. It merely proves that, in the opinion of the General Medical Council, the substance in question has an area of employment so considerable, that an official definition of it is demanded. Of course, if any substance is at all extensively used, there is a certain presumption that it is useful. But of its utility the Pharmacopœia gives no official warrant. It is, in short, the function of the Pharmacopœia to define remedies, not to select them. The education of the profession in the selection and use of remedial agents is not the business of the General Medical Council, which—at least, in its corporate capacity—has no special qualifications for such a task. That education must be supplied by those engaged in the special study of therapeutics, and by the published experience of members of the profession as this appears in the medical literature of the present and former times. From these sources, and from his own experience, every practitioner must form for himself an opinion as to what substances have value as remedies, and in the selection and use of these he must act on his own responsibility. It may be urged that the Medical Council might call to its assistance various therapeutic experts, and might on the advice of these pronounce on the medicinal virtues of substances proposed to be entered in the Pharmacopœia. A volume so constructed would doubtless have considerable educational value, but there is no need to set the machinery of the Medical Council in action in order to secure its appearance. This is a free country, where every man "may speak the thing he will," and if any therapeutic expert has aught to say that is worth saying, the medical journals and publishers' lists are open to him. His opinion and teaching will then be taken on their merits, which will be better both for him and for the profession, than if his personality were concealed behind the dignity and form of the General Medical Council. There is, indeed, no necessity for the existence of any volume having legal force to indicate to us what are remedies and what are not. We do not require such official instruction, nor is it advisable to ask for it. To stamp a selected list of substances as authoritative medicinal agents, would be more likely to hinder than to promote progress in the healing art. It would tend to stereotype practice and to erect an artificial therapeutic orthodoxy. The profession and the public no more need official teaching on therapeutics than they need an official chemistry or anatomy or surgery. All these can be supplied, and are best supplied, by private enterprise. But the public and the profession do require an authoritative interpretation of the names of medicinal agents, otherwise every man may understand these as seemeth right in his own eyes. Hence the legislature has ordered a list of such agents to be compiled, and has committed the responsibility of the compilation to the General Medical Council. This list, with the necessary descriptions and tests, is the British Pharmacopœia.

There is, however, one feature of the Pharmacopœia which at first sight gives colour to the suggestion that one of the purposes of the volume is at least to suggest instruction in therapeutics. This is the statement of a dose in connection with

* A lecture delivered in Queen Margaret College as an introduction to the course of Practical Pharmacy, Summer Session, 1897.

each of the official remedies employed for internal administration. But in the preface to the volume it is carefully pointed out that "these doses are not authoritatively enjoined by the Council, and the practitioner must rely on his own judgment and act on his own responsibility in graduating the doses of any therapeutic agents which he may wish to administer to his patients." A statement of doses in the Pharmacopœia has this practical value. A physician in writing a prescription may—for even Jupiter sometimes nods—by a lapse of memory or a slip of the pen order a dose much in excess of what he intends. The dispenser, in consequence of the statement of doses in the Pharmacopœia, is now in a position to note this excessive dose, and to approach the physician to ask for his direct authority before dispensing it, on the ground that it exceeds the maximum quoted in the Pharmacopœia. This would be a somewhat difficult thing for the dispenser to do were he not able to support himself with a definite official reference. The introduction of doses into the Pharmacopœia provides, therefore, an additional check upon accidental errors, and in this way promotes the public safety. It is not the case that in mentioning what is an "average dose" of each remedy the Pharmacopœia intends to instruct practitioners in the treatment of their patients. The selection of the dose, like the selection of the remedy, is a matter for medical education and experience, and is taken entirely on the personal responsibility of the physician. Frequently, in practice, the pharmacopœial dose is purposely exceeded, and when this is the case it is well for the physician to indicate that his order in this respect is intentional by writing some special mark, such as a note of exclamation, or his initials, immediately after the dose in question. In this way the dispenser will be made aware that the large dose is the result of design and not of accident, and so will have no hesitation in dispensing the prescription.

One further point demands attention. The Pharmacopœia, as we have seen, is not a book intended to give instruction or guidance in therapeutics. Neither is it intended as a student's text-book in chemistry, or botany, or pharmacy, or materia medica. It is a book of technical descriptions and technical directions intended to guide the pharmacist in the selection and manipulation of remedies and medicinal preparations more or less frequently used and ordered by physicians. The student can be provided by private authors with text-books on the geography, chemistry, pharmacy, etc., of the official remedies much more satisfactorily than by the Medical Council, which has no commission or responsibility to supply such instruction. The Pharmacopœia therefore abounds in technical terms and phrases without providing any explanations of these for the benefit of the uninstructed. It tells you, for example, that distilled water should give no precipitate with barium chloride, but it does not tell you that this test is to show the absence of sulphates, because the purpose of the Pharmacopœia is not to teach you chemistry, but by setting forth the methods necessary to test the genuineness and purity of distilled water, to put the pharmacist in a position to supply and use a pure article in the preparation and dispensing of medicines as ordered by the physician. The same is true of all the other official descriptions and tests. If you want to understand the Pharmacopœia, therefore, you must first of all be competent to appreciate the significance of the language of chemistry and botany and physics, and you must study the published commentaries on the volume, just as if you want to understand the effect of an Act of Parliament you must be competent to interpret the exact meaning of the technical terms which abound in legal phraseology. It is no more the business of the Pharmacopœia to teach chemistry than it is the business of an Act of Parliament to teach the rules of legal interpretation. The Pharmacopœia demands a technical phraseology because only in this way can definiteness and accuracy of statement be secured. Hence the person who approaches its study must by his previous training be fitted for the task, and at many points of his course will find the need of some friendly commentator and guide. To the pharmacist, the thorough and detailed study of the Pharmacopœia is an absolute necessity, as all his proceedings are governed by it. To the medical student, the details of the book are of but little importance, and those of mere manufacturing interest he can entirely disregard. But until he has gained experience and is competent to judge for himself, he must remember that the substances named in the Pharmacopœia have a more or less considerable body of professional opinion in their favour, and that there is therefore a reasonable probability that at least the majority of them have some medicinal value. Further, he must remember that the official preparations of each remedy are the forms in which experience has shown that remedy to be most suitably and successfully presented, and hence it is his duty to equip his memory with at least the most important of these preparations. In his practice, too, the medical man must needs have dealings with the trained and educated pharmacists who execute his orders, and it is therefore well for the personal position of the physician that he shall be familiar with the nature of the Pharmacopœia, with the characters of the official preparations, and with the principles of the processes by which these are obtained. Ignorance on these points limits his range of the agents which may be usefully employed in practice, and is apt when it is betrayed to the pharmacist to lessen the latter's respect both for the individual physician and for the profession generally. It provokes, as it is phrased by an old author, "the sneering of the apothecary's boy." Again, the medical man has also this important relation to the Pharmacopœia. Most of the names of the medicines he is to use, are there defined, and the definition is as rigid for him as for the pharmacist. When he writes in his prescription "tincture of opium" or "arsenical solution," or any other official preparation, he is not at liberty to understand by these terms aught but what the Pharmacopœia understands by them, and therefore the strength of the active ingredient in these preparations is a matter of prime importance to the physician.

In this class you are to study by the use of your own senses the characters and properties of some of the more frequently used remedies; to see how these and others can be prepared for actual use; to apply the methods ordered in making the official preparations; and to gain some insight into the art of practical dispensing. Very frequently in your work you will be referred to the pages of the Pharmacopœia. I hope you are now prepared to recognise the exact position and force of that authority, and to appreciate and justify its existence.

SELECTED FORMULÆ FOR PERFUMES.*

Lilas de Perse.—Extracts of jasmine, 2 kilos.; tubéreuse, 1; jonquille, 1; orange, 1; rose, 1 kilo.; tinctures of ylang-ylang, 100 grammes; musk, 25; ambergris, 25; terpineol, 50 grammes,

Ylang-Ylang.—Extracts of jasmine, 1 kilo.; rose, 1 kilo.; tubéreuse, 2; tinctures of orris, 2 kilos.; musk, 30 grammes; civet-30 grammes; otto of roses, 20; oil of ylang-ylang, 60 grammes.

Stephanotis.—Extracts of orange, 1 kilo.; rose, 1 kilo.; jasmine, ½ kilo.; cassia, ½ kilo.; tinctures of orris, ½ kilo.; musk, 20 grammes; oils of roses, 5 grammes; lemons, 1 gramme.

Hyacinth.—Spirit, 3000; distilled water, 300; extract of jasmine, 500; tinctures of benzoin, 100; musk, 50; oils of neroli, 10; hyacinthine, 60 grammes.

Chypre (English).—Extracts of jasmine, 2 kilos.; rose, 2 kilos.; tubéreuse, 2 kilos.; tinctures of ambrette, 2 kilos.; orris, 1 kilo.; musk, 500; civet, 200; tonka, 300; benzoin, 500; vanilla, 100; oils of bergamot, 20; otto of rose, 50; patchouli, 10; sandalwood, 5; rose geranium, 15 grammes.

New-mown Hay.—Spirit, 2500; benzoic acid, 5 grammes; oil of patchouli, 2; lavender, 5 grammes; roses, 4 grammes; neroli, 5 grammes; bergamot, 10 grammes; musk tonquin, 5 grammes; vanilline, 20; orris powder, 150; tonka beans (cut up), 100 grammes.

Chypre (German).—First extracts of jasmine, 2; rose, 2; tubéreuse, 4; tinctures of Abel musk, 1; orris, 2, kilos.; musk, 500; civet, 200; cumarin, 5; heliotropine, 10; vanilline, 5; oils of bergamot, 20; roses, 20; patchouli, 10; sandalwood, 5; geranium de rose, 40 grammes.

Elder Blossom.—Spirit, 8000; distilled water, 2000; oil of ylang-ylang, 70; cumarin, 45; terpineol-muguet, 250; musk Bauer, 5 grammes.

Violet.—First extracts of violet, 6; cassia, 3 kilos.; orange water, 250; tincture of musk, 15; oils of bergamot, 250; geranium (Afr.), 15; ionone, 15 grammes.

Elder.—Extracts of jasmine, 6; orange, 2; rose, 1½; tubéreuse, 1; cassia, ½ kilo.; tinctures of musk, 15; heliotropin, 15; terpineol, 125; oils of roses, 5; neroli, 45; rose-water, 1000 grammes.

* Abstracted from the *Pharmaceutische Post*.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

LINSEED OIL.—This oil is extensively used in the arts and manufactures on account of its capacity for forming a solid varnish-like body when exposed to the air. It consists chiefly of linolein with small quantities of olein, palmitin and stearin, and is a typical "drying" oil. This property is due to such oils containing the esters of linoleic acid or its homologues, and in consequence the iodine-absorption is very high—about 160 per cent. for linseed oil. Linolein does not form a solid eläidin with nitrous acid. "Boiled oil" is linseed oil which has been heated to incipient decomposition, usually with the addition of some metallic oxide or salt, technically known as "driers." Some of the metallic compound goes into solution, and its presence hastens the drying of the oil when exposed to air. The reason for this is not well known, but the metallic oxide probably acts a "carrier" of oxygen. The varnish-like substance so formed is known as linoxyn.

OIL OF THEOBROMA.—This consists chiefly of stearin with some olein and traces of glycerides of other acids, among which is arachidic acid, $C_{19}H_{39}COOH$, a higher homologue of stearic acid. The iodine absorption is low, since the greater part consists of glycerides of fatty acids belonging to the stearic or saturated series. It is used for making suppositories, because it is a hard solid capable of being moulded at ordinary temperatures, and yet easily melts below the temperature of the body.

EXPRESSED OIL OF NUTMEG.—This contains about 5 per cent. of essential oil, some free myristic acid, $C_{13}H_{27}COOH$ (stearic series), and the glycerides of myristic and stearic acid.

COD-LIVER OIL.—This oil is composed chiefly of olein with small quantities of stearin, and also glycerides of the lower fatty acids. It contains, besides a minute trace of iodine, some substances of an alkaloidal nature, and bile acids. The value of cod-liver oil is generally considered to be due to its comparatively easy and rapid assimilation. This may be due to the bile acids which do facilitate the passage of oils through membranes. Cod-liver oil usually contains some free fatty acid. The dark brown varieties obtained from stale livers, or by the use of a high temperature contains sometimes 7 or 8 per cent. The colour test with sulphuric acid depends upon the presence of biliary compounds, and is given more or less distinctly by other liver oils.

LARD.—The Pharmacopœia directs lard to be obtained solely from the omentum or flare, the fat in the abdomen. Some commercial varieties are, however, prepared from the entire fat of the hog, and contain in consequence an unduly large proportion of olein. This having a lower melting point than stearin and palmitin—the two chief constituents of omentum fat—makes such lard too soft, and in ointments made with it one may often notice a separation of drops or pools of an oily fluid. This is known, when separated, as lard-oil or lard-oleine.

SUET is the analagous fat obtained from the omentum of the sheep.

WOOL-FAT.—The most prominent constituent of this is cholesterin, a monatomic alcohol, $C_{26}H_{43}OH$, of unknown constitution. This exists partly free and partly as stearate and palmitate. It contains also a smaller quantity of ordinary glycerides. If wool-fat be saponified with alcoholic potash in the usual manner and the alcohol removed by evaporation, the resulting soap may be dissolved in water. The cholesterin, unlike glycerin, is insoluble in water. From the soap solution it may be obtained by agitation with ether. The ethereal layer, separated and evaporated, deposits the cholesterin in characteristic scaly crystals. Cholesterin in several isomeric forms is found widely distributed in the animal and vegetable kingdoms, *e.g.*, in blood, bile, gall stones, and vegetable waxes. In the B.P. test presence of more than traces of free fatty acids are detected by titration with soda. The colour reaction with strong sulphuric acid is due to cholesterin, to which constituent its capacity for absorbing water is also due.

CERA FLAVA.—Beeswax consists of about 15 per cent. cerotic acid, $C_{23}H_{53}COOH$, a homologue of acetic acid, and over 80 per cent. myricin, the palmitic ester of myricyl alcohol. Myricyl alcohol has the formula $C_{30}H_{61}OH$, and is a homologue of ethyl alcohol. Myricyl palmitate, $C_{15}H_{31}COOC_{30}H_{61}$, is therefore comparable with ethyl acetate, $CH_3COOC_2H_5$, but with increasing number of carbon atoms in the molecule the physical properties of the higher homologue undergoes the usual change observable in homologous series: that is, while the lower members are gases or liquids with low boiling points, the higher and more complex members become solids with higher melting and boiling points. Owing to its comparatively high value, beeswax is liable to a good deal of adulteration. Most of the adulterants affect the sp. gr. and melting point of the wax, and the observation of these physical constants becomes, therefore, valuable means of detecting sophistication. Mineral substances, such as barium sulphate or ochre, and starch, flour, etc., are insoluble in hot turpentine, which dissolves beeswax easily and entirely. Treatment with rectified spirit only removes from genuine beeswax a small quantity of colouring and fatty matter, but dissolves such adulterants as resin and stearic acid. Aqueous solution of soda, when boiled with wax, does not saponify the latter (for which an alcoholic solution is necessary), but does saponify fatty substances, like tallow, suet, etc. After separating the undissolved wax, if these substances be present, the aqueous fluid yields a precipitate of insoluble fatty (stearic and palmitic) acids when acidified with hydrochloric acid. Paraffin wax reduces the density and the amount of potash required for complete saponification, which, as mentioned above, must be carried out in alcoholic solution. Genuine beeswax requires about 9 per cent. KHO. Adulteration with fats increases the amount of KHO, since such substances as lard and tallow require about 19 per cent. KHO. Paraffin wax may also be detected, and its proportion determined by heating the sample with excess of concentrated sulphuric acid. This completely chars the beeswax, but leaves the paraffin unaffected. The charred mixture, after cooling, is washed with water to remove acid and then with alcohol to remove adhering water. The black residue is next exhausted with ether: this dissolves the paraffin wax, which may be separated and weighed by evaporating the ethereal solution.

PEPSIN.—The process described in the Pharmacopœia does not yield a very active product, since it includes not only the pepsin ferment but also the cellular elements of the mucous membrane. To obtain a ferment free from the latter the moist pulp, obtained by scraping, is placed in water acidulated with hydrochloric acid and the mixture kept warm until a nearly clear fluid is obtained containing the pepsin and the peptones formed by its digestive action on the mucous tissue. If this be filtered and the filtrate saturated with salt a precipitate is formed which has very active digestive properties, while the peptones remain in solution. This precipitated pepsin is collected and suspended in water in a dialyser. This is done in order to separate it from the adhering salt which diffuses away, leaving the pepsin dissolved in the water. Note that this pepsin is soluble in *water* but not in strong saline solution. From the watery solution the pepsin is next precipitated by addition of excess of alcohol, then collected by filtration and dried at a low temperature. Or the watery solution may be evaporated in vacuo and the residue powdered. Pepsin, like other ferments, loses its digestive properties if exposed to a temperature exceeding about 70° C. The process described above embraces in outline the principles upon which are prepared the soluble pepsins—mostly of American origin, which can now be purchased having a proteolytic (proteid-digesting) activity far exceeding the standard required by the Pharmacopœia. Pepsin may be obtained in scales by evaporating a strong solution to which some dextrin has been added. When the fluid becomes thick it is spread upon glass plates and scaled in the usual way. The official method of testing pepsin is by observing the weight of coagulated white of egg digested in a certain time under certain conditions of temperature, concentration of solution, and acidity. In order that comparative results may be obtained, these conditions must be rigidly observed. Coagulated white of egg is em ployed, because it is a proteid body easily obtained in a fairly uniform condition. It is necessary to pass it through a sieve, as described, in order to obtain it in a uniform condition for exposure to the digestive action of the pepsin. If it be used in large pieces it is digested more slowly, owing to the smaller extent of surface exposed. It serves also to imitate the condition in which most of the proteids of food are introduced normally into the stomach—that is, cooked and consequently coagulated. During peptic digestion the albumen passes first into soluble acid albumen, and then into albumose and peptone. The student is strongly recommended to pursue the subject by consulting some special work, such as Stirling's 'Practical Physiology.' More detailed information will be found in Halliburton's 'Physiological Chemistry.' Compare also the analogous subjects of diastasic and pancreatic digestion in the books mentioned, for although no products representing these actions are officially recognised in the Pharmacopœia, such substances as represented, for example, by malt extracts and pancreatin, possess considerable importance in the treatment of disease

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PROPRIETARY VERSUS OFFICIAL PREPARATIONS.

Not the least interesting of the papers read before the British Medical Association, at the Toronto meeting, was that by Dr. Fotheringham, of Toronto, who took as his subject the prescribing of proprietary instead of pharmacopœial preparations. He was fully justified in his remark that the selected topic ought to be both timely, acceptable, and profitable. It was timely because of the undoubted tendency of the profession of late years to desert the Pharmacopœia and wander like lost sheep "into strange pastures and devious ways laid down for them by shepherds, not disinterested." It should be acceptable because the profession everywhere is, "with a few isolated and contemptible exceptions," at one in condemnation of nostrums and compounds and panaccas, and of all attempts to turn to private profit either the needs of the suffering or the talents and experience of the patient clinician and investigator, whose rewards are always so disproportionate to the benefit he confers upon mankind. One cause of the development of the custom of prescribing proprietaries of late years was alleged to be the insistence of manufacturers, who, often without real knowledge of the merits of their wares, vend them with purely commercial motives, strenuously claiming superiority "as they might for a particular kind of bicycle." At the same time, it was freely acknowledged that the profession is very much indebted to the genuine scientific ardour and often very remarkable enterprise shown by many manufacturers, who have produced many useful and palatable preparations of old drugs, besides introducing some most useful new ones. A second cause of the custom was said to be the desire of the public for more palatable medication, born partly of increased fastidiousness which accompanies the general diffusion of knowledge, partly of the diligent propaganda carried on by homœopaths, faith curers, etc., and partly of the bad influence of a large section of the medical press. "We are for our professional sins afflicted by a set of advertising media, called medical journals, ostensibly controlled by the editors, but really dominated by the sheerest commercialism, having only a few pages of reading matter, usually of little merit, but padded full of puffs for all kinds of proprietary affairs of unpublished formula, from men signing themselves 'M.D.'"

A fourth, and perhaps the most important, cause mentioned is the enormous increase in the extent of the field of professional training, so that the medical student spends on essential subjects, such as anatomy, chemistry, physiology, histology, and pathology so much time that he cannot become proficient as he should be in prescribing. Moreover, the teacher of therapeutics nowadays is so beset with the necessity of importing into actual practice generalisations discovered for him by the chemist and pathologist, that it is with difficulty he finds time to deal with the Pharmacopœia at all. Now, if the student is not compelled to become well acquainted with the official remedies and preparations before graduation, he is not very likely to acquire that knowledge afterwards, but he will rather be easily and gently floated off "into a 'limbo' of 'popular' remedies." It becomes increasingly necessary, therefore, that lecturers on therapeutics should teach in their classes, and maintain in season and out of season, "that wholesome conservatism which is of the very essence of the fit and trained medical mind, which leads one to make changes slowly while it does not blind one to genuine merit." The first rule laid down with regard to the prescribing of proprietary preparations was that medical men should act so that the public may reap the fullest possible advantage and the proprietors gain only a legitimate commercial profit. A physician properly jealous of the rights of his patient and of his own professional independence, will look on every one of these preparations with a discriminating prejudice, and if the article really is a secret nostrum, he will avoid it absolutely. But if the preparation should be of value and its formula known, Dr. Fotheringham would put it at once in the Pharmacopœia and wherever possible intrust its preparation to the retail chemist.

Having indicated his belief that physicians should favour the retail man rather than the manufacturer, as they are in the last resort more dependent upon the former, Dr. Fotheringham observed that the physician cannot be too careful of the exact nature of his relation with the dealer in drugs, that he must preserve an attitude of absolute independence, giving no favours and receiving none beyond those that private friendship may suggest, and not even these if it be necessary to avoid even the appearance of evil. Finally, he urged that there can be only one opinion as to the use of compounds sold without a printed formula—they are utterly taboo—for the reason that the man prescribing them is making himself the agent of a layman, and allowing that layman to use him for selfish ends and not for the good of the patient. Even where the formula, or what purports to be the formula, is published, there is often a sense of uneasy insecurity, for there is no independent guarantee, nothing but the seller's belief, that the compound is as represented. And in any case it is idle to say that the printing of the formula removes the evil, as no physician can carry in his head the whole formula. He may remember some of the more active ingredients, but the net result is the obfuscation of any established principles in the mind of the prescriber. He "makes himself the agent of the manufacturer, sells his professional birthright for less than a mess of pottage, allows his professional duties to degenerate into the mere making of a diagnosis for a manufacturer who, if he could be on the ground which the prescriber occupies, would certainly make his own diagnosis and give his own prescription, and possibly do it quite as well as a physician of that stamp can do it. In short, the habitual prescriber of preparations of this kind becomes a therapeutic imbecile—a child playing with poisons."

ANNOTATIONS.

THE SCHOOL OF PHARMACY will be reopened on Monday, October 4, when both elementary and advanced courses of instruction in the various subjects of the pharmaceutical curriculum will commence. The Dean (Professor Greenish) will be in attendance at the School on the opening day, between 10 a.m. and 1 p.m., to receive students and to furnish information relating to the courses of study. The professors of botany and chemistry will also be present to give advice with reference to their special subjects. Brief particulars of the courses were published in the *Pharmaceutical Journal* for September 11, and copies of the prospectus of the School, giving fuller particulars, may be obtained from the Secretary of the Pharmaceutical Society, 17, Bloomsbury Square, W.C., to whom applications for admission should also be addressed and fees paid. Intending students who desire advice respecting the course of study to be pursued in their particular cases may write to the Dean of the School, at the same address. It should be borne in mind that the benches in the laboratories will be allotted to students in the order in which they are applied for, and that preference will be given to those who enter for a full course.

THE INAUGURAL SESSIONAL ADDRESS will be delivered on this occasion by Professor Herbert McLeod, F.R.S., one of the Pharmaceutical Society's Examiners for England and Wales. Prior to that, however, the Sessional prizes and certificates will be distributed by the President, Mr. Walter Hills, and subsequently the ninth Hanbury Gold Medal, which has been awarded to Dr. John Elishee de Vrij, C.I.E., will be presented. In addition, the first Flückiger Gold Memorial Medal will be formally handed to its recipient, Mr. E. M. Holmes, Curator of the Pharmaceutical Society's Museums. Such an attractive programme ought to be sufficient to tempt a large audience on this interesting occasion. The meeting will open at 3 p.m., and Members and Associates are invited to attend with their friends, ladies as well as gentlemen, while a larger attendance of students is particularly desired. At the conclusion of the proceedings, the Society's House will be open for the inspection of visitors.

THE GENERAL INDEX to the last seventeen volumes of the third series of the *Pharmaceutical Journal* continues to be the subject of inquiries, in reply to which it can only be stated that the date of publication of the Index rests entirely with those who desire to possess copies. The manuscript index for the seventeen years is now rapidly approaching completion, and readers who are willing to subscribe, say, a guinea for a copy of the printed index, should notify the Editor at once. Unless a sufficient number of subscriptions are promised, it is extremely doubtful if any further steps can be taken in the matter. Accordingly, those who are anxious to simplify the means of reference to their bound volumes are requested to act promptly, and so enable the Editor to form an estimate as to the demand existing for the general index.

THE OUTWARD CARRIAGE ON BOOKS borrowed from the Pharmaceutical Society's Library is defrayed by the Council in the case of Members, Associates, and Students residing in the provinces; but in last week's issue a correspondent pleaded that they might also be excused paying for return carriage. It seems necessary to point out that "A Provincial Chemist" errs somewhat in assuming that if the Council paid carriage both ways for provincial chemists they would only be on a par with their metropolitan brethren. As a matter of fact, the provincials have the best of the bargain. All persons residing within five miles of the Society's house have to pay carriage both ways, and the cost of that often exceeds the sum paid for carriage one way by those living outside the radius. Again, country borrowers may retain books for three weeks, while those in London are allowed a fortnight only. If carriage in both directions were paid by the Society, the amount payable in many cases would often exceed that of the annual subscription, and it seems only fair that some proportion should be reserved for other purposes.

EXEMPTION FROM JURY SERVICE is enjoyed by pharmaceutical chemists, as is well known to our readers, but they must take care to insure that their names are not included in the new jury lists which have been hanging on all church doors lately. In the event of a pharmaceutical chemist's name being so included in the list he must enter his claim to have it removed before the end of the present month, otherwise he will be liable to serve on a jury if called upon. In view of the advantage accuring from exemption from service on juries it is somewhat surprising to find that so comparatively few chemists and druggists take steps to secure the higher diploma. In the presidential address delivered by Peter Squire in May, 1863, he expressed the opinion that the fact that pharmaceutical chemists were then being released from the duty of service on juries would induce the rising generation to qualify themselves for the title, and as a result the boon granted to the pharmaceutical chemist would prove of immense benefit to the public at large. But then came 1868, with its permanent lowering of the standard of legal qualification, and since then not even the bait of exemption from jury service has sufficed to attract a large proportion of candidates for the Major examination. Concerning this point then, and in view of subsequent events, Peter Squire evidently prophesied too much.

THE EXTENT OF APPRENTICESHIP STUDIES affords another instance of unfulfilled prophecy by the same distinguished pharmacist. He contended (1863) that in future chemists in business would not be content to allow their apprentices to pass through the period of pupilage with carelessness, but that they would be convinced of the necessity of directing their pupils how to acquire the knowledge the parents had paid for, "and thus every apprentice will at the close of his apprenticeship, be ready to undergo the Minor examination, and a short period in the laboratory of this institution (School of Pharmacy) would then qualify him for the Major." Would that it were so; but even now, thirty-four years later, the realisation of this ideal seems as far off as the Greek Kalends. Students who have spent three or more years in a pharmacy, crowd to pharmaceutical schools and, instead of being prepared to study with advantage the special subjects they require to be conversant with, they expect first to be taught the very rudiments of the sciences upon which the art of pharmacy is based. Peter Squire suggested one way in which such a state of affairs would be obviated; the other is to institute a compulsory curriculum of study. The older plan has failed, because it has never but in exceptional cases been afforded a fair opportunity; what is probably the only practical alternative remains yet to be tried in Great Britain.

GROCERS' ASSISTANTS CAN UNITE, if chemists' assistants cannot, for, as a result of an agitation among the employés in the grocery and provision trades, there has recently been formed in London the National Association of Grocers' Assistants, and a meeting of the members has been held at 18, Newgate Street, City, to elect a general secretary and re-affirm the policy of the Association. It is proposed to hold a public meeting at an early date to ventilate the

grievances of the class now organising itself. The objects of the Association are to secure the general adoption of a shorter day for grocery employés, to assist members during sickness and when out of employment, to improve the conditions of employment in the trade, to impress upon Parliament the necessity for amending the existing laws relating to labour so as to include grocery employés, to secure for grocery assistants the social and political privileges accorded to other workers, and to secure direct representation in Parliament. This is an extensive programme, but to achieve only one or two of the objects aimed at will be better than to remain disunited and let things drift.

Some Educational Information invariably arrives after our Students' Number has been published, and the present year is no exception in that respect. Thus, we learn that at the South-West Polytechnic Institute, Manresa Road, Chelsea, S.W., in addition to day classes in chemistry and botany, an evening course of pharmaceutical chemistry (theoretical and practical) will be given during the coming winter session. The course will include thirty lectures and about four hours' practical work per week for thirty weeks, and is specially designed to meet the requirements of "Minor" candidates. The fees are moderate, and it is intended to supplement the course in chemistry with courses in botany and materia medica during succeeding sessions. The classes begin at 8.30 p.m., so as to suit the convenience of those engaged in business during the day. Evening classes in botany and chemistry are also held at the City of London College, White Street, Moorfields, E.C. At Brighton, a series of lectures and practical demonstrations has been arranged at the Municipal School of Science and Technology to cover the whole course for the Minor examination. Here, again, the fees are extremely moderate, both for day and evening classes.

The Electric Lighting of Railway Carriages is a desideratum that appears to be in a fair way of being supplied, as, according to the *Standard*, experiments have recently been made by the London and North-Western Railway and other lines with a new method, and these have proved highly successful. The principle of the invention is that the dynamo and accumulators are under the carriages, and the current, which is generated by the moving train, is carried along cables running up at the end of the carriage and along the roof, with branches to the lamps in each compartment. The dynamo is driven by a belt from a pulley on the axle, and the accumulators store a sufficient amount of current to supply the lamps while the train is stationary. In fact, it is claimed that after a run of a hundred miles, including ordinary stoppages, there would be a sufficient amount of storage to illuminate the carriages at a standstill for an hour. Thick cables are used, which are incapable of being made hot by the amount of electricity passing through them, and the lights are well protected by fuses, so that there is no danger of the train catching fire. The London and North-Western first tried the system as an experiment some twelve months ago, applying it to a train running from Euston to Birmingham, and subsequently to one from Euston to Liverpool, and to a third from Euston to Manchester. The results of a trial extending over several months were perfectly satisfactory, and last July the new method of lighting was permanently supplied to two trains working between Watford and Euston, and to a couple of sleeping saloons running on the trains to Scotland. Other lines have been making experiments in the same direction and several of the smaller systems are being fitted with the electric light. So far as the new method has been adopted on the London and North-Western Railway, the light is supplied by twenty-seven lamps, working in two sections, to each sleeping saloon, and two eight-candle power lamps in each compartment.

In the Section of Pharmacy and Pharmacognosy, at the meeting of Naturforscher und Aerzte in Brunswick, the question as to the extent to which the testing of drugs and galenical preparations by chemical methods is practicable will form the subject of a discussion, to be opened by Professor E. Schmidt, Dr. E. Schaer, Dr. Beckurts, and Dr. Salzmann. In view of the present tendency to introduce standards into pharmacopœias, the methods of determination to be employed for the purpose of standardizing acquire considerable importance.

Ten Years' Sunshine at Leeds has been recorded by Mr. Richard Reynolds, pharmacist, of that city, working in co-operation with two other observers, three stations having been selected by the Leeds Philosophical and Literary Society for the observations:—(1) The Society's Museum, situate in the centre of the city, elevation above the sea 145 ft.—observer, Mr. Henry Crowther; (2) Woodhouse Cliff, one-and-a-half miles north-west from the centre of the city, elevation 330 ft., residential suburb—observer, Mr. R. Reynolds; (3) Lawnswood Cemetery, Adel, four miles north-west from the centre of the city, elevation 475 ft., on the fringe of the city—observer, Mr. C. S. Irvine. During the years from 1887 to 1896 the mean sunshine registered was:—Museum, Sundays, 169 hrs. 1 min.; other days, 140 hrs. 4 min. Woodhouse Cliff, Sundays, 193 hrs.; other days, 171 hrs. 6 min. Adel, Sundays, 203 hrs. 4 min.; other days, 191 hrs. 1 min. It was thus seen that on days other than Sundays the normal sunshine at Adel lost 26·7 per cent. at the Museum, and 10·5 per cent. at the intermediate station of Woodhouse Cliff. On Sundays the loss was less, being 16·8 per cent. at the Museum, and 4 per cent. at Woodhouse Cliff. Truly, here was a reason for calling the first day of the week Sunday. Accompanying the paper were a number of tables, one of which showed the total amount of sunshine for each day of the week during the ten years. The records of sunshine given were the results of more than 10,000 observations. Over-refinement in theorising upon these data, said the authors of the paper, was needless, but the partial improvement of the central station on Saturdays was clear, as was the case on Thursdays, probably due to the Wednesday half holiday of those tradespeople who must attend to their business on the Saturday. This would appear to indicate that if the people had more holiday there would be more sunshine.

The Glow-worm's Light is said to have been shown to be due to the emission of rays similar to the Röntgen rays. Three hundred glow-worms were caught near Kioto and placed before photographic plates screened from the light by several thicknesses of black paper, together with plates of brass, copper, and aluminum. A piece of cardboard with a hole in it was placed between the metal and the photographic plate, and for two days the arrangement was kept in a dark chamber sheltered from all foreign lights. On developing the plate, however, it was found to be blackened, except the part opposite the hole in the cardboard. The rays of the glow-worm would appear, therefore, to penetrate metal and excite luminosity in cardboard. When there is nothing between the sensitive plate and the glow-worm the rays are said to behave like ordinary light, but in traversing some metals and cardboard they seem to acquire properties like that of the X-rays, or it may be that the glow-worm emits X as well as ordinary rays. This account savours somewhat of the improbable, and in regard to the latter part of it, there may be a third explanation.

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 271.)

Pagenstecher (Hydrocyanic Acid).—See Schönbein and Pagenstecher.

Payer (Hydrocyanic Acid).—A very dilute tincture of guaiacum, together with a trace of copper sulphate solution, is placed in a porcelain capsule, and on approaching the mixture with a glass rod moistened with hydrocyanic acid, blue lincs are formed in the liquid. Upon stirring the whole solution turns blue. Compare Schönbein and Pagenstecher's reaction.

Pellagri (Brucine).—If this base be dissolved in concentrated hydrochloric acid and heated with the addition of sulphuric acid, a blue colour will be produced on neutralising the solution with sodium bicarbonate.

Pellagri (Morphine).—Dissolve the base, or the residue left on evaporation of a solution containing it, in concentrated hydrochloric acid, add a few drops of strong sulphuric acid, and heat on a water-bath. A distinct purple coloration should then be apparent. Next add more hydrochloric acid, neutralise the solution with sodium bicarbonate, and add an alcohol solution of iodine. The liquid should now be of a deep chrome-green colour.

Pellet (Glucose).—Dissolve in hot water 68.7 Gm. of copper sulphate, 200 Gm. of sodium chloride, 100 Gm. of anhydrous sodium carbonate, and 6·87 Gm. of ammonium chloride, then dilute with water to make 1 litre of this solution, 10 C.c. will be reduced by 0·05 Gm. of glucose. Compare Fehling's solution.

Pelletier (Quinine).—Chlorine gas passed into water containing quinine in suspension dissolves it, and the colour of the solution changes from light red to violet, then to dark red.

Peloggio (Iodine).—A blue colour is developed on passing a galvanic current through a liquid containing iodine in combination, in the presence of starch paste and a little hydrochloric acid.

Pelouze (Glucose).—See Moorc's test.

Penzoldt (Acetone in Urine).—Add an aqueous solution of a few crystals of ortho-nitro-bengaldehyde to the distillate from urine, then render it alkaline with sodium hydrate. In the presence of acetone the mixture becomes yellow, then green, and finally indigo separates out.

Penzoldt (Naphthalin in Urine).—On adding to a small quantity of the urine 1 C.c. of concentrated sulphuric acid, the urine floating on top of the acid is coloured dark green, and upon standing the acid assumes the same colour.

Penzoldt (Sugar in Urine).—Make the urinc strongly alkaline and treat with a solution of diazo-benzene-sulphonic acid (1 : 60), at the same time performing a control experiment with normal urine. The latter is coloured yellowish-red, while diabetic urine becomes dark-red and opaque. See Ehrlich's reagent.

Penzoldt and **Fischer** (Aldehydes).—A red colour, changing to violet, is produced by aldehydes on adding an alkaline aqueous solution of diazo-benzene-sulphonic acid (1 : 60) in the presence of sodium amalgam.

Perenyi (Fixing Fluids).—(1) Mix 4 parts of 10 per cent. nitric acid, 3 parts of alcohol, and 3 parts of 0·5 per cent. chromic acid solution. Immerse objects for 4 to 5 hours, then pass through 70 per cent. alcohol (24 hours), strong alcohol (some days), absolute alcohol (4 to 5 days), then cut sections. (2) Mix 3 parts of 20 per cent. nitric acid, 3 parts of 1 per cent. chromic acid, and 4 parts of absolute alcohol. This is a special mixture, used for embryos of Lacerta. Fix for 20 minutes, wash out for an hour with 70 per cent. alcohol, and then with strong alcohol. Stain with Delafield's hæmatoxylin, and treat for 3 to 5 minutes with 1 per cent. chromic acid.

Perenyi (Hardening Solution).—Mix 4 volumes of 10 per cent. nitric acid, 3 volumes of alcohol, and 3 volumes of a 0·5 per cent. solution of chromic acid.

Perrins (Berberine).—Brilliant green spangles are formed on adding a dilute solution of iodinc with potassium iodide to an alcoholic solution of berberine.

Perrot (Essential Oils).—A solution of dimethyl aniline violet in glacial acetic acid and dilute alcohol gives characteristic colours with many ethers, aldehydes, phenols, etc., but does not react with fatty oils or hydrocarbons. It may, therefore, be employed to detect many adulterations in essential oils.

Persoz (Textile Fibres).—Shake repeatedly a solution of 10 Gm. of zinc chloride in 10 Gm. of water with 2 Gm. of zinc oxide, and digest the fabric in the resulting solution of basic zinc chloride. Silk is dissolved.

Pettenkofer (Biliary Acids).—On adding to a small quantity of a solution of biliary acid (*e.g.*, urine) two-thirds its bulk of concentrated sulphuric acid, drop by drop (so as not to heat above 62° C.), and 2 to 5 drops of a solution of cane sugar (1:5), an intense violet or purple-red coloration is produced. Strassburg modifies Pettenkofer's by dissolving cane sugar in the urine, saturating filter paper with the solution and, after drying, bringing the paper in contact with a drop of sulphuric acid. The colour is then seen on holding the paper to the light. Drechsel uses phosphoric acid instead of sulphuric, and Udransky replaces the cane sugar and sulphuric acid by furfurol-sulphuric acid. See also Neubauer's test.

Pettenkofer (Carbonic Acid).—Dissolve 1 part of rosolic acid or corallin in 500 parts of 80 per cent. alcohol, and add baryta water until a reddish colour is obtained. On adding 0·5 C.c. of this solution to 50 C.c. of water containing bicarbonates, the red colour will disappear if free carbonic acid be present.

Pettenkofer (Sugar).—By reversing Pettenkofer's process for detecting biliary acids, as in Brunner's test, the reaction serves as a test for sugar from glucosides. Sulphuric acid is added to an aqueous solution of bile till the precipitate first formed is redissolved, and on adding the liquid containing sugar, a violet colour is produced.

Petti (Physostignime).—On adding dilute hydrochloric acid to saturation, followed by excess of ammonia solution, and then heating, the colour changes in the case of physostignime will be as follows :—Pale red, red, yellowish red, green, blue.

Pfitzner (Dammar Solution).—The resin is dissolved in a mixture of benzol and turpentine.

Pfitzner (Safranine Stain).—Dissolve 1 part of safranine in 100 parts of absolute alcohol, and after a few days add 200 parts of water.

Phipson (Benzoic, Hippuric, and Salicylic Acids).—On mixing 3 equivalents of acid with 1 equivalent of glucose and a large excess of sulphuric acid, a moderate heat causes the formation of a brown colour, changing to black. See *Chemical News*, xxviii., 13.

Phipson (Frangulin).—Sulphuric acid produces an emerald-green colour, changing to purple and then dark red.

Pianese (Methylene Blue and Eosine Stain).—The same as Chenzinsky's solution, with the addition of a considerable proportion of lithium carbonate.

Piccini (Nitric in Presence of Nitrous Acid).—Urea is added to the liquid containing nitrates and nitrites, which is then mixed with a solution of urea in dilute sulphuric acid. When evolution of nitrogen from decomposed nitrites ceases, a blue colour is produced, or adding potassium iodide, starch paste, and a fragment of zinc.

Pictet (Examination Liquid).—A 5 to 10 per cent. solution of manganese chloride is used in placc of normal salt solution for marine animals. For terrestrial animals use a 1 to 3 per cent. solution only.

Piria (Tyrosin).—Heat the sediment from suspected urine with a little concentrated sulphuric acid, neutralised with calcium carbonate, and treat the filtrate with ferric chloride solution. The solution is coloured violet if tyrosin be present.

Piria and **Staedeler** (Tyrosin).—In this modification of Piria's test, the urinary sediment is warmed with the acid, then neutralised with barium carbonate, boiled, filtered, and added drop by drop to a dilute solution of ferric chloride.

Planta (Alkaloids).—Potassio-mercuric iodide gives white precipitates. See Mayer's reagent.

Plaut (Actinomycosis).—Sections of tissue affected with actinomycosis are placed for 10 minutes in Gibbes' magenta solution, or Ziehl-Neelsen carbolic fuchsine solution at 45° C.; next rinse in water and place in saturated aqueous solution of picric acid, mixed with an equal volume of absolute alcohol, for 5 to 10 minutes, wash in water, pass through 50 per cent. alcohol into absolute alcohol, clear in cedar oil and mount in balsam. In

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

Squire's modification of method, the reactions are placed for 10 minutes in carbolic, fuchsine, and decolorise for 24 hours in fluorescine alcohol (yellow fluorescine, 1 Gm. rubbed in a mortar with 50 C.c. of absolute alcohol, and allowed to settle). Stain the nuclei with Ehrlich's hæmatoxylin and counterstain faintly with benzopurpurine solution, prepared by dissolving 0·25 Gm. in 20 C.c. of rectified spirit and 80 C.c. of distilled water.

Plugge (Albumin).—The reagent used in Plugge's test for phenol yields a red colour with albumin, similar to that produced by Millon's reagent for albumins and phenols.

Plugge (Ammoniacum).—Dissolve 30 Gm. of caustic soda in water, keep the solution cool while adding 20 Gm. of bromine, and then dilute to 1 litre. A drop of this solution, added to an aqueous or alcoholic solution of ammoniacum prepared with the addition of soda lye, causes a beautiful violet colour which rapidly disappears.

Plugge (Nitrous Acid).—A red colour is produced on heating to boiling a 5 C.c. of a solution of mercurous nitrate with 5 C.c. of carbolic acid (1:100), and 15 C.c. of water, then adding 120-150 C.c. of a liquid containing nitrous acid.

Plugge (Phenol).—A dilute solution is boiled with mercurous nitrate solution containing a slight trace of nitrous acid. Phenol causes the appearance of an intense red colour, whilst metallic mercury separates out and an odour of salicylol is developed. Compare Fresenius' phenol reaction.

Podwyssotzki (Emetine).—A drop of a saturated solution of sodium phospho-molybdate in concentrated sulphuric acid yields a brown coloration with emetine, which changes to blue on adding a drop of hydrochloric acid.

Podwyssotzki (Fixing Mixture).—Mix 15 C.c. of 1 per cent. cchromic acid dissolved in 0·5 per cent. corrosive sublimate solution, 4 C.c. of 2 per cent. osmic acid solution, and 6 to 8 drops of glacial acctic acid.

Podwyssotzki (Safranine Stain).—After staining, differentiate for two minutes or less in a strongly alcoholic solution of picric acid, followed by pure alcohol.

Pohl (Picric Acid).—A woollen thread is coloured yellow on soaking in a solution of picric acid and rinsing in water.

Pölzam (Imbedding Mass).—Cut good white soap in thin slices, dry in the sun, powder, and mix into a paste with spirit. Next mix the paste with 90 per cent. alcohol and glycerin in such proportions that the whole shall contain for every 10 parts by weight of soap, 22 parts of glycerin and 35 parts of alcohol. Let the whole simmer until a transparent, syrupy fluid is obtained. This mass may be removed from sections by means of water or very dilute alcohol.

Poli (Serial Sections).—Arrange sections on a layer of melted Kaiser's gelatin, add glycerin, and cover.

Pollacci (Glucose).—Shake the liquid with 4 C.c. of water, 1 drop of aqueous solution of ferric chloride, and 6 drops of solution of soda; boil, add 2 drops of sulphuric acid, cool, and add a fresh solution of potassium ferricyanide. Glucose produces a blue colour.

Pollacci (Iodates in Iodides).—Make the alkaline liquid hot and add a piece of phosphorus, which will soon be surrounded by a dark yellow zone. Amorphous phosphorous promptly reduces iodates to iodides.

Pollacci (Phenol).—(1) When an aqueous solution containing phenol is poured on the surface of sulphuric acid, a red colour is produced at the line of contact; (2) a brown colour is produced on adding a drop of the liquid to sulphuric acid and potassium bichromate.

Pollacci (Sulphuric Acid in Vinegar).—Immerse strips of filter paper in a beaker containing the vinegar, so that one end of each touches the bottom and the other projects about 1 Cm. above the top. After 24 to 36 hours, cut off the projecting portions of the strips, moisten with ether, and when that has evaporated take up the soluble matter with water and examine for sulphuric acid.

Porret (Ferric Salts).—A blood-red colour is produced on adding solution of potassium sulphocyanide.

Posner (Peptone and Albumins).—When a layer of very dilute, almost colourless, copper sulphate solution is carefully poured on the surface of alkaline urine in a test-tube, a violet zone is formed if peptone be present. Albumin gives the same reaction on warming. Compare the biuret reactions of Brücke and Rose.

Pouchet (Bleaching Method).—Macerate sections in glycerin to which a little peroxide of hydrogen has been added (5 or 6 drops to a watch-glassful).

Poutet (Fixed Oils).—Mix 10 Gm. of oil, 5 Gm. of nitric acid (sp. gr. 40° to 42° B.), and 1 Gm. of mercury; shake for 3 minutes till the mercury is dissolved, allow to stand 20 minutes, and again shake for 1 minute. Various fats show differences in colour and in the time they take to solidify. Olive and peanut oils harden most rapidly. In one modification of this claïdin reaction the proportions used are 50 C.c. of oil, 12 Gm. of mercury, and 15 Gm. of nitric acid (sp. gr. 1·35). Olive and almond oils only are solidified by this. Another modification, recommended more particularly for determining the purity of olive oil, is to mix the oil with one-twelfth its weight of a solution prepared by dissolving 6 Gm. of mercury in 7·5 Gm. of nitric acid (sp. gr. 1·35). Shake every 10 minutes for 2 hours, then put in a cold cellar and observe the consistence after 24 hours.

Power (Elaterin).—A deep red colour is produced on adding sulphuric acid, while the addition of potassium bichromate causes a brown to light-green colour.

Power (Emetine.)—A bright orange to lemon-yellow colour is produced on adding solution of chlorinated lime and 1 drop of acetic acid.

Power (Glucose).—A colourless solution is obtained on heating the liquid to boiling with 1 drop of copper sulphate solution (1:14) and a slight excess of ammonia.

Pradines (Fuchsine in Wine).—Distil off the alcohol and to 10 C.c. of the residue add 4 C.c. of ammonia solution; shake well with 5 C.c. of ether and separate. A drop of the ethereal layer placed on white paper or muslin gives a rose-red stain if fuchsine be present. If desired, the residue left after distillation may be shaken with a saturated solution of ammonia gas in ether.

Prescott (Carbolic Acid).—A yellow colour is produced on adding a few drops of nitric acid, then a slight excess of potash, and diluting with water.

Prescott (Sulphocarbolates).—A yellow colour is produced by boiling in water with nitric acid, and neutralising with potash solution.

Preyer (Carbon Monoxide in Blood).—Warm 3 or 4 C.c. of the suspected blood with 10 C.c. of water and 5 C.c. of potassium cyanide solution (1 : 2) for 5 minutes at 30° C. Treated in this manner the spectrum of normal blood loses the absorption-line of oxy-hæmoglotin, but in the presence of carbon monoxide the spectrum remains unchanged

Price (Iodine).—A blue colour is produced on mixing with starch and adding hydrochloric acid, and solution of potassium nitrite.

Pritchard (Hardening Fluid).—Dissolve 1 part of chromic acid in 20 parts of water, and add 120 parts of rectified spirit.

Pritchard (Reducing Solution).—An aqueous solution containing 1 per cent. each of amyl alcohol and formic acid. Used for reducing chloride of gold after impregnating animal tissues with that salt.

Procter (Cannabis Extract).—Nitric acid converts the extract in an orange-red resin.

Proctor (Tannic and Gallic Acids).—A green colour is produced on adding a faintly alkaline solution of sodium or potassium arseniate, and a purplish-red on adding acids.

Prollius (Cinchona Bark).—Determine the alkaloids by extracting with a mixture of 88 parts of ether, 8 of absolute alcohol, and four of ammonia water.

Purdy (Glucose).—The solution consists of 4·15 Gm. of copper sulphate, 10 Gm. of mannite, 20·4 Gm. of caustic potash, 300 C.c. of ammonia solution (sp. gr. 0·88), and 50 Gm. of glycerin, and enough water to make 1 litre of this solution, 25 C.c. will be reduced by 0·015 Gm. of grape sugar. Compare Fehling's solution.

Purgotti (Copper).—A blue colour is produced on mixing the solution with an alkaline chloride, and pouring tincture of guaiacum on the surface.

Pusch (Benzol and Benzine).—Iodine forms a violet solution with benzol, and raspberry-red with benzine.

Pusch (Citric and Tartaric Acids).—On heating 1 Gm. of powdered substance on a water-bath, with 10 Gm. of sulphuric acid, citric acid turns lemon-yellow, while tartaric acid becomes brown or black.

Puscher (Alcohol in Essential Oils).—Place a few drops of the oil at the bottom of a dry test tube, and dust the upper portion of the tube with powdered fuchsine. On heating the tube any alcohol present will come off first and dissolve the fuchsine, forming a red solution.

Puscher (Arsenic in Green Colours).—Ammonia gives a blue colour, and when evaporated a dose of the solution leaves a dirty yellowish-green stain. A pale blue stain indicates absence of arsenic.

Puscher (Fuchsine in Fruit Juices).—A woollen or silk thread soaked in the juice and then rinsed in water is coloured red.

(*To be continued.*)

DENTAL NOTES.

[*These notes have been compiled for the benefit of pharmacists in this country and abroad who are also registered dentists, while others may find it useful to direct the attention of their dental friends to this column occasionally.*]

In Cases of Chronic Alveolar Abscess, Exostosis, or where the presence of pulp nodules prevent the action of arsenious acid, apical amputation, if performed under suitable conditions of strict asepsis, is perhaps the surest and least troublesome way of dealing with the difficulty. Dr. E. B. Lodge describes in the *Ohio Dental Journal* his usual mode of procedure, viz., make a three-line or Y incision, turning the flaps back. Having exposed the process over the root, take a Younger or other suitable trephine of requisite size, and by the aid of an engine pass it carefully through the external plate of bone and apex of the root, the loosened tissue being removed with a suitable instrument. After carefully removing any spiculæ of bone or recrossed tissue, syringe the cavity with warm water and apply an antiseptic ; if the root is to be filled, now is the time to do it. The filling material may be forced through the root and the surplus removed, the end of the root being left smooth. The wound should then be filled with a pellet of cotton saturated with an antiseptic. The dressing should be changed daily until sufficient granulation renders it no longer needful.

As a Useful Flux to prevent pieces from becoming discoloured during soldering, the *Western Dental Journal* gives the following :— Put in a cup boracic acid, 1 oz. ; ammonia, ½ oz. ; carbonate of ammonia, ½ dwt. ; bicarbonate of soda, 2 dwt. ; water, 4 ozs. Boil until the fumes of ammonia are no longer given off. Carefully coat the piece, drying it over a spirit lamp ; then scrape off just where it is desired the solder should flow. When cooled the piece will be found untarnished.

The Removal of Green Stains from children's teeth is something every dentist is at times called upon to do. This can be readily and easily done by mixing equal parts of cream of tartar and powdered pumice, applying by means of an orange stick or with a rubber cup on the engine. The teeth should afterwards be carefully burnished quite smooth, or else the stains are liable to re-occur. Cream of tartar is an excellent thing for cleaning the teeth when used by the dentist, but should not be recommended to the patient.

This Month's Issue of the *Journal of the British Dental Association* contains an educational supplement which gives full information as to the conditions to be fulfilled by pupils entering the dental profession, as well as the regulations and fees charged by the various general and dental hospitals in the Kingdom.

To be Able to Control Hæmorrhage Effectually after tooth extraction is to be relieved of much anxiety and trouble. Passing a double silk thread through both sides of the torn gum by the aid of a suitable needle and tying firmly over the alveolar border, the stitches being removed in forty-eight hours is recommended by Dr. McNaughton in the *Cosmos*. Where such a course is from laceration of the gums or other causes not possible, an excellent plan is to make a saturated solution of tannic acid in absolute alcohol, then take small pellets of cotton wool, dip each pellet before using in the solution and, inserting them carefully and firmly, to make sure that the first pellet is carried down to the apex of the socket, continue the packing until the socket is quite full. It is quite unnecessary to use any controlling appliance if that be properly done. The plug should be removed in forty-eight hours, when it will be found to come away entire.

The Mouth Mirror, to the dentist, is like cold missionary to the cannibal, something to be looked after ; so any information that enables us to preserve and facilitate its use, instead of constantly having to purchase new ones, is acceptable. Some time since we were delighted to read that rubbing soap over the glass and then lightly polishing it off prevents the mirror from becoming clouded in the moist atmosphere of the mouth. Now Dr. M. J. E. Moore tells us, in the *Ohio Dental Journal*, that by using a felt cone on the lathe with plenty of wet pumice, and using considerable pressure but avoiding the generation of heat, mirrors can be freed of all marks and scratches. It takes a little time to do it, but Dr. Moore is quite right.

One of the Best "Investments" for metal cases that are required to withstand a very high degree of temperature, according to the *Dental Practitioner and Advertiser*, is a mixture of two parts of not too fine plaster of paris to one part of ground asbestos, grade 3, that has been passed through a No. 12 sieve to rid it of any coarse fibres. If the plaster is strong a little less of it may be employed in the mixture. This will not crack or shrink.

Adhæsol is the name of a new preparation which is recommended as a substitute for collodion as a dressing, it having the advantage of being a better antiseptic. According to the *American Journal of Dental Science*, this preparation is a clear amber-coloured liquid with a pleasant odour, and is neither toxic nor caustic. It dries in a few seconds on the skin, and is an adherent covering to the mucous membrane. It is prepared as follows :— Macerate copaiba resin, 350 Gm. ; benzoin and balsam of tolu, āā 30 Gm., with a mixture of ether, 1000 Gm., and oil of thyme 20 Gm., for two days, then filter and add α-naphthol, 3 Gm.

A Case of Hearing Restored after Twenty-five Years is related by the *Dominion Dental Journal*. A lady, aged fifty, who had been deaf for that period, had her hearing restored after the extraction of a number of stumps. The roots of the upper wisdom teeth were badly exostosed, and when extracted she felt as if relieved of a pressure, which she had felt for a number of years.

Toothache Remedy.—The following mixture has given good results :—Cocaine hydrochlorate, 1 ; camphor, 50 ; chloral hydrate, 50. To this add a few drops of water to produce a clear mixture ; a few drops are inserted into the painful tooth on a piece of cotton wool.—*Brit. Journ. Dent. Sci.*, xl., 462, after *Zahnartz. Woch.*

Creosote Taken Internally Prevents Dental Caries, according to Winkler (*Intern. Med. Mag.*), who is convinced that while bacteria are present in all dental cavities and are the direct cause of decay in some cases, the primary cause in a majority of instances lies in a morbid state of the system, which gives into the mouth perverted secretions. The destruction of dental tissue by corrosive excretions from the gingival borders is at once arrested by the frequently repeated use of creosote in minute doses, covering a period of from one to three weeks. In other cases the teeth are affected by a decay which is characterised by a very light brown or chalky white colour and by rapid progress. The treatment here is not so well defined as in the first group, but the salts of mercury or potassium, and of calcium, with charcoal, creosote, etc., are the most potent ; in the third class, due to acid excreting bacteria which are lodged in sheltering localities about the teeth, operative interference is the only treatment. Cleanliness of the teeth and mouth, and, when the presence of acid prevails, the use of milk of magnesia, especially at night on retiring, is efficient in preventing decay. Winkler is persuaded that more than fifty per cent. of dental cases are absolutely preventable by medicines internally administered.

The British Association for the Advancement of Science.

MEETING AT TORONTO.

WEDNESDAY, AUGUST 25.

THIS was winding-up day, and only a few of the sections met. In these the papers presented were few and rapidly disposed of. The Section on Chemistry had to work at high pressure to complete their programme, as did also "Mathematics and Physics." The papers in the Chemical Section were:—"Molecular Movement in Metals," by Professor W. C. Roberts-Austen; "The Causes of Loss Incurred in Roasting Gold Ores Containing Tellurium," by Dr. T. K. Rose; "The Behaviour of Lead and of some Lead Compounds Towards Sulphur Dioxide," by H. C. Jenkins; "The Vapour-Tensions of Liquid Mixtures," by Dr. W. L. Miller and T. R. Rosebrough; "The Electrolytic Determination of Copper and Iron in Oysters," by Dr. C. A. Kohn; "The Nitro-alcohols," by Professor Henri; "The Plaster of Paris Method in Blowpipe Analysis," by Professor W. W. Andrews; "Some Experiments with Chlorine," by R. Ransford. Reports of Committees:—"The Electrolytic Methods of Quantitative Analysis," "Isomeric Naphthalene Derivatives," "The Direct Formation of Haloids from Pure Materials," "The Bibliography of Spectroscopy," "The Carbohydrates of Barley Straw."

The programme in the Mathematical and Physical Section was as follows:—"On the Refractivity of Mixtures of Gases," by Professor W. Ramsay, F.R.S.; "On the Use of the Trifilar Suspension in Physical Apparatus," by Professor S. P. Thompson, F.R.S.; "On Zeeman's Discovery of the Effects of Magnetism on Spectral Lines," by Professor O. Lodge, F.R.S.; "On the Use of a Constant Total Current Shunt with Ballistic Galvanometers," by Professor W. E. Ayrton, F.R.S., and J. Mather; "The Sensibility of Galvanometers," by Professor W. E. Ayrton, F.R.S., and J. Mather; "Short *versus* Long Period Galvanometers for Very Sensitive Zero Tests," by Professor W. E. Ayrton, F.R.S., and J. Mather; "On a Research in Thermo-Electricity by Means of a Platinum Resistance Pyrometer," by H. M. Tory; "On a Simple Modification of the Board of Trade Form of the Standard Clark Cell," by Professor H. L. Callendar, F.R.S., and H. T. Barnes; "On the Cyclical Variation with Temperature of the E.M.F. of the H. Form of Clark's Cell," by F. S. Spiers, F. Twyman, and W. L. Waters; "On the Disruptive Discharge in Air and Dielectric Liquids," by J. W. Edmondson.

These sections among the laymen are the least popular, and are left almost entirely to the patient labourer in the field from which come the forces that lift the world year by year into greater material wealth. The chemist is left to his atoms, molecules, and periodic law; the mathematician to his calculations, while the majority of the members crowd to hear the men of bones and skulls discuss "Pre-Historic Man." To-day was no exception to the general rule, as geologists and anthropologists joined to consider some evidences of paleolithic man in America. These were presented by Professor Putnam, President of the American Association, and Professor Claypole. Several of those who took part in the discussion led by Sir John Evans, were sceptical of the finds, and suggested the possibility of a "plant." It was generally accepted that isolated bits of evidence would not justify a conclusion on a subject so important.

The general meeting in the afternoon was devoted largely to thanksgiving and saying pleasant things of the people among which the members have sojourned. Much has been said during the continuance of these meetings of the benefit that must follow this Toronto gathering, not only to science, but in drawing the mother country and Canada more closely together. No report of this gathering would be complete or do justice to the occasion which failed to note its social aspect. The Local Managing Committee, while preparing proper accommodation for the business meetings of the sections, was not unmindful of the fact "that man is a social animal." The homes and hearts of the best citizens had been opened with a readiness and spontaneity characteristic of Canadian hospitality. The openness and frankness of it must have reacted upon the Association itself and in some respects mollified its fixed habits. The statement is made that to accept a civic welcome before the opening meeting such as was tendered last Wednesday by the Mayor and Council is a decided innovation on the usual practice. The public men of the country have vied with each other in their efforts to make the visitors realise that they are among friends and kindred. His Excellency the Governor-General hastened home to contribute his quota to the general welcome. Affairs of State have been held in abeyance while our statesmen gave their time to entertaining. Reference has already been made to the civic reception and inaugural meeting in Massey Hall. The Royal Canadian Yacht Club garden party at their club house on the island was the first purely social function. The club-house and balconies were tastefully decorated for the occasion. Commodore Gooderham's yacht "Cleopatra" conveyed the vice-regal party over, which, besides their Excellencies Lord and Lady Aberdeen, contained Lord and Lady Lister, and Lord and Lady Kelvin. As the party landed a royal salute was fired, the band playing the National Anthem. The afternoon passed quickly amidst the beautiful surroundings of the club-house. The brilliant sunshine brought into sharp contrast the vivid green of the lawn and shrubberies with the blue grey of the calm waters of the bay and the red and grey buildings of the city off in the horizon to the north, while the intense blue of the sky was a revelation to the Transatlantic visitors.

In the evening Lord and Lady Aberdeen gave a reception to the men of science in the Parliament buildings. The usually sombre pile was a scene of sparkling brilliancy; electricity, flowers, and bunting combined to produce a picture charming to the eye. Brilliant also was the assembly gathered in the corridors and legislative chambers—judges, bishops, politicians, professors, and learned men from all parts of the world. Never before had Canadians mingled with so distinguished a company or had the honour of entertaining such. A special convocation of University College was held at the pavilion in the Horticultural Gardens, at which honorary degrees were conferred on Lord Kelvin, Lord Lister, Sir John Evans, Lord Rayleigh, Sir Wilfred Laurier, Premier Hardy, and Professor Gibbs. Never before in the fifty-five years of its active academic existence has the university had assembled at a convocation such an array of men eminent in every department of science and literature as graced the proceedings on this occasion. Not only the great men whom they had assembled to honour, but leaders of scientific thought in England, and celebrities not a few from great colleges in the United States. The proceedings and speeches delivered were worthy of the occasion. A conversazione at University College the following evening was as interesting and brilliant an affair as any of its predecessors. A public banquet in honour of the Association, and presided over by Lord Aberdeen the succeeding evening, brought the list of public social functions to a close; brilliant as had been all the preceding events, this was not a whit behind in point of interest or enjoyment. It was a fitting climax to a week of pleasure and profit, the memory of which will long linger with the citizens of this fair city, who have been fortunate enough to share in them. "Canada first" was the dominant note of the speech with which Lord Aberdeen opened the proceedings and proposed the toast of "The Queen." In a speech brim full of references to the great works achieved by the men whom they had met to honour, his Excellency proposed the healths of Lord Kelvin and Lord Lister, other toasts of the evening were proposed and responded to by Right Hon. Jas. Bryce, Sir John Evans, Professor F. W. Putnam, of Harvard University, U.S. Lord Aberdeen briefly replied to the toast of his health and the meeting broke up.

AFTER PROCEEDINGS.

"The meeting is now adjourned until 1898 at Bristol" were the words of Sir John Evans at the close of the last general meeting, and now the "curtain is down and lights out," and members of the British Association are scattering in every direction. One distinguished company starts to-day for the Pacific coast under the guidance of Professor Saunders, of Ottawa. The Government has kindly granted him leave of absence to accompany the party. Although there will not be time for an extended tour through the country, Mr. Saunders has completed arrangements to have collections of the products at the principal points along the railway for the inspection of the scientists. They will thus be in a position to judge of the country's capabilities. Other parties are touring the province of Ontario, which has many points equally interesting with the Far West. One group took a trip to Algonquin Park, the great forest and game preserve covering thousands of square acres of the most varied and diversified scenery the eye has ever rested upon. Another party of about 100 took a run through the north country, and enjoyed a sail on the beautiful waters of Georgian Bay. In this way the time is being spent, and the visitors will leave with some knowledge of beautiful Canada.

EXTRACTS FROM CONSULAR REPORTS.

ANTIMONY weighing 125 tons, containing from 60 to 62 per cent., was extracted from the Taya mines (Algeria) during 1896 and exported to France at a price of £10 per ton.

THE IMPORT OF OPIUM into Macao (China) in 1896 shows an increase over the preceding year of over 800 chests, being 4429 chests, as against 3607. The bulk of this opium is boiled and prepared at Macao and shipped to San Francisco and Australia for the use of Chinese emigrants there.

SULPHATE OF COPPER WASH FOR PERONOSPORA, an enemy of the vine, is gaining in favour with Italian growers. During 1896 the importation of sulphate of copper was 637 tons, as against 222 in 1895, and during the first five months of 1897 nearly 800 tons were imported, which conclusively points to the fact that growers are becoming more and more persuaded of the practical utility of this dressing as a preventive and curative. Wine made from grapes from vines which have been affected by Peronospora lose in alcoholic gradation and in colour; the addition of spirit will remedy the first defect, but to produce the point of colour peculiar to all wines from the province of Lecce—a very dark ruby—some speculators have recently used sulphuric acid. The sanitary authorities at once intervened, however, and the wine was destroyed.

OPIUM AS AN INVESTMENT.—Recent returns of opium imports at Chefoo for the years 1894-96 show a decrease in both the Indian and native article. In 1894 the quantity of Indian imported amounted to 492 cwts., and in the two following years 540 and 424 cwts. respectively, while native imports for the three years were 77, 370, and 113 cwts. It would be inferred from these figures that the demand for the drug is falling off in the district, but such is not the case. The truth is that the figures for native opium are thoroughly misleading, not, however, through any fault of the Maritime Customs. It appears that in addition to a large importation of Manchurian, known as "pien t'u," *i.e.*, "frontier drug," by native junks, there is a regular steam communication between Vladivostock and Chefoo, with a large Chinese passenger traffic between the two places, and a considerable quantity of opium is smuggled through by returning coolies, who invest their savings in this convenient form of currency when leaving the Russian port, in preference to carrying silver, which exchanges for less copper cash at Chefoo than in Vladivostock.

GERMAN IODINE TRADE.—Only 938 kilos. were imported in the open markets in 1896, compared with 1132 in the previous year, Great Britain sending 522 kilos. Of hydrochlorate of potash and other preparations of iodine a considerable import took place, viz., 285 kilos., of which 167 went from the United Kingdom. The prices of iodine were kept at an artificial height by the Iodine Convention, but lately a number of producers have arisen outside the Convention, not only in Chili (where it is the product of the saltpetre works), but also in Japan, Scotland, France, and Norway, and these new producers are beginning to influence the prices.

NEW REMEDIES.

ICHTHYOL IN OPHTHALMIC SURGERY.—Ichthyol has now proved itself effective in yet another field. Numerous cases are reported of its application to diseases of the conjunctiva and eye-lids, and very favourable results have been obtained. Its action is astringent and anodyne, as well as antiseptic, and causes contraction of the blood vessels. It is applied combined with vaseline (2·5 to 50 per cent.), or as an aqueous solution (30 to 50 per cent.).—*Pharm. Centralh.*, xxxviii., 359.

ICHTHYOL AS A LOCAL APPLICATION IN SCARLET FEVER.—Although ichthyol does not appear to have any specific action on scarlet fever, the local application of a 5 per cent. ointment of ichthyol has a most beneficial effect in allaying the irritation of the skin, producing a rapid decline of fever, and improving the general condition. The itching is at once stopped, and the patient enabled to sleep.—*Practitioner.*

ANAESIN.—This new local anæsthetic is said to consist of a 1 per cent. suspension of acetone chloroform in water. Its effect is supposed to be equal to a 2 to 2·5 of solution of cocaine.—*Pharm. Centralh.*, xxxviii., 372.

IODOL PLASTER.—Mozocchi has obtained excellent results with iodol plaster in the treatment of various syphilitic diseases. The maceration, inflammation, and peeling of the skin which are produced by the use of resorcin and mercurial plaster did not ensue with iodol, and it was observed that even after six or eight days no displacement of the plaster had taken place, nor had any irritating action resulted.—*Pharm. Post*, xxx., 293.

ICHTHALBIN.—This ichthyol albumin is a very fine greyish-brown powder, and being quite tasteless may be readily swallowed with a draught of water. It passes undissolved into the stomach, where the gastric juices gradually separate its component constituents, ichthol and albumin, the former acting beneficially in stimulating the tone and developing its aperient and antiseptic properties. Ichthalbin has been successfully tested in anæmia, rachitis, scrofula, and intestinal catarrh. For adults the dose is 1-2 grammes three or four times per diem, and it is best taken at meals. The dose for children is up to 1 gramme, with a little rasped chocolate.—*Pharm. Post*, xxx., 293.

THYROIDIN IN SKIN DISEASES. — Zarubin has found thyroidin useless in three cases of psoriasis, and in one case of sycosis, and since the danger attending its exhibition is considerable, he does not recommend its employment in ordinary practice.—*Brit. Journ. Dermatol*, ix., 288, after *Archiv. f. Derm u. Syph.*

LIQUOR ARSENICALIS AS A LOTION IN LUPUS.—The following lotion has given good results to Schutz in the treatment of lupus erythematosus. Liquor Fowleri, 4 grms.; aqua dest., 20 to 30 grms.; chloroformi, 2 ♏. To be applied by means of a camel-hair brush to the affected region night and morning, being allowed to dry on the skin. In the course of the fifth day an increase of swelling and redness takes place. The lotion is then stopped and some simple powder or paste applied until this again subsides, which occurs in four or five days. The painting is then resumed. In ten or eleven weeks the case will probably be cured without leaving a scar.—*Brit. Journ. Dermatology*, ix., 289, after *Archiv f. Derm. u. Syph.*

PICRIC ACID IN ACUTE ECZEMA.—In acute vesicular eczema Gaucher has found the application of a 1 per cent. solution of picric acid very useful. The diseased part is painted with the solution, and then covered with wool or buttercloth, soaked in the same. The application is repeated every second day. The irritation is rapidly allayed by this treatment; it might prove useful in some other moist inflammations of the skin, and especially in pemphigus.—*Brit. Journ. Dermatol.*, ix., 298, after *La Presse Médic.*

BENZACETINE IN NEURALGIA.—The following combination of benzacetine and caffeine is recommended in neuralgia. Benzacetine, 85·8; caffeine, 8·5; citric acid, 5·7 parts. Dose 10 to 30 grains, to be repeated every hour until relief is obtained.—*Practitioner*, lix., 108.

LETTERS TO THE EDITOR.

Impressions of a Student of the School of Pharmacy.

Sir,—On reading Mr. Perrédès' letter on the above subject in last week's Journal, I should like to try to correct a few of the misapprehensions under which he is labouring. Mr. Perrédès, like many more, entered the Society's School with too great expectations. Professors and demonstrators be they ever so willing and able, can only, as it were, lay the foundation for the student himself to work on. The opinion I formed at the "Square," last session, was that the aim of the School was not a "Minor" cram, but a sound working education, which with the aid of a little common sense would be the best possible capital a pharmacist could have; and this in my opinion is reasonably carried out in the present School. As regards Mr. Perrédès' remarks on the teaching of botany and the small amount of time given to recognition of plants, it seems to me that, considering the absence of classification from the elementary course, this recognition must of necessity partake of the nature of "cram," and as such should be curtailed as much as possible. In materia medica and pharmacy I think that as long as the preparation for the Minor is completed in nine months, instead of two years, these faults, which I think Mr. Perrédès has exaggerated, will be necessary evils. Does Mr. Perrédès really expect thirty or forty men to work in one laboratory for nine months and there not be any tomfoolery? But I think he will agree with me that there was very little of this during the first six months of the course, and that those who were guilty of it showed by their work that they could do something else when it was required. No doubt the teaching of practical chemistry was not what it might have been, mainly owing, I think, to two of the demonstrators being new and, although no doubt good men, not being used to chemistry as applied to pharmacy. If there be any class of men that I have a respectful pity for, it is those who have to teach "Minor" physics, as it seems to me they have to teach a multitude of subjects in a more or less advanced stage to men who as a rule do not understand the elementary principles of those subjects. In conclusion I may say that I consider my course at the "Square" has not only given me my Minor certificate but has also laid the foundation of what might be a thorough scientific education, and I strongly advise all who possibly can to go to the "Square."

Peterborough, September 21, 1897. W. B. Nelson.

Sir,—Referring to Mr. Perrédès' letter in last week's Journal. I venture the opinion that a graduated course of pharmaceutical instruction for the Minor, such as he seems to have looked for, can never be crowded into the brief nine months' course which is now considered adequate preparation for that examination. It seems to me that we students are much at fault, in neglecting to give proper attention to the pure sciences before going to a school. Doubtless this fact, coupled with the elementary nature of our Preliminary examination will account for the existing state of affairs in which a student is occasionally "taught to run before he can walk." There is nothing to prevent a student from taking a course in botany, chemistry, and physics at the "Square" or elsewhere before he enters his name for the entire Minor course, provided he can afford it. Failing this, abundant opportunities for the acquirement of the elementary principles of these subjects lie around him in the shape of text-books. In our present transitional state towards an enforced curriculum a teacher is often called upon to explain points which might easily have been grasped during pupilage.

Dartford, September 20, 1897. F. A. Upsher Smith.

Sir,—It has seemed good to Mr. Perrédès to place on record in last week's *Pharmaceutical Journal* his impressions of the School of Pharmacy under the new curriculum. In discussing education in the School of Pharmacy, Mr. Perrédès has involved the general question of the fit scope of pharmaceutical education. The opinions that he has expressed on the latter subject are valuable, but I am inclined to think that he would have acted more wisely had he carefully discriminated between the special and the general subjects before committing his thoughts to paper. The true cause for deprecation in the School of Pharmacy course is the shortness of the curriculum—a fault which is fully recognised by the Pharmaceutical Council, and one which will probably be rectified in due time. In Mr. Perrédès own words, the teaching of botany in the School is "certainly excellent," and I am surprised to find anything but admiration expressed for the way in which the professor and his assistant give thorough instruction in all the required departments of botanical knowledge in the short time at their disposal. Without an extension of the curriculum it would be scarcely possible to remedy the well-recognised disadvantages of teaching materia medica and pharmacy to students who have but little knowledge of botany and chemistry. Mr. Perrédès should have done the professor of materia medica justice by saying that as far as possible his lectures last session were made to supplement the botany lectures, leaves, flowers, fruits, and seeds being studied after the professor of botany had dealt with them from the botanical point of view. It was recognised that practical chemistry was not quite satisfactory at the School last session, but I have no doubt that there will be much less cause for adverse criticism in the forthcoming session, considering that our professor was new to the laboratories and to the needs of pharmaceutical students. The laboratories were conducted better last session than in the immediately preceding sessions, according to old students. That certain students are incapable of gentlemanly behaviour, except under coercion, is much to be regretted; still, it seems to me that the professor's generous attitude towards us is greatly superior to a policy of constant repression. With regard to physics, I do not wish to say more than that I am of opinion a good grounding in mathematics would remove a great obstacle from this part of the way of pharmaceutical students. The new Preliminary examination arrangements will tend to ensure this.

Cirencester, September 21, 1897. H. E. Matthews.

"A Student" also writes on this subject, but unless his letter were signed with his proper name, publication of his remarks would not be justified. Our correspondent's reason for suppressing his name—that if it were known the examiners might be prejudiced against him when he presents himself for the qualifying examination—can only be characterised as an absurd one.—[Ed., *Ph. J.*]

The Proprietary Articles Trade Association.

Sir,—When Mr. Glyn-Jones says his usual practice is to decline to discuss P.A.T.A. matters with anonymous correspondents, he implies that he does discuss such matters with those who reveal their identity. Would you kindly allow me to remind him of my letter in the Journal of July 10, and to ask him if he intends to take any notice of that letter, and if not why?

Edinburgh, September 21, 1897. J. A. Forret.

Local Organisation in Pharmacy.

Sir,—I desire to offer a few remarks on the above-named subject, and also to endorse several of the very clear and capital suggestions made by your correspondent Mr. Bolton. He may well state that "talk" and nothing but "talk" has been paramount in the domain of pharmacy, and only those who have a life-long connection with the world of pharmacy can thoroughly understand its true significance. Apathy and this incessant grumbling have produced a miserable unbrotherly feeling in the ranks of pharmacy, and many pharmacists, I am sorry to say, have for years past done their level best to stultify all attempts at organisation. I would also like to emphasise and cordially support your recent able leaderette on "Local Organisation." The conclusions to be drawn from that article are of vital importance to every pharmacist who really has the present and future welfare of pharmacy at heart. I particularly wish to refer to our local organisation—the Plymouth, Devonport, Stonehouse and District Chemists' Association—not in any terms of laudation at the success it has achieved in so short a period, but with a desire to offer words of encouragement to others who may contemplate forming themselves into bonds of fraternity and sociability in matters connected with pharmacy. Personally, I am sure that "organisation and consolidation" are the only means whereby we shall ever attain what pharmacists desire. Our local organisation is but four years old, and, thanks to excellent management, it continues to thrive, flourish, and strengthen in numbers year by year. Our social gatherings each year are admitted to be of the very best; in fact, the annual ball has held the premier position for the season. Of our "business meetings" I venture to say that few other associations connected with pharmacy in the kingdom could

produce a smarter set of debaters, especially on matters connected with the vital interests of our business. I am hopeful enough to predict that the day will yet arrive when our brethren in pharmacy will see the utility of concerted and united action to maintain the prestige of a profession or business ever held dear by our forefathers. May that day soon arrive.

Devonport, September 20, 1897. Philip A. Kelly.

Wanted, An Association of Public Dispensers.

Sir,—We have seen of late many letters calling attention to the hard lot of the public dispenser, but not one single suggestion has been made to remedy the same. What in the world is the use to keep bewailing our fate, grumbling at our employers, and not making one single effort to mitigate the abuses? It is no earthly use sitting still open-mouthed, waiting for ripe fruit to fall in. We must exert ourselves to help ourselves, and we can then reasonably expect others to help us. It is worse than useless to try individually to gain our desires. The watchword is "Combination!" Remember, "Union is strength." Individual application results, as it did in my case, in being told that "If your position was vacant we could advertise and obtain one to do the duty at far less money." This was said at a board on which sat four labour members, some of whom are making themselves very prominent in a celebrated trade dispute! We must emulate other branches of skilled labour and combine for our mutual protection. We must form an association and let it be seen that we are no longer poor miserable slaves, to be slighted and ordered about at the mercy of every whim; but a body of technical workers who have sufficient self-respect to expect reasonable remuneration for arduous duties skilfully performed. We must form an association at once. Remember the success attending the latest formed one, viz., that of the Inspectors of Weights and Measures. It is officially recognised, and meets at and under the patronage of the Board of Trade. Surely we can assert ourselves sufficiently to request justice—the hire the labourer is worthy of. Who will join with me in this effort to obtain the much-to-be-desired object? Who will help me to form the "Association of Public Dispensers?" Who will help me to obtain a fair day's pay for a fair day's work?

September 20, 1897. Disgusted (109/40).

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

Preservative Powder.—The powder is boric acid with about 10 per cent. of borax. [*Reply to* A. B.—109/12.]

Empty Gelatin Capsule Shells.—You will probably get what you require from Messrs. Parke, Davis and Co., 21, North Audley Street, W. [*Reply to* E. W.—109/19.]

Polishing Paste for Metal.—Glass, in finest powder, 2 parts; putty powder, 1 part; powdered pumice stone, 2 parts; oxalic acid, 1 part; crude oleic acid, sufficient to make a stiff paste. [*Reply to* Goulstone.—109/7.]

Etching Compound for Glass.—The powder is a mixture of equal parts of ammonium fluoride and barium sulphate. The liquid is hydrofluoric acid. The two should be mixed to a soft paste immediately before using. [*Reply to* J. A.—108/44.]

Cream of Tartar Substitute.—The "acid" consists in both powders of crude calcium superphosphate, with a considerable quantity of free sulphuric acid as well. "No. 1" contains about 60 per cent. of "superphosphate," accompanied by a considerable amount of sulphate, and the rest is ordinary tricalcic phosphate. "No. 2" is similar, but contains 10 per cent. of starch and 56 per cent. of the superphosphate, with some sulphuric acid as well. We should not recommend you to use either of these as substitutes for cream of tartar or for tartaric acid. [*Reply to* W. H.—109/2.]

Science Teacher.—Send six stamps to the Department of Science and Art, London, S.W., for a copy of the Science and Art Directory. That will give you full information on the subject. [*Reply to* Science.—109/29.]

Menthol-Cocaine Snuff.—(1) Light carbonate of magnesium, 6 grains; menthol, 2 grains; cocaine hydrochloride, 4 grains; milk sugar, 88 grains. Mix. (2) Boric acid, 93 grains; cocaine hydrochloride, 3 grains; menthol, 4 grains. Mix. [*Reply to* W. H. D.—109/8.]

Book on Perfumery.—Besides the work you name, there is 'Practical Perfumery,' published by the *British and Colonial Druggist*, 44, Bishopsgate Street Without. There are also a great number of perfumery recipes in Kilner's 'Compendium of Modern Pharmacy.' You can obtain this from H. Kimpton, High Holborn. [*Reply to* E. W.—109/19.]

Joseph Jewell.—The book was published at Newbury in 1840, and a copy may be seen in the Library of the British Museum. The title of it is 'A Short Sketch of a Long Life, Accompanied with a Few Useful Hints,' by Joseph Jewell. It is doubtful whether you could procure a copy now. [*Reply to* E. M. E.—109/34.]

Weed-Killer in Powder.—Dried arseniate of soda, 7 parts; dried sodium carbonate, 5 parts; Mix. Add 16 ounces of this mixture to 6 gallons of soft water (rain water answers best). Keep it always in the same vessel and thoroughly empty after each time of using, as it is very poisonous. It is well to have the cans, etc., containing the powder painted in some distinctive colour. [*Reply to* R. W.—109/16.]

Ledum Palustre.—This is the marsh cistus, belonging to the Ericacea. It is a native of Northern Europe. The leaves are aromatic and astringent. The tincture should be made 1 in 8 with proof spirit from the dried leaves. The astringent properties may be useful in the case of mosquito bites, but probably the alcohol in the tincture plays no small part in the cure. The best thing for mosquito bites is ichthyol. [*Reply to* L. R. P.—109/15.]

Lime Juice Cordial.—You should sterilise your lime juice before using it by boiling for five minutes in a flask and plugging the mouth with cotton wool while boiling. The syrup, too, should be freshly-boiled. Fill into clean, scalded bottles and cork up at once, or you can sterilise the bottles already filled with the "cordial" thus: Stand them, after filling, in a fish-kettle of cold water, gradually heat to boiling, and cork up after the water has boiled well for thirty minutes. Sulphurous acid is generally used as a preservative for the "cordial," but if the above precautions are taken, its use is not necessary. If you do not care for the trouble of this sterilising, try a small trace of formalin. It is quite harmless in minute quantities, and the odour and taste are not noticeable in lime juice. [*Reply to* S. P. A.—109/9.]

INFORMATION WANTED.

"Ajax" asks for the address of Sir Francis Willoughby. Can any reader oblige? (109/30.)

OBITUARY.

Couchman.—On September 10, Thomas Couchman, Chemist and Druggist, Wadhurst. Aged 71.

Silver.—On September 13, Sydney Ward Silver, Chemist and Druggist, Norwich. Aged 22.

Brown.—On September 15, Francis James Brown, Pharmaceutical Chemist, Malmesbury. Aged 57.

Richards.—On September 15 (his eleventh birthday), Charlie, the only and dearly-loved son of F. J. and M. Richards, of 153, Dudley Road, Birmingham.

Hemmons.—On September 16, John Hemmons, Chemist and Druggist, Bristol. Aged 56.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Andrews, Bainbridge, Buckpitt, Bullock, Bworsina, Cox, Crocker, Doe, Elliott, Finlayson, Forret, Fox, Gardner, Gibbard, Gibbs, Havard, Hunt, Jackson, Johnson, Kelly, Lonsdale, Lothian, Lucas, McKnight, Matthews, Metcalfe, Nelson, Oliver, Plumbly, Plumley, Ralph, Saunders, Smith, Tebbutt, Thorpe, Walker, Welford.

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"THE MONTH."

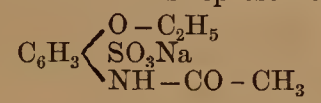
Anesin. Under this name a new synthetic compound has been introduced as an hypnotic and anæsthetic by the firm of Hoffmann, La Roche and Co., of Basle. It is described as an aqueous solution of tertiary trichlorbutyl alcohol, and as being equal in its action to a 2 per cent. solution of cocaine. The physiological action of this compound was investigated by Kossa, and more recently by Vámossy, and it was found to resemble chloral hydrate, the dose as an hypnotic being from 7 to 16 grains. Professors Lanfeuauer and Kétly state that 16 grains and upwards can be administered without any unpleasant symptoms being produced.

—*Apotheker Zeitung*, xii., 608.

Toxicodendrol. Pfaff finds that the irritant principle in *Rhus toxicodendron* is an oily body soluble in ether and alcohol, precipitated from the latter solution by alcoholic lead acetate, and when liberated from the lead compound possessing active vesicant properties; he names it toxicodendrol. It is found in all parts of the plant, the stem containing 1·6, the fruit 3·6, and the leaf 3·3 per cent. Applied to the skin it is an intense irritant, after a latent period of from twenty-four hours to seven or nine days. Some persons are more easily vesicated by the oil than others. In some 1 milligramme produced hundreds of vesicles, and even 1/1000th of a milligramme proved active in one case.

—*Med. Chron.*, vii., 377, after *Jour. Exp. Med.*

Phesine. This new antipyretic is analogous to cosaprine, and is a sulpho-derivative of antifebrine. It is represented by the formula—



It consists of a light amorphous reddish-brown powder, free from odour, having an acid and acrid taste. Vámossy and Fenyvessy state that the antipyretic reaction is more quickly obtained with this than with phenacetine, but that it is of shorter duration, and the subsequent rise of temperature takes place gradually.—*Thérap. Monats.*, xi., 428.

Ethylamine Urate. When combined with uric acid the volatile base ethylamine forms a stable salt which is readily soluble in cold water. Experiments with it point to the conclusion that it will furnish favourable results in the treatment of gouty affections and that it acts as a solvent on uric acid concretions.

—*Pharm. Zeit.*, xlii., 541.

Critical Temperature of Combination. The varying results obtained by experimenters in determining the initial temperature at which oxygen and hydrogen unite, have led Berthelot to suspect that the observed differences must be due to some interfering cause. He finds by experiments that the alkalies, such as baryta and potash, materially hasten the combination of O and H below 300° C., and that in their presence the whole of the gases will in time combine to form H_2O at 280°. This is shown to be due to the intermediate formation of peroxide, and is analogous to the so-called "catalytic" action of spongy platinum. Powdered glass in the presence of a trace of water is also found to combine with material quantity of oxygen. The author suggests that the glass vessels employed may easily influence the results in these experiments with O and H, since peroxides of the alkalies may be readily formed from the oxygen employed and the alkaline silicates of the glass.—*Comptes rendus*, cxxv., 271.

Assimilating Energy of Blue and Violet Spectrum Rays. From a series of experiments, made chiefly on *Elodea canadensis*, Herr F. G. Kohl derives the following conclusions as to the part taken by the different rays of the solar spectrum in the evolution of oxygen from leaves. The assimilating energy of the red rays is about one-half of that of undecomposed sunlight. The energy of the blue rays is but little less than that of the red rays, while the amount of oxygen given off under the influence of the green rays is not more than one-half of that evolved under the blue. The energy of the yellow rays is still less, and that of the violet least of all. The method employed by the author for determining the amount of oxygen given off was by counting the bubbles, and he describes a process for estimating accurately the volume of gas thus eliminated. He finds this method more reliable than either the eudiometric or the bacterium method of Engelmann.

—*Berichte der deutschen botanischen Gesellschaft*, 1897, p. 111.

Antirheumatine. Under this name a mixture of fluorophenetol and difluorodiphenyl has been introduced in the form of an ointment as a remedy for rheumatism and influenza.—*Pharm. Zeit.*, xlii., 546.

Antitussine. This is an ointment employed as a remedy in pertussis. Its active ingredient is stated to be difluorodiphenyl. It is stated to exercise a sedative and hypnotic action on outward application.

Hydrargyroseptol. This is a compound of quinosol mercury and sodium chloride used as an antisyphilitic, and has the composition $C_9H_6N{\cdot}O{\cdot}SO_3Hg + (NaCl)_2$. Hydrargyroseptol resembles yolk of egg in consistence, swells up in water, and dissolves in about 20 parts to a clear mass with a slight, peculiar odour, and insipid taste developing to acridity. When incinerated it leaves little or no ash. The aqueous solution is lemon yellow and gives reactions for quinosol and mercury. The latter is immediately precipitated by sulphuretted hydrogen, stannous chloride, potassium iodide, etc.—*Pharm. Zeitg.*, xlii., 362.

Ichthyol for Insect Bites. Compresses of moist earth, vinegar, cold water, etc., are all considered quite useless by Ottinger, who recommends as the only serviceable remedy for insect bites, moistening the bitten parts with ichthyol, or better still to apply a plaster of ichthyol. The author states that the popular ammonia is of no use for the purpose.

—*Umschau*, i., 434.

Toxicity of Perspiration. Arloing finds that when injected into animals human perspiration is always markedly toxic in its action. The lethal dose for the dog is about 15 C.c. per kilo. bodyweight. The secretion excited by hard exercise was distinctly more toxic than that produced by the action of sudorific drugs, or than the normal secretion. The symptoms produced by the injection are very marked and point to the presence of a powerful poison.—*Comptes rendus*, cxxv., 219.

Volatile Reducing Substance in Green Cells. The nature of the volatile reducing substance which is the first product of assimilation in green cells, has been investigated by T. Curtius and J. Reinke. It appears to be of the nature of an aldehyde, and the authors propose for it the formula $C_7H_{11}O{\cdot}CHO$, or, less frequently, $C_7H_9O{\cdot}CHO$.

—*Berichte der deutschen botanischen Gesellschaft*, 1897, p. 201.

Active Components of Capsicum. Norbitz gives the name of capsacutin to a crystalline body having the composition $C_{35}H_{54}N_3O_4$, which he regards as the active principle of capsicum, and which he isolated in the following manner. Powdered capsicum fruits were freed from fat with petroleum ether, and then extracted with ether. The ether was evaporated, the residue gently heated with just sufficient solution of KHO to saponify, then extracted with ether, and the latter removed. The ethereal residue was repeatedly treated with hot petroleum ether; on cooling, small crystals separated from it, amounting in weight to 0·05 to 0·007 per cent. of the extracted material. This body is neither an acid, a glucoside, nor an alkaloid. It was proved, however, to be the active principle, as in a dilution of 1:11,000,000 its taste was still noticeable.—*Pharm. Woch.*, xiv., 525.

Retamine. Battandier and Malosse have isolated from the young shoots and branches of *Retama sphærocarpa* a new alkaloid, retamine, which has the formula, $C_{15}H_{26}N_2O$. It crystallises in long needles from petroleum ether, and in prismatic scales from alcohol. It is but slightly soluble in ether and in water, but is dissolved, not however without alteration, in chloroform. It melts at 162° C. with decomposition, and is a powerful base, and also a reducing agent, and gives crystalline salts. It does not precipitate with platinum perchloride, but is thrown down by all the other usual alkaloidal reagents. It is probably an oxy-sparteine.—*Compt. rend.*, cxx., 360.

Testing Commercial Albumin. The importance of testing the coagulating power of egg albumin is well known to those who have to employ that substance in various manufactures, and only a brief experience is needed to show that it is a body which varies enormously in efficacy as a clarifying agent. Carles suggests the following practical tests which will prove valuable where albumin is used in quantity. Two grammes of the sample are taken and first treated with a little water, more is then added until the final volume is 200 C.c. If the albumin is free from coagulated particles, this solution should be translucent; 100 C.c. of this solution is taken, and 35 C.c. of a 1 per cent. solution of tannin is added, then a small pinch of potassium bitartrate is dropped in, the mixture is then well shaken, and a small portion thrown on a filter. The filtrate is divided into two equal parts—to one a few drops of a 1 per mille solution of pure gelatin, and to the other a small quantity of the tannin solution. If no sensible precipitate is formed in either tube the sample is free from either added matter or from coagulated albumin. If the gelatin solution forms a precipitate, it shows that all the tannin has not been precipitated, and that therefore the sample is weak in coagulating power. If on the other hand, the addition of tannin causes a turbidity it indicates the presence of some body, probably gelatine, which has a greater affinity for tannin than egg albumin. Thus a sample sold as pure egg albumin was found to contain only 50 per cent. of that body, and 50 per cent. of gelatin.—*Bullet. de la Soc. de Pharm. de Bordeaux*, xxxvii., 132.

Stability of Iodoform Gauze. Astruc finds that if iodoform gauze be carefully preserved and kept in the dark it does not materially deteriorate in strength in twelve months. If, therefore, a gauze is found to be below the reputed iodoform strength, it must be considered to be badly prepared. Incidentally, it is found in the determination of the iodoform by Gay's method that it is necessary to continue the saponification for at least three hours to ensure that the whole of the iodoform is converted into potassium odide.—*Bull de Pharm. du Sud-Est*, 11/199.

Oil in Leaves. Herr S. Rywosch has made a series of observations on the oil contained in the leaves or other green organs of a number of plants, and finds that its function is entirely different from that of the oil contained in the stem of woody plants. Instead of being stored up in the winter and disappearing when the period of vegetative activity recommences, it remains and even increases in amount during the spring and summer, being very large even when the leaves have turned yellow in the autumn. It cannot, therefore, be regarded as a reserve food-material; its purpose appears to be to take up the xanthophyll. The author was unable to determine the chemical nature of these oils, whether they belong to the fatty or to the essential series.

—*Berichte der deutschen botanischen Gesellschaft*, 1897, p. 195.

Manganese in Wood. In the light of the recent researches on the oxydases recently recorded before the Académie des Sciences (*P. J.* [4], v. 81) and the influence of manganese on vital oxidation, it is interesting to find that Guérin states that this metal is universally present as an organic compound in the ligneous tissues of trees. If sawdust is treated with feebly alkaline water and the extract is acidulated with hydrochloric acid, a precipitate will be obtained which, when washed with acid water and burnt, is found to contain no iron but 0·4 per cent. of manganese and 4·6 per cent. of nitrogen.—*Comptes rendus*, cxxv., 311.

Iodine in the Parathyroid Glandules. Gley has indicated the presence of iodine in the minute parathyroid glandules which are found beside the thyroid, and the functions of which have not been determined. He also states that, in the case of rabbits, the percentage of iodine is markedly higher in these small glands than in the larger thyroid accompanying them, and relatively so in the case of dogs.—*Comptes rendus*, cxxv., 313.

Determination of Phosphorus. The following method of determining the amount of active ingredient in phosphorated oil is proposed by Seyda. Thirty drops of the oil are placed in a Kjeldahl flask, and 20 C.c. of fuming nitric acid added very gradually to it through a tapped funnel. When action is moderated, the flask is cooled, then heated on the water bath for an hour. The greater part of the nitric acid is then driven off by heating the flask over a naked flame; the residue is treated with hot water, transferred to a platinum dish, and evaporated to dryness. The solid residue so obtained containing some free fatty acids is treated with 3 grm. of sodium carbonate, and 1 grm. of potassium nitrate; the solution is again evaporated, and the residue burnt to an ash, calcination being aided by the addition of a little nitre. The ash so obtained is dissolved in water and a slight excess of hydrochloric acid, and heated until all carbonates and nitrates are decomposed. The phosphoric acid is then precipitated by the molybdic method, and the phospo-molybdic precipitate collected, dried, and weighed. It is dissolved in ammonia, and the amount of phosphoric acid contained in it determined by precipitation in the usual way by the magnesium method.

—*Pharm. Zeit. für Russ.*, xxxvi., 337.

Juniper Tar Collodion. This is a mixture of acetone-collodion and juniper tar. It is recommended as a specially effective remedy for psoriasis. If no irritation sets in, the painting should take place daily but the psoriatic eruptions have to be removed in the customary manner. It is stated that this dressing does not soil the linen; the odour of the tar is covered by the acetone. *Pharm. Centralh.*, xxxviii., 423.

Pyramidon. Under this name a methyl derivative of antipyrine, in the form of a white powder, slightly less soluble than antipyrine itself, has been stated to have a greater therapeutic activity than that body, and its effects to be more lasting. Lépine is unable to confirm Tilehne's statement that it is much more active, but finds that it is slightly so. It does not diminish the quantity of the urine excreted, but in large doses increases it.—*Rev. de Thérap.*, cxxxii., 427.

The Camphor Tree. An account of the range, cultivation, uses and products of the camphor tree (*Cinnamomum camphora*) is given in a circular (No. 12) just distributed by the U.S. Department of Agriculture (Division of Botany). Notwithstanding the comparatively narrow limits of its natural environment, the camphor tree grows well in cultivation under widely different conditions. It has become abundantly naturalised in Madagascar. It flourishes at Buenos Ayres. It thrives in Egypt, in the Canary Islands, in south-eastern France, and in the San Joaquin Valley in California, where the summers are hot and dry. Large trees, at least two hundred years old, are growing in the temple courts at Tokyo, where they are subject to a winter of seventy to eighty nights of frost, with an occasional minimum temperature as low as 12° to 16° F. The conditions for really successful cultivation appear to be a minimum winter temperature not below 20° F., 50 inches or more of rain during the warm growing season, and an abundance of plant food, rich in nitrogen. In the native forests in Formosa, Fukien, and Japan camphor is distilled almost exclusively from the wood of the trunks, roots, and larger branches. The work is performed by hand labour, and the methods employed seem rather crude. The camphor trees are felled, and the trunk, larger limbs, and sometimes the roots are cut into chips, which are placed in a wooden tub about forty inches high and twenty inches in diameter at the base, tapering towards the top like an old-fashioned churn. The tub has a tight-fitting cover, which may be removed to put in the chips. A bamboo tube extends from near the top of the tub into the condenser. This consists of two wooden tubs of different sizes, the larger one right side up, kept about two-thirds full of water from a continuous stream which runs out of a hole in one side. The smaller one is inverted with its edges below the water, forming an air-tight chamber. This air chamber is kept cool by the water falling on the top and running down over the sides. The upper part of the air chamber is sometimes filled with clean rice straw, on which the camphor crystallises, while the oil drips down and collects on the surface of the water. In some cases the camphor and oil are allowed to collect together on the surface of the water, and are afterwards separated by filtration through rice straw or by pressure. About twelve hours are required for distilling a tubful by this method. Then the chips are removed and dried for use in the furnace, and a new charge is put in. At the same time the camphor and oil are removed from the condenser. By this method twenty to forty pounds of chips are required for one pound of crude camphor. —*Nature*, lvi., 501.

Chemistry of Chinese Wax. Henriques has examined Chinese wax produced by *Coccus ceriferus*, and finds that the chief constituent is the cerotinic ester of ceryl alcohol. From the acid number of free cerotinic acid he concludes that $C_{26}H_{52}O_2$ is the correct formula for this body, which when pure, melts at 78°·5 C. Ceryl alcohol has the composition $C_{26}H_{54}O$ and is converted into cerotinic acid by the action of soda lime. The formula for the ester is therefore $C_{26}H_{51}O_2 \cdot C_{26}H_{53}$.—*Chem. Zeit.*, xxi., 171, after *Berichte.*

Formation of Diastase. Professor W. Pfeffer has carried out a series of experiments for the purpose of determining the conditions under which diastase is formed in plants. The plants operated on were *Penicillium glaucum*, *Aspergillus niger*, and *Bacterium megaterium*. An increase in the amount of sugar in the nutrient material was found always to have the effect of decreasing the production of diastase, but the same result was not produced when the sugar was replaced by some other carbohydrate, by glycerin, or by tartaric acid. Professor Pfeffer regards the arrest in the production of diastase as not a purely chemical or physical phenomenon, but as one of irritation exerted on the organism by a solution of sugar of a definite degree of concentration.—*Ber. k. Sächsischen Gesell. der Wissenschaften*, 1897.

Cork-Growths in Plants. Sig. E. Marteucci discusses the various kinds of cork-growth found in the leaves and other organs of plants, and classifies them under two distinct types, which, however, pass into one another by insensible gradations. In the first the lenticel forms a prominent excrescence on the surface of the leaf, the cells being arranged in regular rows with their walls parallel to the surface of the leaf. In the second type the lenticel extends deeper into the tissue of the leaf, and is of a spherical or hemispherical form, with the cells arranged in rows radiating from the centre. The first type appears to be the more frequent. —*Nuov. Giorn. Bot. Ital.*, 1897, p. 224.

Aster Sickness. It may console pharmaceutical horticulturists who have lost their asters this season from the prevalent sickness to know that the cause is a worm new to science, named by Friend *Enchytræus parvulus*, a description and drawing of which are given in the *Gardeners' Chronicle*, August 14, p. 97. This authority, working on a much-neglected branch of zoology, would be glad of specimens of any plant-roots infested with parasitic worms, which should be addressed to the Rev. Hilderic Friend, Ocker Hill, Tipton.

Homology of the Anther. According to M. D. Clos the filament of the stamen does not usually, as stated in text-books, represent the petiole of a leaf. In most Apopetalæ it corresponds to a linear petal, to the median vein, to a narrow longitudinal band of a broad sessile petal (Ranunculaceæ, Berberideæ), or to the claw of an unguiculate petal (Sileneæ, many Cruciferæ). In the apopetalous orders with polyadelphous stamens (Hypericaceæ, etc.), the staminal vessels are very frequently analogous to the longitudinal veins of the petals; the number of the latter very often corresponding to that of the staminal phalanges. The anther, whether sessile, dorsifixed, or basifixed, is a structure without an analogue elsewhere in the vegetable kingdom, finding its nearest equivalent in the nucellus of an ovule.

—*Comptes rendus*, cxxiv., 1897, p. 808.

Röntgen Rays in the Laboratory. Thorner has been experimenting on the action of the X rays on various salts and foodstuffs. As a rule, he finds that organic bodies are readily penetrated by the rays, while inorganic substances are more resistant, except boric acid, borax, lithium carbonate, and the diamond; all these are readily penetrated. Foodstuffs which have a low ash offer very little resistance to the passage of the rays. Flour, honey, and sugar are practically transparent, but when mineral matter is added to them the mixture becomes markedly more resistant. Fats have the same properties. Butter mixed with salt is distinctly more opaque than the fresh article. Wheaten bread is

more penetrable than that of rye, and brown bread least so of all. The author considers that this penetrability of bread depends in a great measure on the porosity of the loaf, and that therefore a more transparent bread is likely to be most digestible. Adulterations of coffee berries are readily recognised by means of the X rays, fictitious berries made of breadcrumb being much more translucent, while berries made of clay or other inorganic matter are practically opaque. Tea-leaves that have been faced with inorganic colouring matter give a much darker shadow than the natural leaves, and even bad hazel nuts may be separated from good ones without cracking them by means of the X rays. With silk the penetrability is inversely as the amount of ash given on incineration. Horn is more transparent than bone. Celluloid is readily penetrated. Paste stones offer distinctly more resistance to the passage of the rays than genuine diamonds. —*Umschau*, i., 530.

Seguy's X Ray Lorgnette.

A good deal of attention has lately been attracted to the reports which have appeared in the lay press on an apparatus used by the French Customs authorities for the detection of contraband articles in the baggage of passengers by means of an apparatus developing the X-rays. This is the Seguy lorgnette, so named after the inventor. It consists of a strong wooden box containing a battery with four accumulators. For convenience in transport a specially constructed transformer is substituted for the usual Ruhmkorff coil. The illuminating bulb is attached to the battery by wires insulated in rubber tubes, so that it can be placed in any position. A button is pressed, which displaces the stop of the transformer, and the bulb becomes luminous. The bottom of the lorgnette is furnished with a fluorescent screen; this is placed against the body to be examined, which intervenes between the source of illumination and the screen. This apparatus is well adapted for medical use. For the examination of patients it is not necessary for them to remove their clothing, and the observations can be conducted in daylight. —*Pharm. Zeit.*, xlii., 545.

Permeability of Elements by the Röntgen Rays.

A paper was read by J. Waddell, at the British Association meeting at Toronto, which was partly a discussion of data obtained and already published by Gladstone and Hibbert and by himself, and partly an account of a re-investigation of the points at issue. Waddell maintains that there is no great difference between the permeability of lithium and sodium, and that it is hardly correct to say that lithium has next to no absorbent action on the Röntgen rays. Beryllium and magnesium and boron and aluminum were also compared as to absorbent power and found to be nearly equal, so that among the elements of low atomic weight (all below aluminum) there is no sudden or rapid rise of absorbent action with atomic weight. Experiments intended to elucidate the peculiar granular appearance of coarse powders were also described.

Artificial Diamonds.

A new process for producing artificial diamonds has been experimented on successfully by Dr. Quirino Majorana (*Rendiconti della R. Accademia dei Lincei*). It consists fundamentally in heating a piece of carbon by the electric arc, and then submitting it to a violent pressure by means of a small plunger actuated by a piston, on which a pressure of five thousand atmospheres is suddenly developed by explosion. When a sufficiently strong cylinder had been constructed to withstand this enormous pressure the experiment resulted in the production of a black mass, consisting largely of graphite and amorphous carbon. On employing Berthelot's method to isolate the diamonds if they existed, small microscopic crystals were obtained, mostly black and opaque, but which exhibited all the properties of true diamonds, notably in their manner of burning at a high temperature. The conclusion drawn from these experiments is that pressure and heat are alone sufficient to transform amorphous carbon into the crystalline or diamond form, and that the presence of a metallic solvent, as in Moissan's experiments, is not essential to the transformation.—*Nature*, lvi., 500.

Prevention of Potato Scab.

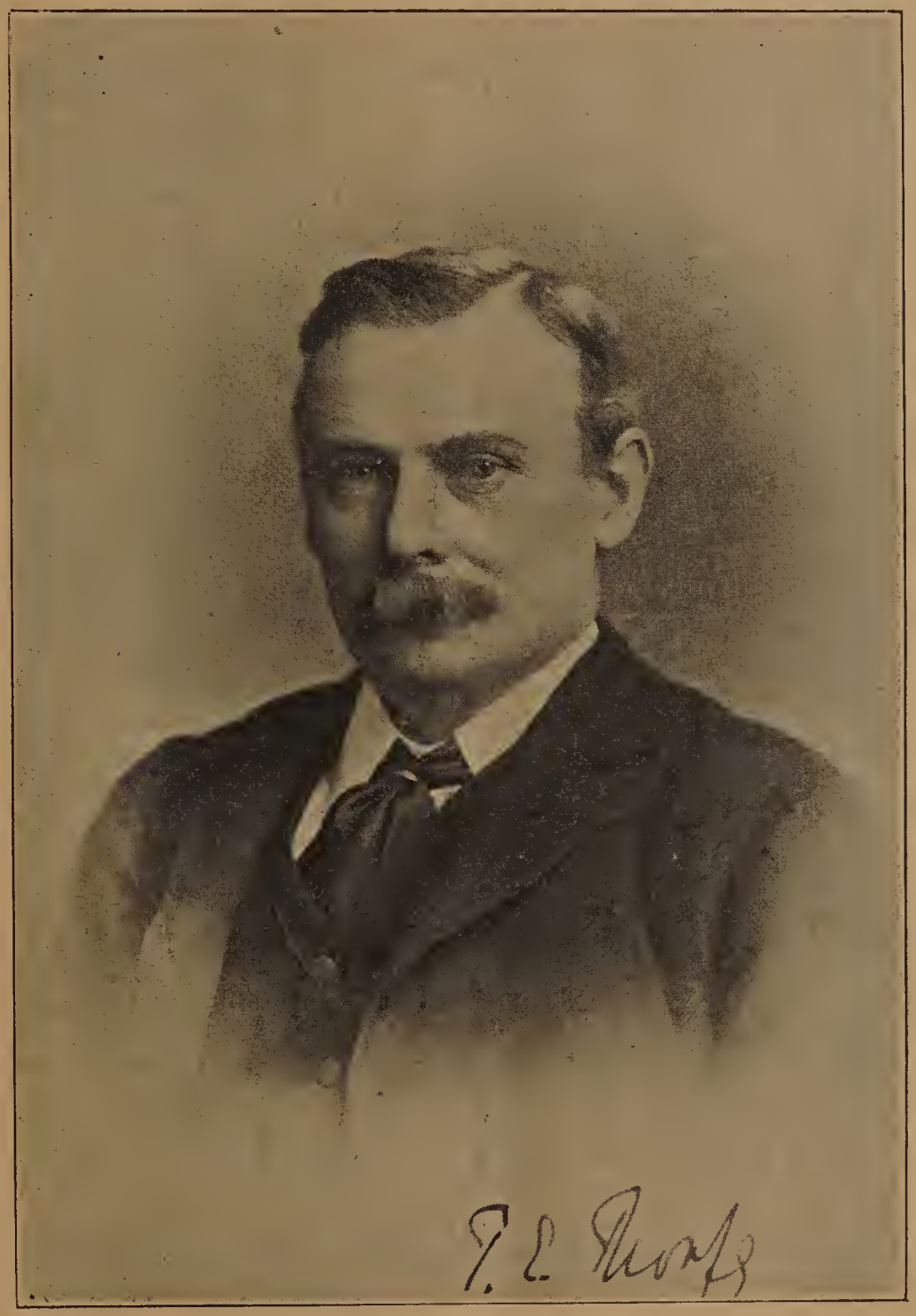
Investigations carried out at the Purdue University Agricultural Experiment Station in 1895 demonstrated that an efficient preventive of potato scab (a parisitic disease) is obtained by treating the seed tubers with corrosive sublimate. But as the poisonous and corrosive nature of this compound renders the treatment objectionable to some extent, investigations have been made with the idea of discovering a preventive having the good qualities of corrosive sublimate without its bad ones, and which could confidently be used as the standard fungicide for potato scab. Observations made at the station lead to the following conclusions :—That formalin will practically free seed potatoes from scab germs by an immersion for two hours in a solution of the approximate strength of 1 : 300. It is equal to corrosive sublimate in efficiency, and is without its dangerous and troublesome properties. Seed material of seemingly good quality, as well as that much affected with scab, shows beneficial results from treatment. The recipe for its use is to add 8 fl. oz. of formalin to 15 gallons of water, and soak the seed tubers in it for two hours before planting.—*Nature*, lvi., 502.

Physical Intensification of Photo-Negatives.

Lord Rayleigh describes an optical device for the intensification of photographic negatives which are so thin that intensification by chemical processes is insufficient to bring out any effective contrast between the transparent and opaque parts. The new method is purely a physical one, and is described as one of using the negative twice over. On placing a feeble transparency upon a sheet of white paper, the picture becomes clearly visible, even though nothing can be seen when the transparency is viewed by transmitted light. Through the transparent parts the paper is seen with but little loss of brilliancy, while the opaque parts act, as it were, twice over, once before the light reaches the paper and once again after reflexion on its way to the eye. In Lord Rayleigh's method, a flat polished reflector is used instead of the paper, the film side of the negative being placed in close contact with it. On the other side of the negative, and fairly close to it, is a condensing lens, which gives parallelism to the rays from the candle used as a source of illumination. The candle is placed just alongside of the copying lens, the light from it passing through the condensing lens, and falling as a parallel beam upon the negative. After reflexion, the light again traverses the lens, and forms an image of the candle centred upon the photographic copying lens. An optically intensified positive is thus obtained, and by copyir g it in the same way in the camera, a negative with more pronounced contrast than the original may be made. To obtain satisfactory results, the false light reflected by the optical surfaces employed must be eliminated. In the case of the condensing lens the difficulty is overcome by giving the lens a slight slope with reference to the face of the negative. The false light reflected from the glass face of the negative to be copied may be got rid of by bringing into contact with the negative a wedge-shaped glass of equal or greater area, the reflexion from the adjoining faces being almost destroyed by the interposition of a layer of turpentine.—*Phil. Mag.*, xliv., 282.

The New Government Laboratory.

MEN die, but the world goes on. There are a few still living who can remember the establishment of an Excise Chemical Laboratory in Old Broad Street. Mr. George Phillips, the first chemist appointed by the Board of Inland Revenue, describes its origin in these words: "The Laboratory was established in the latter part of 1842 with a view to suppress the adulteration of tobacco, which at that time prevailed so extensively as seriously to affect the Revenue. Its operations were in the first place confined to the study and examination of the various features of tobacco, both genuine and adulterated. During the first two years the duties were performed by myself, but as the usefulness of the department became apparent the business gradually extended so as to embrace the analysis of almost every excisable commodity, and the number of assistants was gradually increased until in the year 1856 they had reached six." Such was the origin of the present Government Laboratory, the opening of the new building for which has formed one of the chief scientific features of the week.



From a Photograph by Elliot & Fry, London.]

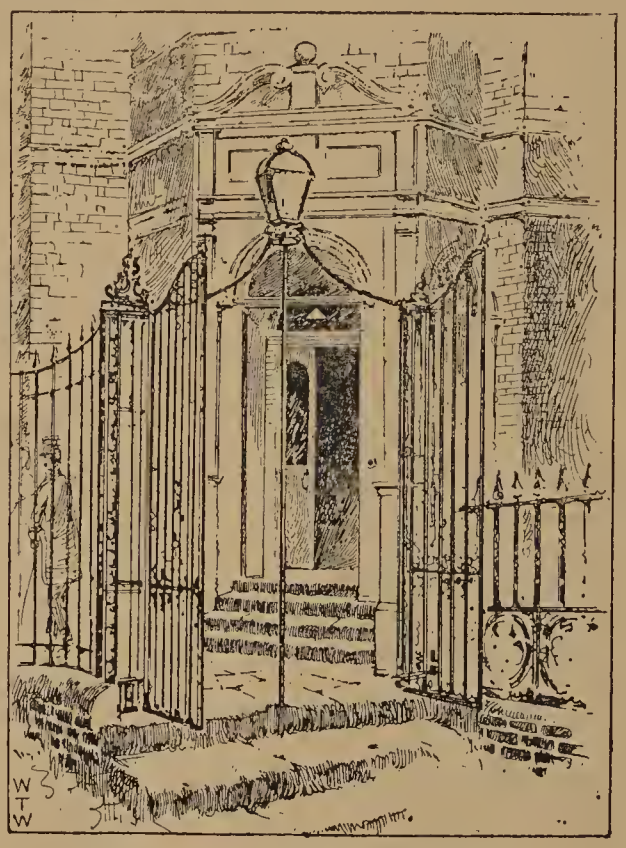
DR. T. E. THORPE, F.R.S.,
Principal of the Government Laboratory.

Mr. George Phillips was succeeded by Dr. James Bell, F.R.S.—now so well known in connection with food analysis — and it was under his kindly chiefship that department after department laid claim to the services of Somerset House, until it might be said with perfect truth that it had become the Government laboratory. In 1863 the total number of samples examined amounted to 8588, in 1896 it reached 64,664. In 1863 the staff numbered 10, in 1896 it numbered 70. During all this long period of transition we can hardly exaggerate the disadvantages under which the work was carried on. The rooms of Somerset House were intended for clerks and not for chemists. They were not adapted for housing scientific instruments. They involved isolation where co-operation was desirable. Supervision was difficult. To add to all these drawbacks it was sometimes impossible to obtain rooms for carrying on new work, and in all circumstances the demand produced more or less friction with the gentlemen whose preserves were being invaded. The passing of the Estates Act was the last straw. It was found impossible to house the increased staff of clerks required for the work.

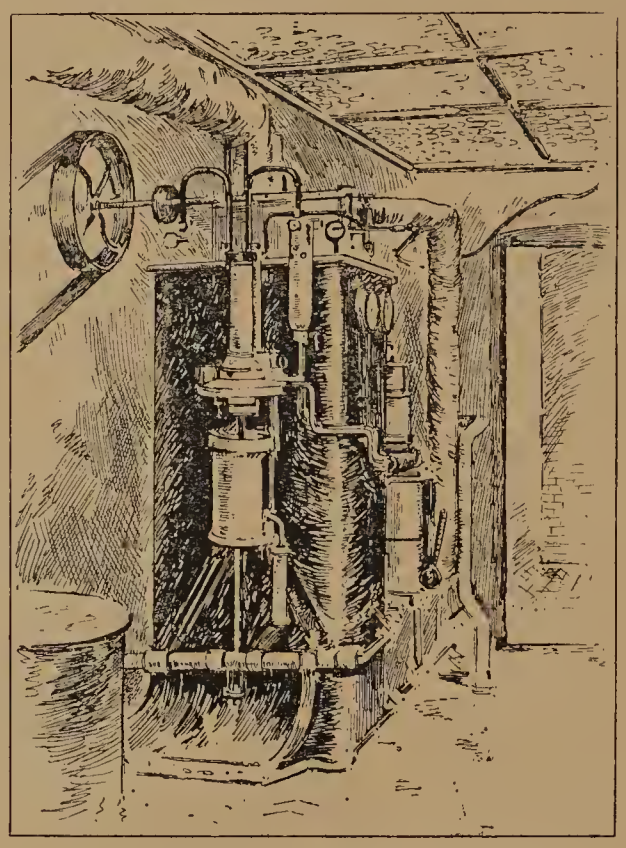
Dr. Bell had in the meantime retired from his responsible position full of years and honours, and Dr. T. E. Thorpe reigned in his stead. The opportunity which to many never comes was at once before him. It was indeed the man and the hour. The Treasury said the Government chemists must depart from Somerset House, and Dr. Thorpe said "Then build a laboratory worthy of us; I will undertake to draw the plans and watch over its progress." Nothing could have been more fortunate, for not only could Dr. Thorpe bring to the work the experience derived from his knowledge of the leading working laboratories of the Continent, but he had devised and superintended the erection of one of the most modern and perfectly-equipped educational laboratories in this country, that of the Yorkshire College at Leeds. The land, a piece in possession of the Government at the north end of Clement's Inn Passage, was soon agreed upon for the site, and about two years ago everything was under weigh. That the building and fittings are only now ready is no

fault of the Board of Works. The work was a new experience for the Government surveyors, and it is a satisfaction—compared with which the lost time weighs as a mere feather—that there is now in close proximity to the Law Courts a Government chemical laboratory worthy of this country and of the science with which it deals.

The new building can hardly be said to possess any claim to architectural beauty ; indeed, its surroundings are such that anything of the nature of elaborate adornment would shed its sweetness on the desert air. The shape is that of a trapezium having its narrow end next the Bankruptcy Court offices, its eastern side facing King's College Hospital, and its western facing Clement's Inn Passage. It is of red brick, and its two large central windows are from the outside its most conspicuous feature. It consists of three storeys, the third one only extending to each end of the largish working room, and it covers an area of 7900 square feet. The visitor enters the building from the south, and under the



ENTRANCE TO THE NEW LABORATORY.



HALL'S PATENT COLD BRINE MACHINE.

courteous guidance of one of the staff is introduced to all the novelties of this latest edition of a working laboratory.

First he notices that all the walls are of white glazed brick, and is assured that no plaster has found its way into the building. There is a complete absence of the close smell found in new buildings with plastered walls, and as a consequence a freshness which is exhilarating. It is also noticed that the flooring is all of solid wooden blocks, thus producing a minimum of vibration and noise.

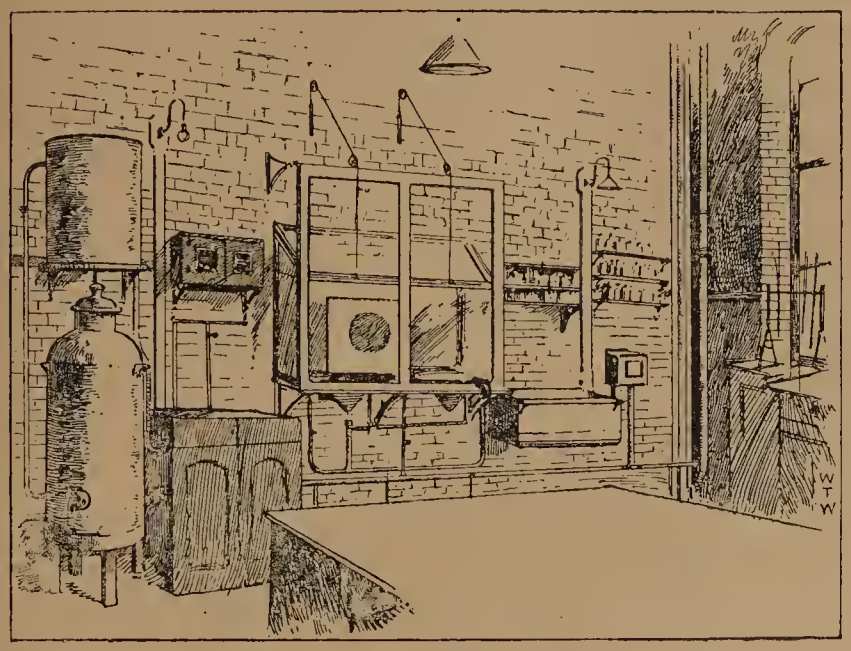
One is introduced first to the machinery in the basement, at once the heart and lungs of the undertaking. Hall's patent cold brine machine immediately engages our attention. The volatilisation of liquid carbonic acid in close proximity to a solution of calcic chloride called brine lowers the temperature of the liquid below the freezing-point of water. This would be in itself an expensive mode of producing cold, but the arrangement of the machine involves the reconversion of the carbonic acid gas under pressure into the liquid state, so that it can be worked over and over again. It need hardly be said that a great many of the operations of the laboratory are conducted at a temperature of 60° F. In order to produce this temperature it has hitherto been found necessary to provide a trough with a pound or two of ice, and in this melting ice the liquid to be operated upon is placed until the desired temperature has been reached. The result of this mode of cooling has involved in summer time the consumption of some hundredweights of ice per day. This is now all changed. Water from a cistern below the cold brine-making machinery is pumped to a cistern on the roof ; in passing upwards it is made to come in contact with coils containing the cold brine, and it is there so cooled as to reach the upper cistern at a temperature of about 50° F. This cooled water has its special duty. It descends to the principal working room, where to each bench a trough is provided, over which is a tap. Open this tap and in comes the cooled water, thus saving, if not entirely doing away, with ice. Having served this purpose it runs away—not into the sewer, for every kind of waste is objected to in this modern laboratory—but back again to the cistern below, from whence it returns again, and again recooled to the upper cistern, an endless circulation. "But," one asks, "suppose there is from any cause a leakage of this water?" "That," replies the conductor, "is provided for by an automatic arrangement." When the revolving water becomes low in the cistern a valve opens and in comes a fresh supply from the main.

Now for the pumps themselves. What are their duties? It has already been seen how they carry out a system of cold water circulation. Besides this they feed the boiler, but not their least important duty is to pump up the cold brine from the Hall's machine. Attached to the main working room, where beers, worts, spirits, and tinctures of all kinds are examined, there is a small room surrounded by coils, through which a constant circulation of the cold brine is kept up. This is the store-room for samples which rapidly decompose or ferment, and the result of the cooling process is to keep the air in the room at a fairly constant temperature of about 40°. The cold brine having been pumped up from below passes through these coils and then returns to the Hall's machine to be re-cooled. "But," it is asked, "what provision is made

for any breakdown in these pumps?" That difficulty, it appears, has been fully met by having the pumps in duplicate, two working and two waiting until they are required to work.

Turning now from water to air, it remains to be seen what provision Dr. Thorpe has made for supplying it to his staff. Close to the boiler is a powerful fan—a modified Guibal, worked by a one horse-power engine. This fan is connected by a system of wide pipes with every room in the building, pumping and revivifying from the lowest to the highest floor.

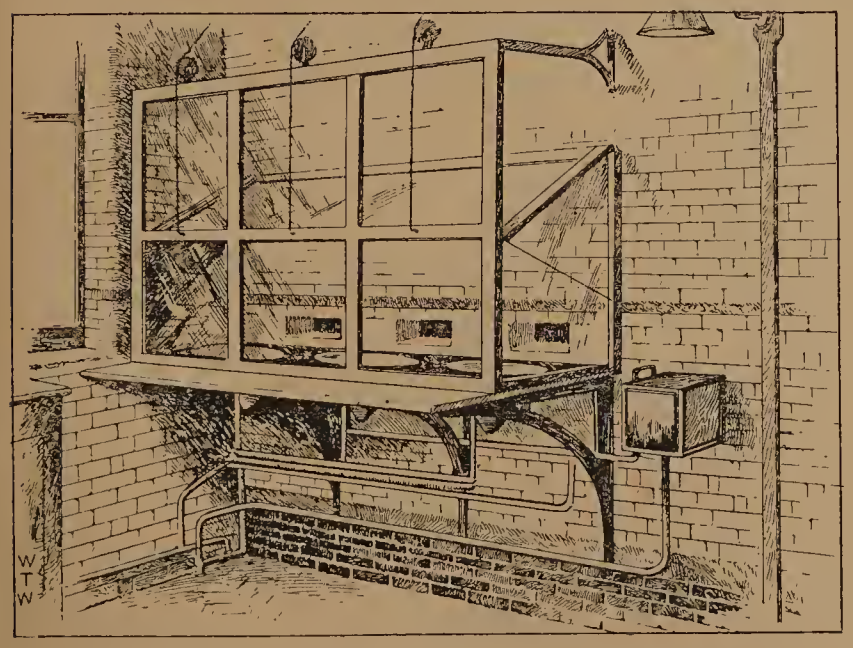
Having obtained some idea at least of the general plan of working the new laboratory, the visitor next ascends to the first floor and visits the rooms where the actual work is to be performed. The first



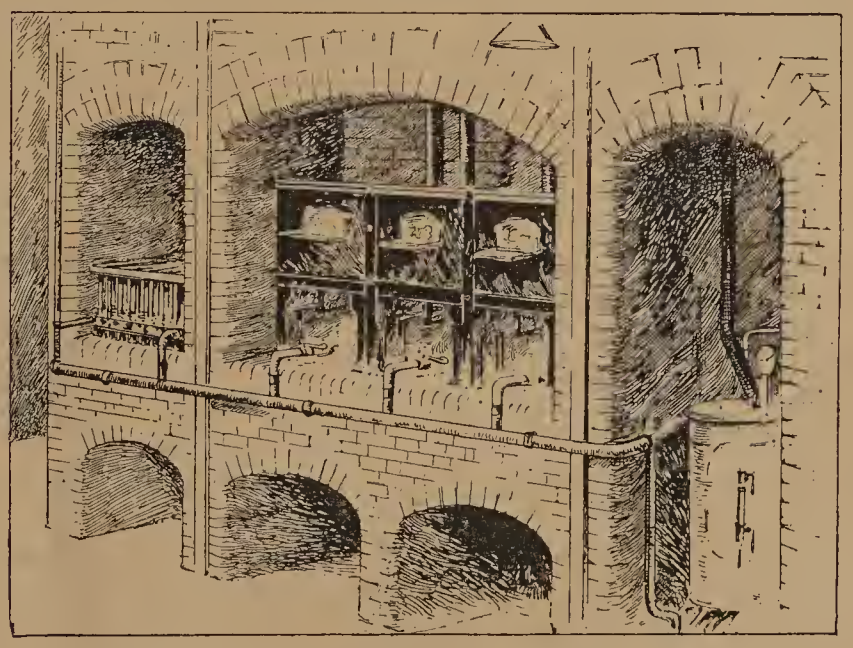
REFERENCE SAMPLE ROOM.

CROWN CONTRACTS ROOM.

on the right is devoted to foods, and this naturally includes articles submitted under the Sale of Food and Drugs Act. It is largely typical of the others. One observes a number of standard solutions enclosed in a cupboard with glass doors, the bottles fitted to burettes, so that the liquids can be drawn off without contact with the air. There is an enclosed evaporating closet so connected with the flue that the vapours are rapidly pumped out, and capable of being heated either by water—automatically prevented from ascending above a fixed level—or by steam from the boiler. Distilled water, so necessary in analytical inquiries, is specially provided for by an automatic apparatus. A cylinder containing what is best known as a worm is connected with the steam pipe from the boiler, and the steam passing through the worm is condensed and flows into a suitable vessel below. When this vessel is full, an overflow pipe turns the distilled water into the pipes leading to the cistern below the pump; but it is not anticipated, seeing the demands that are made upon the distilled water, that there will be much overflow. Lastly there is a drying oven combined with a sand bath. Of the Principal and Deputy-Principal's rooms, which are opposite each other, the most notable feature is the appearance on each side of the writing desks of seven for-



EVAPORATING CLOSET, CROWN CONTRACTS LABORATORY.



MUFFLES AND BURNERS, TOBACCO INCINERATION ROOM.

midable-looking instruments, the speaking trumpets destined to connect the generals with the army. Next to the Principal's room is the library, which it is intended to place under the charge of an official, and so organised that books for reference can be obtained by the staff at the shortest notice, a boon which we are sure will be appreciated. Adjoining the library is the research laboratory under the special direc-

tion of Dr. Thorpe, and set apart for original investigations. Last but not least comes the Crown Contracts Department, involving certainly the most varied work in the laboratory, for here come not only all the samples submitted for Government contracts, including those of India, but also water for purity, and generally matters arising out of Parliamentary and Departmental inquiries. The room is well adapted for its varied duties. It contains everything that has been described under the head of the Foods room, with abundance of muffles and a special closet—the draught from which goes directly into the furnace—for carrying off and destroying the various disagreeable and dangerous gases generated, especially in inorganic analyses. Before leaving this room, it should be mentioned that a room on the basement is specially set apart for water analysis and bacteriological inquiries.

Ascending the first flight of stairs, and passing the rooms of the superintending analysts, which it is intended shall be the depository for microscopes, etc., the room sacred to beer, tinctures, and spirits in all their phases, is entered. It is the show-room of the establishment, and when twenty-eight men are in the full swing of their daily labour it will be an object of human interest. Here Dr. Thorpe has not spared himself in his efforts to provide a room which shall be as healthy as a laboratory can be expected to be. It is in the centre of the building, and enjoys a Dormer roof of glass, the third storey being around and not above it. Reference has already been made to the arrangement for cooled water and for cold storage, which is attached to this room.

Dr. Thorpe has taken advantage of the removal to introduce some improvements which might not be considered as of necessity proper to the new laboratory. Hitherto corks have been drawn by hand; now there is fixed to each bench an American cork-drawer, which, by one motion of the lever, inserts the screw and draws the cork. Another labour-saving contrivance is a little electric motor applied to liquids. For the purpose of getting rid of the carbonic acid in beer it has been the custom to toss it from beaker to beaker. This will be a thing of the past. A little revolving shaft worked by an electric current does it all completely in three or four seconds. These are only a few of the improvements which one may say have been brought about by the removal of the laboratory from Somerset House. But to turn to another subject. In this room it is intended that the values of various sugars should be determined both for their saccharin and brewing value, and indeed, that every necessary check should be applied to wort and beer for the purpose of safeguarding the Revenue. All these require special appliances, and such appliances will not be found wanting here. One notable feature is a dark room—that is a room with the walls painted black—for the polariscopes.

Passing from beer and spirits in all varieties, a glance is taken at the department in which the tobacco revenue is carefully guarded, and the British public protected against the unreasonable watering of their favourite weed. Here are muffles in abundance, steam ovens of the newest and Bunsens of the most delicate pattern, all specially adapted for their purpose.

Now ascending to the highest floor, it is found that the first two rooms are devoted to photography. The dark room is, as might be expected, all that an artist could desire for such work, and will be sure to prove a very useful addition to the resources of the establishment. Adjoining is the museum of standard specimens, which, being now so well housed, will no doubt soon increase both in importance and in volume. It is hardly necessary to say that the whole of the building is lighted by electricity.

SOME NOTES ON CRYSTALLOGRAPHY.

When water containing saline matter in solution is allowed to evaporate slowly, a deposit occurs, the particles of which may assume various forms, differing according to the substance employed. The deposited particles are termed crystals, and if a fair specimen of the deposit be examined by a lens, it will be found to be bounded by smooth, even surfaces, meeting in straight lines; these are the "faces" of the crystal. The chief interest and value of a knowledge of crystallography is to assist in the recognition of many salts, as each particular class of crystal bears some relationship to another.

The Greek word from which "crystal" is derived had a peculiar connection with pure transparent stones cut into seals. These stones, it was thought, were only produced in the extreme cold of the lofty Alps. Pliny, who notices these crystals in his 'Natural History Book,' xxxvii., points out the hexagonal forms, and remarks that it is not easy to form an opinion as to the reason why crystals assume this shape. According to Buffon, a great rival of Linnæus, crystals are only a result of molecular organisation, so that the prisms of rock salt, the rhombic forms of calcspar, the cubes of common salt, and others, were produced by the motions of organic molecules, but he does not refer to crystallography in its bearing upon mineralogy. Romé de Lisle made a collection of mineral crystals, which he examined with great care, and he made a comparison of the forms and angles. In doing this he found a certain relationship existing between the various systems, and also that certain minerals assumed more than one crystalline form. However, his explanation of these phenomena does not quite coincide with the view held in the present day.

If a rhombohedron of calcspar be taken and placed with the chief axis upright and then other similar rhombs are built up on it, a six-sided prism with rhombic ends is formed. By stopping at a certain stage a dodecahedron will occur, a body with twelve rhombic faces bearing an appearance similar to the garnet. A peculiar hexagonal prism of calcspar shows distinct cleavage faces, but to attempt to obtain similar faces on the corners is attended with failure; the result of such cutting is the formation of three alternate edges at each end of the prism. If the process be continued and slice after slice removed until no vestige of the original prism remains, a rhomboid is formed, perfectly similar to Iceland spar and lying in the middle of the prism; when the mineral was distinct, the nucleus had a different form.

According to Haüy, in each mineral there exist solid bodies, incapable of further division, which are of invariable form, the face being parallel to the natural joints indicated by the mechanical division of the crystal, and with angles and dimensions given by calculation and observation combined. These molecules have distinct and determinate forms, except in a few regular bodies, such as the cube, which does not admit of variation. From the primary molecules, all the various crystals found in each system are derived, according to certain definite laws, and in a similar manner secondary crystals are produced. The formation of these secondary crystals, which disguise the real shape of the primary, is probably due to a thin layer of the salt in certain definite directions, decreasing in size at various points and equal in all directions. If successive layers of these molecules, each less by one row all round, be applied to the faces of the first-formed cube a rhombic dodecahedron is produced.

Mitscherlich showed that there are certain substances which crystallise in forms closely resembling each other, and the corresponding angles only differing by one or two degrees, or even less.

Thus the measurements of the obtuse angles of rhombohedrons of

Calcium carbonate	= 105° 5′
Magnesium carbonate	= 107° 25′
Manganous carbonate	= 107° 20′
Ferrous carbonate	= 107°
Zinc carbonate	= 107° 40′

These substances possess the remarkable property of exactly replacing each other in crystalline compounds without alteration of the characteristic geometrical form. Such bodies are isomorphous, from *ῖsos*, equal; *μόρφη* shape or form. The sulphates of magnesium and zinc are familiar examples. These sulphates combine with potassium sulphate and ammonium sulphate, giving rise to double salts, whose figure is the same, but quite different from the original simple sulphates.

In a similar manner alumina and iron sesquioxide replace each other continually without change of figure; the alumina in common alum can be replaced by iron sesquioxide or chromium trioxide, the ammonia by potash forming the well-known iron alum, which consists of the sulphates of iron and potash, chrome alum, sulphates of chromium and potash, but there is no such salt as soda alum, which curiously enough cannot be formed. A crystal of double aluminum and potassium sulphate may be prepared by making a hot solution of powdered alum, filtering until quite bright and then setting aside. The chief difficulty is to make a solution sufficiently strong to crystallise, but on the other hand, if the solution be over saturated, there is a tendency for a large number of small crystals to form, some aggregated together, and their crystalline form obscured. If the operation be carefully performed crystals may occur which show the faces of the octahedron, a variety of the cube. One important fact, however, should be mentioned; to obtain a perfect crystal the crystallising pan should be placed upon one side covered over, and not disturbed for some time; the slightest movement or even the presence of a trace of foreign matter is often sufficient to promote the formation of many nuclei, which usually adhere together, or at any rate mar the beauty of a perfect crystal.

When a hot solution of hydrochloric acid is saturated with arsenious anhydride, and then allowed to cool, a certain quantity of arsenious chloride is formed and remains in solution, while the remainder of the arsenious anhydride is deposited in the form of large octahedral crystals. The formation of these crystals is attended by flashes of light, visible in a darkened room. This experiment is exceedingly beautiful, and is best performed by boiling 60 grammes of arsenious anhydride in 500 C.c. of a mixture of equal volumes of strong hydrochloric acid and water in a flask, and allowing it to cool slowly. After a time the crystals begin to form, a flash of light accompanying the formation of each; the effect may be enhanced by carefully shaking the flask. It has been said that it is only the vitreous form which exhibits this phenomenon, but the same solution will generally serve for the above experiment any number of times if it be reheated, although the arsenious anhydride has, of course, been deposited in the crystalline form.

A very pretty experiment can be made by heating mercuric iodide in a large porcelain dish covered with a dial glass. The yellow iodide is deposited in crystals projecting from the under-surface of the glass, and if this be placed upon the table with the crystals upwards, and some of these be touched with a needle, the red spots appear like poppies among corn, and the blush gradually spreads over the entire field, attended by a rustling movement caused by the change in crystalline form. The red iodide is seen to be octahedral, while the yellow is in the form of rhombic tables.

A consideration of isomorphism experimentally, and also its assistance in checking certain atomic weights, may next occupy attention. The constituents of isomorphous salts cannot be separated by crystallisation alone, unless their degrees of solubility be very different. A solution of ferrous sulphate and nickel sulphate yields on evaporation crystals containing iron and nickel, but if the iron be oxidised to the ferric state and then the solution concentrated, the iron can be obtained fairly pure, the only trace of nickel present being dissolved in the mother liquor, which adheres closely to the crystals of iron. Isomorphism is found to exist between compounds containing the same number of atoms similarly combined, and which bear close chemical analogies to each other.

Isomorphous:
- Zinc sulphate, $ZnSO_4 7H_2O$.
- Magnesium sulphate, $MgSO_4 7H_2O$.
- Hydrogen disodium phosphate, $HNa_2PO_4 12H_2O$.
- Hydrogen disodium arsenate, $HNa_2AsO_4 12H_2O$.

An example will show the relationship: Taking the magnesium and zinc sulphates, the atomic weight of zinc is known, 65, and that of magnesium is doubtful; from the fact of their isomorphic properties it may be assumed that the elements are present in proportions relative to their atomic weights. By analysis we find that the proportion of magnesium is 24 to zinc 65, therefore 24 can be taken as the atomic weight of magnesium. Berzelius corrected in a similar manner many of the atomic weights which had been assigned to the elements. With regard to the physical properties of crystals it must suffice to say they bear a close relationship to their geometrical character. Tetragonal and hexagonal crystals possess the property of double refraction of light with a single optical axis; this is well exemplified in the case of calcspar. Moreover, crystals possess analogous modes of conducting heat, of expanding under its influence, and of transmitting magnetism and electricty.

Forms of Tartaric Acid.—The four modifications of tartaric acid are distinguished by their optical properties. Ordinary tartaric or dextro-rotatory acid occurs in grapes, pineapples, etc.,

Fig. 1.—Lævo-rotatory Tartaric Acid.

and as its name indicates possesses the property of turning a ray of polarised light to the right.

Lævo-rotatory tartaric acid is obtained by the separation of racemic acid into its constituents, dextro- and lævo-rotatory tartaric acids, by the crystallisation of the double sodium ammonium salts, $\begin{vmatrix} CHOH\ COONa \\ CHOH\ COONH_4 \end{vmatrix}$; two kinds of crystals separate, very similar to each other, the difference being that one plane occupies a position on the left-hand side of the crystal, corresponding to the position occupied by a similar plane on the right-hand side of the other crystal. These crystals are separated by hand, and the acids liberated by appropriate treatment.

(*To be continued.*)

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Paraffinum Molle.—This consists of a mixture of hydrocarbons ranging from about $C_{15}H_{32}$ to $C_{20}H_{42}$. When exposed to the action of bromine in carbon bisulphide solution some of the bromine—usually only a small percentage—is absorbed, indicating the presence of unsaturated olefine hydrocarbons homologous with ethylene, C_2H_4. Paraffinum molle is chiefly obtained by fractionating petroleum.

Paraffinum Durum.—Petroleum when fractionated yields only a small quantity of substance of this description. It is chiefly obtained by fractionating the crude oil obtained by the destructive distillation of shale. It is composed chiefly of members of the paraffin series ranging from $C_{20}H_{42}$ to $C_{30}H_{62}$.

Plumbi Acetas.—Acetate of lead when exposed loses acetic acid, a basic oxyacetate being formed. When dissolved in water, dissociation into oxysalt and acetic acid occurs to a slight extent—hence in crystallising the salt it is best to add a slight excess of acetic acid to prevent the formation of this oxysalt. With potassium iodide it gives a yellow precipitate of lead iodide (q.v.), and with sulphuric acid a white precipitate of lead sulphate—

$$Pb2(C_2H_3O_2) + H_2SO_4 = PbSO_4 + 2HC_2H_3O_2.$$

Plumbi Carbonas.—Complete solubility in dilute acetic acid indicates freedom from several heavy white powders, such as barium, calcium, or lead sulphates, which might be used as adulterants, and are insoluble in acetic acid. The precipitation by dilute sulphuric acid of the solution of acetate, so obtained, is very characteristic of lead, lead sulphate being about as insoluble as strontium sulphate. Precipitation as sulphate is often resorted to for the quantitative determination of lead, alcohol being added to render the precipitation more complete, for lead sulphate is even more insoluble in alcohol than water. Adulteration with chalk is detected by solution in acetic acid and after prccipitation of the lead as sulphide with sulphuretted hydrogen, any calcium acetate formed from the chalk by solution in acetic acid will be detected in the filtrate by the precipitation of calcium oxalate when ammonium oxalate is added. Note that lead, like calcium, forms an insoluble oxalate—hence it must be removed by H_2S before testing for calcium.

Plumbi Iodidum.—It will be found by calculation that almost exactly equal weights of lead nitrate and potassium iodide are required to comply with the equation—

$$\underbrace{Pb2(NO_3)}_{331} + \underbrace{2KI}_{332} = PbI_2 + 2KNO_3.$$

Plumbi Nitras.—This salt is obtained when nitric acid acts upon metallic lead. With regard to this action, compare the remarks made under cupri nitras in the "Students' Page"; these apply equally well to lead nitrate. The decolorisation of indigo is characteristic of nitric acid (and some other oxidising agents, chlorine, *e.g.*). It must be remembered that the sulphate of indigo mentioned in the test is the B.P. (see Appendix to B.P.) solution, obtained by dissolving indigo in excess of strong sulphuric acid. When, therefore, any nitrate is added to this solution, nitric acid is liberated by the sulphuric acid and oxidises the indigo to a colourless derivative, isatin. The indigo sulphate solution really contains indigo-sulphonic acid. Compare carefully the constitution of sulphonates, sulphites, and sulphates, by reading in your text-book of organic chemistry the sections relating to them. The ferrous sulphate test for nitrates may be also used if the student carefully considers the conditions under which the required reaction takes place. The black ring or coloration is due to the production of a compound of nitric oxide (NO) and ferrous sulphate. In the case of lead nitrate, addition of ferrous sulphate produces a dense white precipitate of lead sulphate—

$$Pb2NO_3 + FeSO_4 = PbSO_4 + Fe2NO_3.$$

Excess of ferrous sulphate must be added to ensure the presence of some $FeSO_4$ in solution after the above reaction has taken place. In any case the white precipitate of lead sulphate obscures the appearance of the characteristic black ring.

Plumbi Oxidum.—Solution without effervescence in diluted acetic and nitric acids indicates absence of carbonate of lead. This may be found in old samples, particularly if they have been kept in fine powder, for lead oxide slowly absorbs carbon dioxide from the air, lead carbonate being thus formed. From the nitric solution ammonia precipitates lead hydrate, insoluble in excess. Any copper present as impurity would also be first precipitated as cupric hydrate, but since it is soluble in excess of ammonia the filtrate from the lead hydrate would exhibit the blue colour characteristic of copper under these circumstanccs. Note carefully the behaviour of lead salts towards caustic potash and soda, lead hydrate being soluble in solutions of these reagents. Even the insoluble lead sulphate dissolves when digested with caustic potash solution. This should be carefully remembered, as you may have for analysis an alkaline solution which deposits an insoluble lead salt when the alkali is neutralised with an acid.

Potassa Caustica.—The yellow precipitate obtained by addition of platinum perchloride to the solution after neutralisation with nitric acid is the double chloride of platinum and potassium, K_2PtCl_6 ($2KCl,PtCl_4$). This reaction is a very valuable one, as it enables us to detect and separate potassium in presence of sodium salts, the corresponding sodium platinochloride being soluble. The potassium double chloride is soluble in rather less than 200 parts of water, hence the yellow precipitate is not obtained in very dilute solutions. The solution to be tested should therefore be fairly strong. The best method, and one which economises the platinum, is to place a few drops of the solution in a watch glass, add one or two drops of hydrochloric acid and then a few drops of platinum perchloride solution. The addition of hydrochloric acid is made in order to enable the potassium to assume the condition of chloride, whatever may be the salt present. For if, for example, platinum perchloride be added to a solution of potassium nitrate, the latter first decomposes some platinum perchloride—

$$4KNO_3 + PtCl_4 = 4KCl + Pt4(NO_3),$$

in order to form the potassium chloride necessary for the formation of the double chloride of platinum and potassium. Stir the mixture with a glass rod and set aside for a few minutes. The precipitate does not form at once, except from fairly concentrated solution. After a time the yellow precipitate is deposited in a crystalline condition more or less in lines where the glass rod has been rubbed on the watch glass.

Potassa Sulphurata.—When its solution is treated with acid the evolution of sulphuretted hydrogen indicates presence of sulphides, the deposition of sulphur being due to the presence of polysulphides, such as K_2S_3 :—

$$K_2S_3 + 2HCl = 2KCl + H_2S + 2S.$$

Thiosulphate of potassium, if present, would be also decomposed with deposition of sulphur, since the free thiosulphuric acid first formed decomposes into sulphurous acid and sulphur:—

$$(1)\ K_2S_2O_3 + 2HCl = 2KCl + H_2S_2O_3.$$

$$(2)\ H_2S_2O_3 = H_2SO_3 + S.$$

Note that this deposition of sulphur distinguishes thiosulphates from sulphites, the latter evolving sulphurous anhydride (sulphur dioxide) without deposition of sulphur. The sulphurous acid and sulphuretted hydrogen also react with deposition of sulphur:—

$$H_2SO_3 + 2H_2S = 3H_2O + 3S.$$

The reaction between these two bodies is very complex, other oxyacids of sulphur—pentathionic acid, for example, $H_2S_5O_6$—being formed besidcs. If improperly made, potassa sulphurata may contain much undecomposed carbonate, and, if kept too long, oxidation to sulphate occurs. Both these contingencies are provided for by testing the solubility in rectified spirit in which the carbonate and sulphate of potassium are insoluble. A sample which does not dissolve to the extent of 50 per cent. is not considered good enough for medicinal use.

Potassii Bicarbonas.—In addition to the process of preparation mentioned in the Pharmacopœia, potassium bicarbonate may also be obtained by a modification of the ammonia process for preparing sodium bicarbonate, substituting tri-methylamine, $N(CH_3)_3$, for ammonia, NH_3. This will be more particularly referred to under "Sodii Bicarbonas."

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MEDICAL MEN AND CHEMISTS.

Attractive to chemists as was the main topic of Dr. Fotheringham's paper, commented on last week in these columns, they are likely to be even more impressed by the sympathetic manner in which he referred to one of the worst evils oppressing pharmacy. Medical men, he pointed out, have transferred to the chemist of modern days a definite part of the duties of their professional ancestry. That they have not transferred it absolutely as yet is matter of common knowledge, but that aspect of the question does not arise in the present connection. It is sufficient to note that, as Dr. Fotheringham puts it, the retail chemist is known to medical men personally as the individual on whose probity and accuracy they must rely for their success in the use of drugs. But there is a tendency towards centralisation of the trade in medicaments in the hands of large manufacturing houses, and the effect of such a movement is slowly but surely to drive the chemist to the wall. Medical men help in that process every time they prescribe a proprietary article for medicinal purposes. When they specify the name of any maker, they might, so far as the proper function of the chemist is concerned, just as well have the prescribed article sold at the grocer's, as the chemist's function becomes purely mechanical, and by that habit medical men assist in placing themselves more fully in the hands of the manufacturers, and in killing off their best assistant, the retail chemist. The profit goes almost entirely to the manufacturer, and the retailer may be forced into methods and practices of which medical men often complain that they are dubious or worse. Moreover, it is urged that the interests of the physician and his patients are usually more nearly identical with those of the retailer than with those of the large manufacturer. In regard to certain preparations, the services of the wholesale manufacturer cannot be dispensed with, but medical men need not, therefore, transfer the whole of their patronage to him, and force the retail chemist to become merely a handler of the goods of his richer rival.

This welcome digression in Dr. Fotheringham's excellent and instructive paper puts the whole matter in a nutshell. Here we have a large class of specialists who have devoted themselves to the preparation and dispensing of medicinal substances, and on that subject know more than anyone else. They have each gone through a longer or shorter period of pupilage, accompanied by much drudgery, inseparable from a thorough mastery of details; they have also attained to a fairly high standard of scientific and technical training, the better to fit themselves for their important duties; finally, in the public interest, they have shown proof of their skill and fitness to receive a legal qualification, so that they start their independent business career in every way prepared to perform any services which may reasonably be required of them. But what do they find when once they are fairly embarked upon their chosen career, and it is practically too late to recede and turn their energies in some other direction? Apart from the fact that medical men have far from entirely relinquished their grasp upon the chemist's means of livelihood, the habit prevails of ignoring his ability to do what he has devoted many of the best years of his life to fit himself to do. In far too many cases—if a solution of a potent drug, a pill, a syrup, or a compressed tablet is required—the dispenser is openly insulted by receiving a prescription ordering a special make of the required preparation, even though there may be an official or otherwise recognised formula for the article.

Such conduct as is referred to often arises, unfortunately, from inability of the medical practitioner to prescribe. Despite his five years' curriculum, he has lacked the necessary time to acquire a satisfactory knowledge of the most appropriate remedies or method of treatment to be applied in the case of certain well-defined symptoms, whilst, should anything out of the common affect a patient, the ill-prepared medical attendant is utterly at sea. With such a state of affairs prevailing, small wonder is it that he resorts with great readiness to the plausible statements of manufacturers of specialties, who seek to prey upon the assumed ignorance of the medical man, by means of their ingeniously concocted ready-made therapeutics. It is so easy to order a bottle of some well-advertised mixture, guaranteed by the manufacturer—backed perhaps by one or more medical nonentities—to do all that is required when certain complex symptoms are manifested; and thus save time and trouble, as compared with the older method of carefully selecting all the ingredients in a bottle of medicine with a view to meeting the special requirements of the particular case under consideration. Of course, the chemist suffers, because he is at one fell stroke reduced from the position of a skilled practitioner to a mere retailer of other men's goods, and he is paid accordingly. But it is much more to the point to note that the public suffers, for whilst patients are being treated with ready-made physic of unknown or uncertain composition and possessing dubious virtues, a class of useful public servants is being snubbed, ignored, and allowed to feel that their existence is a mistake. The prescriber of ready-made nostrums also suffers, for neglect to exert himself to his full capacity is naturally followed by functional atrophy. But that is mainly his own affair, and no one will be a particle the worse if he becomes a thing of the past. Pending the time, however, when the administration of physic will be no more, is it altogether wise to risk the injury to the public that must inevitably follow even the partial disappearance of a class of well-trained dispensers of medicine?

ANNOTATIONS.

The Inaugural Meeting of the Pharmaceutical Society for the new Session will be held on Monday next, at 3 p.m., when the prizes and certificates will be awarded to the successful students of the School of Pharmacy for the past Session, and an address to the students will be delivered by Professor Herbert McLeod, F.R.S. The Hanbury Gold Medal, awarded to Dr. de Vrij, will afterwards be presented, and the Flückiger Memorial Medal will be formally handed to Mr. E. M. Holmes. A large attendance is desired, and members, associates, and students are at liberty to bring their friends on this occasion. The Society's premises will be open for inspection after the meeting.

The Nomination of Local Secretaries is a subject that should receive serious consideration on the part of all members and associates in business of the Pharmaceutical Society at the present time. The Council attaches great importance to the appointment of these representative officers throughout the country, and it should be obvious that great care ought to be exercised in the selection of nominees. Suitable men for so responsible an office may occasionally be difficult to secure, but it is none the less desirable that the attempt should be made. In a circular that is now being sent out to voters, reference is made to a suggestion that the interests of the Society might be greatly advanced, and closer relations cultivated between the members, if a meeting of the electorate in each district could be convened to discuss the selection of a representative for that district. No better plan than this could possibly be adopted, and it is to be hoped that it may be resorted to in most, if not all, cases.

The Local Secretaryship is no sinecure if the occupant of the post endeavours to advance the interests and extend the influence of the Society on all possible occasions. He has certain well-defined duties, but opportunities may and do frequently arise when he can with advantage go beyond the limits of what is strictly required of him. For example, whether or not there is a local pharmaceutical association in any particular district, there are usually one or more local secretaries, and on them should devolve the improvement of local organisation. They are the duly nominated representatives of the chemists in business within their respective spheres of action, and should, if the occasion arises, be prepared to act in that capacity—calling meetings of the trade to discuss matters of importance, conveying the wishes of those present at such meetings to the proper quarters, waiting upon Parliamentary representatives to explain difficulties and grievances, and so forth.

Unfortunately, in some Cases, the ambition of the individual selected as local secretary ends with his appointment. He rests content with collecting the subscriptions outstanding in his town, or possibly does no more than send up his own to headquarters, but so far as endeavouring to secure fresh members, increasing the Benevolent Fund, and improving local organisation are concerned, he maintains a condition of absolute passivity. It may be contended that his office is a purely voluntary and honorary one, but, on the other hand, it is necessary to realise that his acceptance of office may exclude some other person who is prepared to do all these things and more. If it be an absolute impossibility to secure a competent and energetic man as local secretary in a given district, that district must be in a very bad way, but except in such an extreme case the voters should not rest content until they are represented by a suitable person as local secretary. Length of tenure and personal relations should count for nothing in the matter. The Society requires the best man available for the post, and nothing short of that should satisfy the electorate in every district.

A Scandalous Case is reported from the Redruth district, already notorious for unprofessional conduct on the part of a chemist named Rowe, who has been in the habit of attending patients as a medical man and signing death certificates or what for a time were accepted as such by the local registrar. In the present instance the same chemist was described by the Coroner as a positive danger to society, who practised medicine illegally, though he had been warned twice and proceeded against once by the Society of Apothecaries. In this case—that of an infant—there was nothing criminal against him, but it was shown by the evidence of a medical man that Rowe was ignorant of the necessities of the case, and no doubt, said the Coroner, if he continued to practise medicine illegally he would come to serious harm. Every suspicious case in future in which Rowe was found to have acted as a medical man would be investigated with the greatest care and caution, and if he (the Coroner) found death had been accelerated by improper treatment, he should strongly advise the jury to bring in a verdict of murder or manslaughter against Rowe.

The Royal Photographic Society is now holding its annual exhibition at the Gallery of the Royal Society of Painters in Water Colours, and it is well worthy of a visit. Taking the exhibits all round there has probably been no better show in the photographic world. Nothing strikingly original singles itself out for attention, but the general average of the pictures is extremely high. A few prints might with advantage have been replaced, for, as the *Daily Chronicle* pertinently remarks, one has no patience with the smudgy photographs that are neither the "impressions" they pretend to be nor the record they ought to be. "The story deliberately told by the camera is even more offensive than the story told by the painter. A few verses tagged on to a print will not turn it into a poem any more than pen-and-ink drawings after the photographs, published in the catalogue, can convert the originals into works of art. The clearer the photograph the simpler, the more direct, the less pretentious, the better it serves its purpose." Nevertheless, the Society is to be congratulated on its excellent exhibition, and all who can pay it a visit are strongly advised to do so.

The 'Flora of British India,' which was begun by Sir Joseph Hooker some twenty-five years ago, has just been brought by him to completion. The value of the work as a contribution to pure science is very great, and the Government of India has expressed its hearty recognition of the service to India which Sir Joseph Hooker has rendered by his monumental undertaking. He has for the first time brought the botany of the Empire into a collective form and placed it upon a firm and lasting basis, thus completing the work which he began nearly half a century ago in the Himalayas. Whilst intimating to Sir Joseph Hooker a high appreciation of his labours, and of their value and importance as systematising and adding to our knowledge of the vegetable productions of India, the Government of that country heartily congratulates him upon having brought to a satisfactory conclusion a work to which he has devoted so many years of his life. In transmitting a copy of this letter to Sir Joseph Hooker, Sir Arthur Godley writes:—"Lord George Hamilton desires heartily to associate himself with the Government of India in their acknowledgment of the valuable services you have done to India by this great work, and by your labour in the field of Indian botany, since you first visited that country nearly fifty years ago." According to the *Kew Bulletin*,

Sir J. D. Hooker's literary activity has not ceased with the completion of the 'Flora of British India,' which has occupied him for a quarter of a century, the veteran botanist having offered to undertake the preparation of the two remaining volumes of the 'Handbook to the Flora of Ceylon,' left unwritten by the untimely death of Dr. Trimen. The necessary materials and specimens have already been received at Kew from the Royal Botanic Garden, Peradeniya.

Professor Emile Fischer, of Berlin, has been invited to occupy the chair at Heidelberg, rendered vacant by the death of the late Victor Meyer, but has declined the invitation. Dr. T. W. Engelmann, Professor of Physiology in the University of Utrecht, has been appointed successor to the late Professor Du Bois-Reymond in the chair of Physiology at Berlin.

Railway Companies perform useful public services, but at times their methods are far from pleasing, and as a result, a certain satisfaction is experienced when rebukes are administered to over-zealous railway officials by magistrates. There is little doubt that many past sufferers at the hands of the companies will read with zest the account of what passed at the Mansion House on Monday last. An individual was summoned for travelling on the Great Eastern Railway in a carriage superior to that for which he had obtained a ticket, and also for giving a false name and address, the case being proved by a travelling inspector. In reply to Sir Henry Knight, who was presiding at this Court, the inspector said it was not a fact that people were told to jump in where they could, but Sir Henry promptly retorted that his own experience in travelling from Southend was to the contrary. The carriages were filled with roughs, who were pushed in by the porters and guards. When the inspector said that might be done on Bank Holidays and in excursion trains, to facilitate people getting home quickly, Sir Henry said it appeared to him that when it suited the Company they encouraged the promiscuous riding of travellers irrespective of the tickets they held, and when it did not they prosecuted the offenders. He had the same experience on the London and South-Western line. It was really a scandalous condition of things, and he felt it very difficult to punish the present defendant under the circumstances. It seemed as if the companies quite suited their own convenience, and not that of the public in the matter. When the companies were the offenders, they took no notice of the breach of regulations, but on an off-day, when they had nothing else to do, they prosecuted the delinquents. In the result, the Magistrate imposed two fines of five shillings in all, and declined to allow costs. Moreover, he gave instructions that, in default of payment, the defendant should be released at the rising of the Court. That was done accordingly, doubtless to the great disgust of the travelling inspector and his superiors, and may serve as a useful lesson to them.

The Royal Society of New South Wales offers its medal and the sum of ten guineas for the best communication (provided it be of sufficient merit) containing the results of "original" research or observation on the iron-ore deposits of New South Wales, or on the life-history of the Australasian teredo and of other species of Australasian wood-eating marine Invertebrata, and on the means of protecting timber from their attack. The first paper must be sent in not later than May 1, 1898, and the second not later than May 1, 1899. The competition is open to all without any restriction whatever, excepting that a prize will not be awarded to a member of the Council for the time being; neither will an award be made for a mere compilation, however meritorious in its way. The communication, to be successful, must be either wholly or in part the result of original observation or research on the part of the contributor. The Society is fully sensible that the money value of the prize will not repay an investigator for the expenditure of his time and labour, but it is hoped that the honour will be regarded as a sufficient inducement and reward. The successful papers will be published in the Society's annual volume. All communications regarding the competitions must be addressed to the Honorary Secretaries at the Society's House, 5, Elizabeth Street, Sydney, New South Wales.

The Garb of Old Gaul is probably more frequently dyed with aniline colours than not nowadays, but it is interesting to know from what simple dyes the "Scot" evolved the glorious Tartans of the past. A correspondent of the *Standard* publishes a list of ancient "Highland dyes," the information concerning which was imparted to him by a very ancient "dame," and a thorough "Scotswoman." The list is as follows :—

Colour.	Gaelic.	Dye.
Black	"Bun na copaig"	Dock root.
Blue	"Droman le alm"	Elder with alum.
Crimson	"Crotal geal"	White lichen.
Green	"Bealaidh"	Broom.
Orange	"Preas smeur"	Bramble.
Violet	"Biolare"	Wild cress.
Yellow	"Roid"	Bog myrtle.
Purple	"Crotal Commeach"	Lichen cupross.

A Safe Shave may now be looked for in France, as according to the Paris correspondent of the *Lancet*, at the request of the Hygienic Council for the Department of the Seine, the Prefect of Police has just issued an order to all the haircutters of Paris containing instructions as to the measures to be taken for guarding against those diseases which are likely to be spread by the exercise of their trade. In the first place, all metal instruments are to be plunged directly after use into a vessel of soapy water which has been boiling for at least ten minutes. All combs of tortoiseshell, ivory, celluloid, or buffalo horn are to be replaced as far as possible by metal ones, so that they may the more easily be cleansed and disinfected ; scissors, razors, clippers, and brushes are to be kept in a stove heated to 100° C. or in a closed receptacle in the lower part of which is a solution containing formaldehyde and sodium chloride, in the proportion of 50 grammes of the former to 200 grammes of the salt. Before use, shaving-brushes must be dipped into boiling water, and instead of powder-puffs, blowers (pulverisateurs à sec) are to be used. Finally, all hairdressers must wash their hands before passing from one customer to another, and after anyone has had his hair cut, damp sand is to be sprinkled on the floor so that the hair may be swept up and burnt at the end of the day. The hairdressers have protested against this order, which they declare to be quite inapplicable to their trade, and it will be interesting to observe what the ultimate result may be.

The Royal Colleges of Physicians and Surgeons, as represented by their Councils, have refused to accept the declaration submitted to them, that all medical men associated with cheap medical aid clubs and institutes, are guilty of "infamous conduct" and have brought themselves within the disciplinary regulations. As a result, it is reported that a memorial has been sent to every medical organisation in the country urging them to petition the Councils to declare that the holding of an appointment in connection with such clubs is not compatible with the condition under which diplomas are granted, and suggesting that, if it be possible, new bye-laws should be secured under which the holding of such an appointment would be held to be "infamous conduct."

PHARMACEUTICAL SOCIETY.

MAJOR EXAMINATION QUESTIONS.

PHYSICS.

September, 1897.—10 a.m. to 1 p.m.

[*Six questions only to be attempted.*]

1. Give a short account of the construction of a chemical balance. On what does its sensitiveness depend?
2. If you had to determine the vapour density of a substance how would you proceed? and what information might you derive from the result?
3. Describe the construction of some form of air pump, stating the provisions necessary for high efficiency.
4. Describe the action of a convex lens in the formation of the image of an object illuminated by white light.
5. Describe an electrical machine which will yield positive or negative electricity, or both simultaneously. How can positive and negative electricity be distinguished?
6. A condenser is usually connected to the primary circuit of an induction coil; show how the connections are made, and describe the functions of the condenser.
7. A voltameter containing dilute sulphuric acid is connected to a constant battery. How would the current passing be affected by altering—
   (*a*) the concentration,
   (*b*) the temperature,
of the acid contained in the voltameter?
8. What conclusions as to a source of light may be drawn if its spectrum be—
   (*a*) continuous,
   (*b*) bright lined,
   (*c*) dark lined?
9. How would you proceed to determine the specific heat of a piece of metal by means of a Bunsen Ice Calorimeter?

CHEMISTRY.

September, 1897.—2 to 5 p.m.

[*Not more than six questions are to be attempted.*]

1. How would you propose to ascertain whether two given salts were really isomorphous with each other?
2. What evidence can you give in favour of the molecular formula O_3 for ozone?
3. How may Phosphorous Anhydride be prepared? Give a sketch and description of the apparatus you would employ for the purpose.
4. Explain fully what is meant by the term *heat of formation*, and indicate how the heat of formation of sugar could be ascertained.
5. What is *glycocine?* How can it be prepared, into what reactions does it enter, and what important derivatives may be obtained from it?
6. Trace the points of resemblance which mercury exhibits with silver and copper on the one hand, and with zinc and cadmium on the other.
7. How could ordinary lactic acid be obtained from acetic acid? How many lactic acids are there, what is their constitution respectively, and how are they severally obtainable?
8. How are benzoic and salicylic acids commonly prepared, and how can they respectively be synthesised from benzene?
9. Asparagin is the monamide of amido-succinic acid; draw out its graphic formula, and indicate by what experiments you could demonstrate the manner in which the two atoms of nitrogen are respectively combined in the molecule.

PRACTICAL BOTANY AND MATERIA MEDICA.

Tuesday, September 28, 1897.—10 a.m. to 1 p.m.

1. Briefly describe the specimens A and B, using technical language as far as possible.
2. Cut a transverse section of C. Mount it in an approbriate medium and leave it for the inspection of the examiners.
Leave with it an explanatory sketch. Identify the specimen C.
3. Identify the drug provided, and display its histological peculiarities.
Leave a section and a lettered sketch explaining it.

BOTANY AND MATERIA MEDICA.

Tuesday, September 28, 1897.—2 to 5 p.m.

1. Contrast a Fern and a dicotyledonous flowering plant with reference to—
(*a*) Their method of fertilisation,
(*b*) The structure of the stem.
2. What modifications of stem structures are met with among the flowering plants? In each case you mention state the purpose of the modification, and illustrate it by an example.
3. How would you demonstrate by experiment the following phenomena:—
(*a*) The evolution of CO_2 by green plants,
(*b*) Root pressure,
(*c*) The negative geotropism of roots?
4. Describe the commercial varieties and botanical source of Coca, and mention its principal constituents. How is Cocaine prepared? What tests should be applied to ascertain its purity?
5. Give an account of the production of Gum Tragacanth. Describe its chemical composition.

MEDICAL JOTTINGS.

The General Medical Council has only within the last few years included any direct representation of registered medical men, and judging from results so far the change has not been a pronounced success, partly due perhaps to the fact that unlike our own Council, the proportion of elected representatives is very small. Out of thirty members only five are elected by the general body of medical practitioners, five are nominated by the Crown, and twenty chosen by the Universities and Medical Corporations. Of the five elected members who retain office for five years, three sit for England and Wales, and one each for Scotland and Ireland. Last November the term expired for the English members, and for these seats there were ten candidates; the electorate numbered 22,500, about fifty-four per cent. of whom recorded their votes, Dr. Rentoul heading the poll with 6646 to his credit. This gentleman however, has unexpectedly resigned his seat, necessitating a fresh election with its concurrent trouble and expense, the last one cost the Council over £400. The *Medical Press* makes an urgent suggestion that all should vote on this occasion, and thus remove the stigma remaining from the last election, that half the profession does not care for direct representation, and would not even take the trouble to return the voting papers.

Sir Walter Foster, who is one of the candidates, has previously sat as a direct representative, but did not seek re-election last year. Other candidates are Mr. Victor Horsley, F.R.S., Dr. J. A. Rigby, of Preston; Dr. T. M. Dolan, of Halifax, and Dr. Diver, of Kenley, Surrey; Mr. G. Jackson, of Plymouth, was also in the field, but has retired in favour of Sir Walter Foster, between whom and Mr. Victor Horsley the probable choice of the electors lies. Dr. Rentoul seems to have had an inkling that his resignation was a mistake, for he sought to withdraw it, the vacancy, however, had been created, and the resignation could not be recalled.

Dr. Edward Berdoe, the anti-vivisectionist, has been writing to the *Daily Chronicle* to protest against certain "experiments on lunatics," which are recorded in a paper by Dr. Berkley in the 'Bulletin of the Johns Hopkins Hospital' for July, 1897. The author says: "It was, therefore, directly for the purpose of ascertaining the toxicity of one of the best known varieties of the thyroid extract that the following series of experiments were taken." Dr. Berdoe contends that these experiments were undertaken, not with a view to cure the patients, as they were declared to be incurable, but for the purpose of testing the toxic action of the thyroid extract when pushed to a dangerous point. The *British Medical Journal*, in its comments on this, admits that Dr. Berkley's paper needs some explanation, but says that the use of thyroid extract is recognised as valuable in certain cases of insanity, and that one of Dr. Berkley's patients appears to have been cured by it.

Dr. William Hardman, of Blackpool, complains, in a letter to a medical contemporary, of "a most provoking conceit of chemists" who frequently favour him with pamphlets setting forth the virtues of new remedies, and give all possible details except the price. Dr. Hardman states that his experience is that enormous prices are asked for many new remedies which on trial turn out worse than useless, and he suggests that the prices of the preparations should be quoted in the pamphlets.

The Will of the late C. F. Du Pasquier, formerly surgeon-apothecary to the Queen and to the Prince of Wales, who recently died at Norwood at the advanced age of 87, has been proved. The personal estate was valued at £49,660.

Mr. Ernest Hart, well known as the editor of the *British Medical Journal*, has long suffered from impaired health, and we very much regret to learn that he has had to undergo amputation of his leg in consequence of necrosis of the bones of the foot. Happily, Mr. Hart is now convalescent and progressing favourably.

Count Cesaro Mattei, by whose remedies, named electro-homœopathic, it was claimed that many marvellous cures in cases of fever, cancer, and scrofula had been effected, has left his residuary estate "to found a moral entity which shall last for ever," and bear his name "Opera Count Cesaro Mattei." The entity is to have two objects, the preservation of his castle in Italy, and charity. A hospital for cancer is to be founded and endowed in the vicinity of the castle.

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 292.)

Raabe (Albumin in Urine).—Trichloracetic acid in saturated solution is used as the precipitant. It does not coagulate mucin or precipitate peptones. It is poured on to the surface of the cold urine.

Raabe (Albumin in Urine).—When crystallised trichloracetic acid is added to urine it sinks to the bottom of the liquid and is dissolved, forming a turbid zone.

Rabl (Alum Cochineal).—This is practically identical with Czokor's cochineal alum-carmine.

Rabl (Chloro-Formic Acid).—Add 4 or 5 drops of concentrated formic acid to 200 C.c. of 0·33 per cent. chromic acid solution. Or, Squire gives the following formula:—Mix 7 C.c. of 10 per cent. chromic acid solution, 200 C.c. of water, and 5 drops of formic acid (sp. gr. 1·2). The mixture must be freshly prepared at the moment of using and small pieces of tissue should be fixed in it for 12 to 24 hours, then washed with water, hardened in alcohol of gradually increasing strength, and stained with Delafield's hæmatoxylin or safranine. This is one of the best reagents for the study of karyokinesis.

Rabl (Picro-Sublimate).—Mix 1 volume each of saturated solutions of mercuric chloride and picric acid, and add 2 volumes of distilled water. Embryos may be left to harden in this for 12 hours, and should then be washed in water for 2 hours, prior to removal into weak alcohol.

Rabl (Platinum Fixing Solution).—Objects are left for 24 hours in an aqueous solution of platinic chloride (1 : 300), then wash with water, harden in alcohol, and cut sections. Stain with Delafield's hæmatoxylin or safranine.

Rabl (Platino-sublimate Mixture).—Mix equal volumes of 1 per cent. platinic chloride solution, saturated mercuric chloride solution, and distilled water. This is used for hardening embryos of Vertebrates and for other objects.

Rabl (Serial Sections).—The sections are secured to slides by means of a modification of Schällibaum's solution, prepared by mixing 2 parts of collodion with 3 parts of clove oil.

Rabl (Staining Method).—Stain very lightly with dilute Delafield's hæmatoxylin for 24 hours, wash out first with water, then with alcohol acidulated with hydrochloric acid, next stain for some hours in Pfitzner's safranine and wash out with pure alcohol.

Rabourdin (Iodine).—If to a liquid containing iodine 2 drops of nitric acid, 15 drops of sulphuric acid, and a little chloroform be added, a violet colour will be imparted to the chloroform.

Rafaële (Albumin in Urine).—Use hydrochloric instead of acetic acid in Spiegler's test, which see.

Ramsay (Carbonyl Chloride in Chloroform).—Add to the chloroform in a test-tube clear baryta-water, cork, and allow to stand for some hours. The film at the junction of the two liquids is white, owing to formation of barium carbonate if the chloroform contained carbonyl chloride. The presence of this impurity makes the chloroform difficult to inhale. It is easily removed if, immediately before use, the chloroform be shaken with slaked lime. It is well to keep slaked lime in the stock bottle and to shake before use.

Ranvier (Absolute Alcohol).—Alcohol absolute enough for all practical purposes is prepared by treating 95 per cent. alcohol with calcined cupric sulphate, with which it is shaken up and allowed to remain for a day or two. Repeat the operation with fresh cupric sulphate until the salt ceases to become conspicuously blue, or until no particles of water are visible when a drop of the alcohol is mixed with a drop of turpentine and examined under the microscope.

Ranvier (Ammonia-Carmine).—Dissolve carmine in water with a slight excess of water, and expose the solution to air until entirely dried up. The residue is then dissolved in distilled water and the solution filtered.

Ranvier (Carmine-Gelatin Injection).—Soak 5 Gm. of gelatin in water until quite swollen and soft (about half an hour), wash, drain, and melt over a water bath. Then add slowly a solution prepared by rubbing up 2 5 Gm. of carmine with a little water, and adding just enough water, drop by drop, to form a transparent solution. Next, neutralise by adding cautiously, drop by drop and with continual agitation, a mixture of 1 part of glacial acetic acid and 2 parts of water. Care must be taken to avoid forming a granular precipitate of carmine by adding excess of acid. Finally, strain the mass through new flannel.

Ranvier (Decalcifying Fluid).—Use 50 per cent. hydrochloric acid with the addition of sodium chloride to counteract its swelling action.

Ranvier (Formic Acid Method).—Thoroughly impregnate the tissues in a mixture of 4 parts of 1 per cent. gold chloride solution and 1 part of formic acid, which has been boiled and allowed to cool. Afterwards reduce the gold, either by the action of daylight in acidulated water, or in the dark in 20 per cent. formic acid.

Ranvier (Iodised Serum).—Flakes of iodine are added to the freshly obtained amniotic liquid of mammals, and the mixture is frequently agitated for several days. Or, serum is mixed with a large proportion of tincture of iodine, and the precipitate removed by filtration. The resulting strong serum is kept in stock and a little added every two or three days to the serum intended for use.

Ranvier (Lemon-Juice Method).—Soak pieces of fresh tissue in fresh lemon-juice until transparent (5 to 10 minutes), then rapidly wash in distilled water, treat for 10 to 60 minutes with 1 per cent. gold chloride solution, again wash and expose to light in a bottle containing 50 C c. of distilled water and 2 drops of acetic acid. Reduction is complete in 24 to 48 hours. If it is not desired to retain the superficial epithelium, reduction may be more completely effected in the dark, by treatment with formic acid (sp. gr. 1·2), diluted with three times its volume of water. The lemon-juice in the above process may be replaced by an aqueous solution of citric acid (40 grains in each ounce).

Ranvier (One-Third Alcohol).—This mixture of 2 parts of distilled water, and 1 part of 90 per cent. alcohol is known in France as "Alcool au tiers," in Germany as "Drittelalcohol" or "Ranviersche alcohol dilutus," and in Italy as "Alcool al terzo." It is a very mild fixative, and objects should not be left in it for more than 24 hours. They may then be stained with picro-carmine, alum-carmine, or methyl green.

Ranvier (Picro-Carmine).—Mix 1000 parts of water, 20 of picric acid, 10 of carmine, and 50 of ammonia. Keep in a stoppered bottle, in a warm place, for 2 or 3 months, then expose in a large dish until the liquid has become reduced to four-fifths of its original volume. Now remove the crystals that have formed, dry, and dissolve in a little warm water. If, after filtration, the carmine does not appear to be dissolved when examined under the microscope, add more water and ammonia and expose, etc., as before. When the carmine is properly dissolved, evaporate the filtered solution to dryness in a stove, and reduce the residue to powder. For staining, 1 Gm. of this powder is dissolved in 100 Gm. of water, and a crystal of thymol added to prevent mould.

Ranvier (Prussian Blue Injection).—Mix concentrated solutions of ferrous sulphate and potassium ferrocyanide by pouring the former gradually into the other, taking care to leave an excess of ferrocyanide. Filter off the liquid and wash the precipitate with distilled water until it becomes soluble, then make a concentrated aqueous solution of it. Soak 1 part of gelatin in water for half an hour, wash, melt, and add gradually to 25 parts of the blue solution heated to the same temperature, stirring continually with a glass rod until the curdy precipitate that first forms disappears. Then filter through new flannel and keep at 40° C. on a water bath, until injected. The soluble Prussian blue, prepared as above, is sometimes used without gelatin, or it may be mixed with one-fourth of glycerin.

Ranvier (Silver Nitrate Injection).—Mix 2, 3, or 4 parts of concentrated solution of gelatin with 1 part of 1 per cent. silver nitrate solution.

Ranvier and **Vignal** (Osmium Mixture).—Fix tissues in a freshly-prepared mixture of equal volumes of 1 per cent. osmic acid and 90 per cent. alcohol, then wash out in 80 per cent. alcohol, next with water, and stain for 48 hours with picro-carmine or hæmatoxylin. This method has been applied to the histology of insects.

Raspail (Albumins).—Upon adding sugar and concentrated sulphuric acid to albumins they are coloured red. Compare Schultze's furfurol reaction.

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

Rawitz (Hæmatein Stain).—Add 1 to 3 drops of strong alum-hæmatein solution to 25 or 50 C.c. of distilled water, and stain sections of picric or sublimate material in the mixture for 24 to 48 hours.

Rawitz (Invert Stain).—Place sections of material fixed in Flemming's liquid or some other chromic mixture in a 20 per cent. aqueous solution of tannin for 24 hours. Then wash and treat for 2 or 3 hours with a 1 to 2·5 per cent. solution of tartar emetic, kept at a temperature of 37° C., or for 24 hours with the same solution at the normal temperature. Again wash and stain for 24 hours with safranine, fuchsine, methyl violet, gentian violet, or emerald green. Differentiate with alcohol or by treatment for 2 to 24 hours with 2·5 per cent. tannin solution, after which clear and mount.

Read (Carbolic Acid and Creosote).—Strong solution of ammonia dissolves carbolic acid, but not creosote.

Reale (Free Hydrochloric Acid).—In solutions of ferric chloride containing free hydrochloric acid a 1 per cent. solution of carbolic acid gives a greenish coloration. In the absence of free acid an amethyst colour appears and a large quantity of acid prevents coloration.

Redenbaugh (Narcotisation Method).—Add crystals of magnesium sulphate to water containing marine animals until a saturated solution is obtained, or in the case of Annelids throw them into a saturated solution of the salt.

Redwood (Alcohol in Essential Oils).—The addition of nitric acid is followed by evolution of nitrous fumes.

Rehm (Stains for Nerve Cells).—(1) Wash sections for a few minutes in aqueous solution of Congo red, then in alcohol, and afterwards treat for 10 minutes (until they become blue) with alcohol acidulated with hydrochloric or nitric acid. Clear with origanum oil and mount. (2) Place sections of alcohol-hardened material in a 0·5 per cent. aqueous solution of hæmatoxylin for 1 or 2 days, wash in aqueous solution of lithium carbonate until no more colour comes away, then dehydrate and mount. After-stain, if desired, for a few minutes with 0·1 per cent. aqueous solution of Bismarck brown.

Rehm (Stains for Axis Cylinders).—(1) Stain sections of alcohol-hardened material for 5 minutes in 1 per cent. ammonia-carmine, wash out in 70 per cent. alcohol acidified with 1 per cent. nitric acid, then with pure alcohol; stain for half a minute in 0·1 per cent. methylene blue solution, differentiate in alcohol, clear in origanum oil, and mount in colophonium. (2) Employ a modification of Nissl's method, in which sections of alcohol-hardened material are stained for half a minute to a minute in hot 0·1 per cent. methylene blue solution, wash in 96 per cent. alcohol till no more colour comes away, clear with origanum oil, and mount in balsam or benzol-colophonium.

Reich (Cane Sugar).—Cobalt nitrate solution and potash or soda lye added to solutions of cane sugar produce a violet coloration. According to Dupont, glycerin, milk sugar, glucose, and inert sugar do not interfere with the reaction, but dextrin and gums should be removed by precipitation with lead acetate or baryta water.

Reich (Glucose).—(1) No violet coloration or precipitate is formed on adding potash solution and boiling, then adding cobalt nitrate; (2) No colour reaction on adding boiling solution of potassium bichromate.

Reichardt (Arsenic in Urine).—To 200 C.c. of urine add 2 Gm. of caustic soda, and evaporate off the liquid; then dissolve the residue in a little water acidulated with hydrochloric acid, and test in Marsh's apparatus.

Reichardt (Nitric Acid).—Upon treating a solution of brucine in sulphuric acid with a few drops of a solution containing nitric acid, a rose red to deep red coloration is produced. Or, to 1 drop of the water add 3 drops of brucine solution and a few drops of sulphuric acid.

Reiche (Gum Acacia).—Boiling with a solution of orcine in hydrochloric acid causes a red to violet colour and a blue precipitate, which dissolves in alcohol with a greenish-blue colour. Alkalies change the latter colour to violet with a greenish fluorescence.

Reichert-Meissl (Foreign Fat in Butter).—Weigh into a flask 5 Gm. of the melted butter, add 2 C.c. of 50 per cent. sodium hydrate solution, and 30 C.c. of rectified spirit. The fat is then saponified under a reflux condenser by brisk boiling for 20 minutes. The spirit is then boiled off, the last traces being carefully driven off. 100 C.c. of hot water is then added, the soap dissolved, 40 C.c. of dilute sulphuric acid are next added, and 110 C.c. of liquid is slowly distilled over. 100 C.c. of this is then titrated with $\frac{N}{10}$ soda, using phenolphthalein as an indicator. Pure butter contains volatile fatty acids, which use up from 24 to 32 C.c. of $\frac{N}{10}$ alkali for 5 Gm. taken.

Reichert-Meissl (Number).—This number indicates how many cubic centimetres of decinormal sodium or potassium hydroxide solution are required to neutralise the volatile fatty acids obtained from 5 Gm. of a fat when operating according to the Reichert-Meissl method (see *ante*). The Reichert numbers formerly in vogue gave the figures for 2·5 Gm. of fat only.

Reichl (Glycerin).—1. Mix equal parts of glycerin, phenol, and sulphuric acid, heat to 120° C., and on cooling pour water on the brownish-yellow mass formed. Then add ammonia drop by drop, and the mass will be dissolved, forming a fine carmine-red liquid. 2. A violet-red colour is produced on boiling glycerin with an equal volume of water, a little pyrogallic acid, and a few drops of sulphuric acid, then adding stannic chloride.

Reichl-Mikosch (Albumins).—This reagent consists of benzaldehyde and sulphuric acid containing ferric sulphate.

Reinke (Flemming's Orange Method).—In this modification, sections of Hermann's liquid are left for 24 hours in concentrated potassium sulphite solution. Then wash with water and stain for 1 or 2 hours with safranine, well wash in water and stain for 24 hours with a concentrated aqueous solution of gentian violet to which a few drops of a similar solution of orange G. have been added. Differentiate rapidly with alcohol and clear with clove oil

Reinsch (Arsenic).—A solution of arsenous or arsenic acid acidulated with hydrochloric acid is reduced by metallic copper, especially if heat be applied, a grey coating of copper arsenide being formed on the metal. Antimony and arsenic behave in a similar manner; their absence must therefore be determined first. Compare Hager's empirical arsenic test or Kramato method.

Reinsch (Sulphurous Acid).—A brown or black stain is produced on copper by sulphurous acid in the presence of hydrochloric acid.

Remak (Hardening Fluid).—Mix 50 C.c. each of 2 per cent. copper sulphate solution and 25 per cent. alcohol, and add 35 drops of rectified wood vinegar. This is said to be useful for hardening the ova of Amphibia.

Remak (Hardening Solution).—Mix 50 C.c. of 20 per cent. aqueous solution of copper sulphate, 50 C.c. of alcohol (25°), and 35 drops of rectified wood vinegar.

Renard (Peanut Oil).—The arachaic acid (m.p. 74°-75°) in the oil is isolated as a lead salt, being separated from the lead oleate by extraction with ether. See *Chemiker Zeitung*, 1895, p. 451.

Renaut (Glycerin Hæmatoxylin).—To a saturated solution of potash alum in glycerin, add a saturated solution of hæmatoxylin in 90 per cent. alcohol drop by drop, so as to form a deeply coloured solution. Expose to daylight for a week and then filter. This solution, like Renaut's hæmatoxylic eosine, may be used for mounting unstained sections, which after some time absorb the colour from the liquid and become stained.

Renaut (Hæmatoxylic Eosine).—Mix 30 C.c. of concentrated aqueous solution of eosine, 40 C.c. of saturated alcoholic solution of hæmatoxylin (which has been kept for some time and precipitated), and 130 C.c. of saturated solution of potash alum in glycerin (sp. gr. 1·26). Stand for 5 or 6 weeks in a partially covered vessel, protected from dust, until the alcohol is evaporated, and then filter. The filtrate can be diluted with glycerin if desired. Mount objects in this fluid diluted with 1 or 2 volumes of glycerin, or, stain separately for some days or weeks and mount in balsam, after washing in alcohol charged with a sufficient quantity of eosine.

Renaut (Silver Method).—For the study of lymphatics stain tissues with a 1 per cent. solution of silver nitrate mixed with (1) 3 or 4 parts of a mixture of 80 parts of saturated solution of picric acid and 20 parts of a 1 per cent. osmic acid solution, or (2) with 4 parts of a mixture of 4 parts of picric acid solution and 20 of osmic acid solution, with or without the addition of 1 per cent. of acetic acid to the mixture.

(*To be continued.*)

EXTRACTS FROM CONSULAR REPORTS.

The British and German Drug Trade for 1895 and 1896 is dealt with in a recent report which gives some very interesting figures tending to prove that as far as direct trade between the two countries is concerned Great Britain not only holds the foremost position, but is increasing her export, while that of Germany is decreasing. The exports of drugs and druggists' goods from Great Britain to Germany were 59,479,000 kilos. in 1895 and 61,863,800 in 1896, an increase of 2,384,800 kilos. British imports from Germany, however, during the two years were 42,520,600 kilos. in the former, and 41,791,400 kilos. in the latter year, a decrease of 729,200 kilos.

The German Chemical Trade with England has also suffered more or less during the last year; still, this branch is one of the most important ones for the trade of both countries. Only a few of the chemicals in which the London market specially participates are dealt with in the report, the first being sulphate of ammonia.

Sulphate of Ammonia.—Of the entire German export 12,651 dz.* 7236 dz. came to Great Britain, compared with 15,217 dz. and 7317 dz. in the previous year. Over-production has caused this article to suffer a great fall in price, the English market price of sulphate of ammonia falling from £8 9*s.* per ton in January to £7 8*s.* in December, 1896, the average price being £7 18*s.* per ton as against £9 15*s.* in 1895 and £13 3*s.* in 1894.

The Supply of Aniline Productions by Germany to foreign countries has considerably increased during the past year, though it did not attain the same increase as in 1895 compared with 1894.

Cochineal has, in consequence of over-production, suffered a serious fall in price. The English deliveries in 1896 amounted to 3275 serons (bales), compared with 2457 in 1895.

The Import of Refined Glycerin into Germany has increased; 16,444 kilos. were imported in 1896 as against 13,768 in 1895. Of this Great Britain sent 4905 kilos. The export of refined glycerin amounted to 26,125 kilos., compared with 18,982 kilos. in 1895. Of this quantity Great Britain imported 5903 kilos. The prices yield at present to the influence of the American market, but it seems probable that this will cease to be the case, as America will produce sufficient to supply her home demand.

The Prices for Sulphate of Copper have steadily increased since April, 1896, the whole year showing numbers as to the consumption and delivery which have never before been reached. The total deliveries in open market (German) amounted to 217,066 tons in 1896, an increase in the European consumption of 50 per cent. The market opened in January at a price of £40 11*s.* 3*d.*, reaching its highest point in June, £50 5*s.*, the concluding price of the year being £49 10*s.*

The Mexican Import of Chemical Products amounted to £338,487 in 1896, compared with £304,623 in 1895. A noticeable feature in this branch of trade was the great increase in the importation of paints and colours, which in 1895 only amounted to £27,812, while in 1896 it represented a value of £64,063, or more than 130 per cent. difference.

The Export of Chicle from Mexico during 1896 exceeded by nearly 1,000,000 lbs. that of the preceding year. Hitherto it has been used almost exclusively as a chewing gum, but experiments are being made to ascertain if it cannot be used for certain purposes as a substitute for indiarubber.

Nitrate of Soda was introduced into the port of Antwerp during 1896 to the total amount of 133,500 tons, as against 118,370 tons in 1895. Other fertilisers imported were Peruvian guano, 20,000 tons; phosphates, 12,000 tons; sulphate of ammonia, 24,000 tons.

Chemicals to the value of £1773 (1303 cwts.) were imported at Laraiche (Morocco) in 1896, as against £1174 (746 cwts.) in the previous year.

* Double centner = 100 kilos.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Advertisements and Orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

Articles and Reports sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

Correspondents should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for Illustrations should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Queries addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

Reprints of Articles cannot be supplied unless authors communicate with the Editor before publication of the articles. The right to reproduce all original matter and illustrations published in the Journal is strictly reserved.

LETTERS TO THE EDITOR.

Impressions of a Student of the School of Pharmacy.

Sir,—I am glad Mr. Matthews has tried to do justice to some of the existing arrangements of the School. The students of last session had a much easier time of it in every subject than those of the preceding sessions, when one lecture contained as much as two or sometimes three of those of last session. The botany demonstrations are now very valuable, and I need scarcely add that the lectures have always been "excellent." Speaking for myself, I am glad they went as thoroughly to the root of the subject as they did, and any drudgery one had in learning nomenclature is more than compensated for by the pleasure of knowing even a little about the subject. I found the arrangement of materia medica most helpful in illustrating the botany lectures, and I think I learned more morphology from the dry specimens than from the few fresh ones that are available at the earlier part of the session. In the chemistry of materia medica the Minor student must be content with names. These for the most part are very comprehensible and easy to remember. The improvements in the pharmacy arrangements can only be fully appreciated by those who attended before last session. The class-rooms have been altered past recognition, and I think many of us will be glad to have as nicely appointed dispensaries to work in as the one at the School. The lectures and practical work were also excellently well organised and up to date. In the chemistry department the general arrangements are better, such as the supply of chemicals, extra balances, and smaller details. The professor's explanations and demonstrations at our benches were most helpful, but I think we would have liked more on that very account. The weak places will no doubt be wiped out next session. As an older student, I would say the rough play in the laboratory and class-rooms was quite an innovation of last session and was unknown in the session before, when I think the number of students was nearer sixty than forty, for, at any rate, the first six months. I do not think students will find any other place where they will get through so much work and get as much personal attention as they do at the "Square." Those who have no acquaintance with chemistry are naturally at a disadvantage to that extent, though the earlier lectures are simpler now than when the course was shorter. With a professor or lecturer for every subject, several demonstrators, a comfortable library with a librarian always willing to help students to suitable books, and a curator more than willing to satisfy every reasonable inquiry, the student at the "Square" has many advantages not available elsewhere. If

he consults his cheque-book at the end of the course I think he will feel he has had good value for his outlay.

Ealing, September 25, 1897. E. A. Gair.

Sir,—Allow me, through your columns, to thank Mr. Nelson for his sledge-hammer epistle, Mr. Matthews for his mellifluous communication, and Mr. Smith for his modest and sensible letter. The aim of the Pharmaceutical Council in instituting a new curriculum for the School was set forth in the *Pharmaceutical Journal* as follows:—"Subjects that were formerly taught satisfactorily in the pharmacy, and there alone, cannot now be mastered thoroughly during the prevailing short periods of pupilage, even if master pharmacists were always prepared to impart the needed instruction. Specialisation has been at work, and now, therefore, schools must needs replace the dispensing counter and laboratory as places of pharmaceutical instruction, in addition to serving the wider purpose of teaching pure science." This paragraph will answer some of my friends' objections, the remainder I shall proceed to answer briefly. I am sorry that the purport of my remarks on botany should have been misunderstood. I should be the last to question the admirable method of instruction of so eminent a teacher as our professor. My contention was that the subject matter taught was not of as much direct use to the chemist in business as it might be. Mr. Nelson has evidently made a slip in saying that classification is absent from the elementary course. The section is headed "Classification – the Natural Classification of the Members of the Vegetable Kingdom" in the School syllabus. As to the charge of tomfoolery, I may say that it cost me no small effort to mention it, but I felt that I could not conscientiously pass it over. Mr. Nelson seems nettled at it, but I can assure him that personality was the remotest of my intentions. He "doth protest too much." I am, I regret to say, at variance with Mr. Nelson and Mr. Matthews in thinking that a little stern discipline would be beneficial, for men will be men (shall I say "boys will be boys"?). Mr. Smith's suggestion that a course in the purely scientific subjects should be taken first is certainly the best under the circumstances, but that would mean two years. Could it not be done in less? Finally, there is a point of the highest importance which I thought my closing sentence would have made sufficiently clear, but which seems to have been misinterpreted by many, including private correspondents of mine. It has been thought that I have endeavoured to deter students from going to the Society's School. I shall, therefore, formally state that this was never my intention. It is my firm conviction that the teaching at the "Square" is the best available at present in spite of its defects, such as they may be, and I can adduce two no better reasons that such is my belief than the following: It has been chiefly through my advice that a young friend of mine has entered for the next elementary course at the School. This gentleman was somewhat startled by the educational number of the Journal, in which the knowledge expected from a student entering the School was stated. In the second place, I intend to enter for the advanced course next Monday, when I hope to have the pleasure of seeing my friends, Messrs. Nelson, Smith, and Matthews. My only motive was to suggest what seemed to me improvements in the School, so as to attract more students, not to drive them away.

Jersey, September 27, 1897. P. E. F. Perrédès.

Local Organisation in Pharmacy.

Sir,—Provincial pharmaceutical organisation has received much attention in the Midlands for many years. I venture to state that ninety-nine out of every hundred of our members would endorse the views you, Mr. Editor, so ably put before us in your issue of August 28 (p. 199). It is not an experiment; we find the same principle put into force by nearly every trade. The laws of our country, too, show us that it is high time to wake up from the usual pharmaceutical slumber which besets us. What we really want is more interest, and to get that we must be brought into contact with each other and see something of the working arrangements. Give a man an interest and then he will interest himself [Interest ought to be of spontaneous growth. Ed. *P. J.*], but to expect a man to pay a yearly subscription, and in many cases not the opportunity of even seeing a member of Council or an officer of the Society in his lifetime, is a fault which should be remedied. Our house in Bloomsbury Square is well adapted for its purpose. Our President, Council, and officers are doing their duty to the best of their ability, but we, the members, want to be in closer touch with them; we should do each other good; the more active members would get their wild imaginations re-modelled, toned down; the lukewarm would be roused to a sense of the duty they owe to their craft. I sincerely hope this question of improving provincial pharmaceutical organisation will be taken up by the various local associations during the coming session, and that as a result, the Federation will be able to take definite action in the matter.

Birmingham, September 22, 1897. Chas. Thompson.

The Glow-Worm's Light.

Sir,—I notice on page 289 of last week's *Pharmaceutical Journal* a paragraph *re* "The Glow-Worm's Light." I wish to point out that in June of last year I made in North Wales a number of experiments with glow-worms, and a letter giving the results was published in the *Pharmaceutical Journal* of November 28, 1896, page 479, showing that the light given out by the insect had the power of penetrating a ferrotype plate.

Leeds, September 27, 1897. Fred. Reynolds.

Pharmaceutical Chemists and Jury Lists.

Sir,—In last week's Journal I notice the reminder with reference to claim for exemption from jury service. A year ago I searched for the list of eligible persons both at the church doors and at the local police station, only to find that whatever custom may prevail elsewhere, in Portsmouth at least no such lists are exhibited. The Clerk of the Peace, however, has a private list, and he has at my request entered against my name: "Pharmaceutical Chemist, not liable to serve."

Southsea, September 28, 1897. Thos. Postlethwaite.

*** The affixing of jury lists to the door of every church, chapel, or other place of public worship is not a matter of custom, but of Statute. The overseers or churchwardens of the parish are the persons who are required to see to this. [Ed. *P. J.*]

The P.A.T.A. and its Methods.

Sir,—In this month's issue of the *Anti-Cutting Record*, "Phœnix" comments at some length on my letter in the *Pharmaceutical Journal*, September 4, concerning the P.A.T.A. In a paper where space is so valuable as in the *Anti-Cutting Record*, this is in itself a great honour, and I am sadly afraid the report of some dinner has been crowded out in consequence. But "Phœnix" seems to look upon my letter as an opportunity to parade his brilliant powers of wit and sarcasm, whilst I, in a genuine spirit of ignorance, sought enlightenment. Evidently he has missed his true vocation—his imagination is altogether too vivid to deal with ordinary business communications, he ought to be writing sensational head-lines to police reports for newspapers, or better still, concocting the flowery advertisements for the patent medicines about which he has shown so much solicitude lately. A reproof which has become famous tells us that eminent men are apt to be carried away by "the exuberance of their own verbosity." Why not stick to facts, "Phœnix"? You quote from my letter as having stated that grocers were formerly in ignorance of the great profits of the patent medicine trade. Now, I did not state anything of the kind, nor could anything so absurd be possibly inferred from my letter. You show yourself to be such an adept at juggling with the truth that small wonder I put little faith in the specious statements of yourself and colleagues. In my previous letter I asked what practical benefit the P.A.T.A. hoped to secure for the retail chemist? After a wonderful rhetorical display, I find that "Phœnix" answers me, and the sum and substance of his answer is, that once we get a universal fixed price for all proprietary medicines, no matter how long these have been handled by the grocer or company trader, the public will at once return to what they consider the rightful seller, the chemist. Well, if that is the best reply you can give I should have left out that ornate prelude. But allowing for a moment that it will be so, then what inducement does the P.A.T.A. hold out to grocers to join it? Does the P.A.T.A. wink at the chemist as being in the "know," and fondly imagine that it is humbugging the grocer? We may not all be gifted with that remarkable keenness of vision which enables "Phœnix" to see a "veritable Tom Tiddler's ground—an 'Eldorado'" in a business which I described as "directly or indirectly fairly lucrative"; but we are open-eyed enough to discern between common-sense argument and the exaggerated twaddle which "Phœnix" has seen fit to use in his comments on my letter. I do not admit that trade once lost will ever again wholly revert to its former channel; can you find any precedent in support of this argument in the history of our

own country for the past fifty years? The public go to the chemist in preference to another trader in the same article chiefly to avail themselves of the therapeutical or other knowledge he is supposed to possess. What does a chemist know or want to know about patent medicines?—he neither knows their power as a remedy nor the dose, nothing beyond the external wrapper—whilst a grocer might say: "Well, I take So-and-So's pills, and they do me good." Besides, and this is the important part of the question to chemists, is there a single grocer who takes out a P.M. licence and then abstains from any further encroachment on the rightful business of a chemist? Of course not, he sells dozens of other articles which were formerly handled solely by the chemist, and at a good profit; and lastly, "Phœnix" points out that "to talk of the conservation of profits accruing from patent medicines to their legitimate seller, the chemist, is but offering him Dead Sea fruit." Is not that the very thing which he explains is the aim and object of the P.A.T.A.? First, fixed assured profits, and ultimately the return of the whole of the P.M. trade to the chemist. If then "Phœnix" admits that the P.A.T.A. offers only Dead Sea fruit I have no alternative but to believe him. After all I only sought conviction, and I suppose I have got it.

September 27, 1897. F. H. S. (110/39).

The Chemist's Discretion.

Sir,—I beg to thank you for your able leader in the Journal of 18th inst., and only wish its sentiments could be written in large type and placed under the noses of the many "great unpaid"—including not a few of the coroners. As matters now stand we are placed in a false position, and the sooner the prosecuting powers are placed in other hands the better will it be for us, because at the present time the Pharmaceutical Society is considered to be a vindictive body, unduly using its powers to hurt and annoy other traders. Allow me, sir, to suggest the advisability of publicly drawing attention in the daily papers to any prosecution of a chemist and druggist falsely so-called. Hoping you will continue to ventilate these matters,

September 22, 1897. A. S. (110/18).

The Anti-Cutting Movement.

Sir,—For some time the question of extreme cutting of Beecham's pills has considerably exercised my mind. I have had a great deal of correspondence with various firms who have offered suggestions, none of which I have considered workable. To many of these correspondents I have suggested that the local retailers should meet together and settle prices, but this advice has never borne fruit until last week. Receiving information from Southampton that the retailers there were ready and willing to fall in line if I could obtain the consent of Day's Southern Drug Co., Ltd., and the International Tea Stores Co., Ltd., I wrote to these firms suggesting that prices be arranged that would give each retailer a small profit, and they both readily agreed. The International Tea Co. wrote: "We shall be most happy to make this our minimum selling price at all our branches if you can induce our principal competitors to act in the same way. We appreciate your action in the matter." I accordingly drew up an agreement, copy of which is given herewith:—

> With a view of stopping the ruinous cutting of Beecham's Pills in this neighbourhood, we, the undersigned, have mutually agreed not to retail Beecham's Pills under the following prices:—
>
> | | |
> |---|---|
> | 9½*d.* size ..... | 7½*d* |
> | 13½*d.* ,, ... | 10½*d.* |
> | 2*s.* 9*d.* ,, ... | 2*s.* 3*d.* |
>
> and we promise to advise you at any time we collectively or individually find it detrimental to our interest to so continue, together with the circumstances leading to such decision. One week's notice to be given by either of the attached signatories if they wish to withdraw from this agreement.

Mr. F. B. Wride, a leading chemist, immediately obtained signatures of the local firms, and the agreement comes into force this day. In writing to advise you of this I wish to point out that I do not presume to dictate to any purchaser of my pills the price at which he is to retail at. In moral law the legitimate owner may give away if he likes, and although many of your readers will hardly believe the fact, there is a very strong feeling in the trade, even among small buyers, of resentment to any dictatorial power being exercised by any firms with whom they are compelled to do business, many of them using the argument that such steps are absolutely at variance with free trade. There is nothing startling about the new step which Southampton has been the means of my starting, but I maintain it is sound common sense, and I shall be pleased to give every assistance in my power to have the same mutual agreement adopted generally. With this view I am prepared to send agreement forms to any gentleman in any town who will be kind enough to undertake the task of obtaining the necessary signatures, and if he fails to get all to join I shall be willing to use what little persuasive argument I have in attempting to acquire the desired result, even to the sending of one of my representatives if necessary. I must point out that the prices given on the present agreement give an all-round profit of 10 per cent., and with a quick turnover of, say, once a month, this represents say 100 per cent. per annum, so that Beecham's Pills should still be worth handling by everyone. Whether other firms who have hitherto refused to join in any arbitrary attempts to fix prices assist in this common-sense movement or not has no influence with me, but I hope that these mutual agreements may give better results to the handling of many other specialties, and at the same time bring about better feeling between rivals in the trade.

St. Helens, September 27, 1897. Thos. Beecham.

*** We consider it is quite within Mr. Beecham's province to fix the price a which his preparations shall be sold, but the step now taken is altogether insufficient to counteract the evil practice of cutting; the only satisfactory and logical position to take is to maintain the face prices.—[Ed. *P. J.*].

A Test to Distinguish Tannic and Gallic Acids.

Sir,—Among the various tests of the Pharmacopœia perhaps none give more dissatisfaction to the student than the gelatin or albumin tests for distinguishing tannic and gallic acids. The solutions of albumin or gelatin, if not freshly prepared and made clear, usually cause some degree of uncertainty in the reactions, and on this account I have made several experiments for my own satisfaction, and finally, basing an experiment upon the fact of their incompatibility with mineral acids, obtained the following reaction, which need not occasion the least doubt, and may be applied as an additional confirmative test:—

Acidum Gallicum.—One grain was added to 90 ♏ of solution of ammonia, which formed a deep salmon-red coloured solution. To this was added 10 drops of strong nitric acid and shaken, then placed on one side. No precipitate was formed on standing for some considerable length of time, but the solution was changed to a deep red colour.

Acidum Tannicum.—One grain was treated in precisely the same way. A similar coloured solution was formed, and on standing for a few seconds a flocculent precipitate was formed, soluble in excess of acid.

Weymouth, September 22, 1897. John Oliver.

Wanted, an Association of Public Dispensers.

Sir,—The suggestion put forward by your correspondent "Disgusted" in last week's *Pharmaceutical Journal*, with regard to forming an association of public dispensers, ought to meet with hearty support. His experience in nowise differs from that of many other dispensers, and it is a matter of surprise that they have not hitherto associated to look after and protect their own special interests. The difficulty in combining appears to arise from individuals taking so little interest in the matter; each one that I have spoken to has stated his willingness to join an association if one were established, but appeared too apathetic to assist in forming one. May we not take a hint from the Pharmaceutical Society and act upon the same plan as the divisional secretaries—each active member amongst us stir up the more passive ones in his own district? At any rate, we ought to start with a sufficiently broad basis, so as to include all public dispensers, irrespective of their qualifications or appointments. Possibly "Disgusted" has a definite programme to formulate, if so, we shall be pleased to see it.

An Infirmary Dispenser (111/2).

London, September 28, 1897.

OBITUARY.

Thomas.—On September 4, Watkin Jones Thomas, Chemist and Druggist, Aberdare. Aged 66. Mr. Thomas had been a member of the Pharmaceutical Society since 1870.

Barnard.—On September 21, Owen Robert Barnard, Chemist and Druggist, Stanstead, Essex. Aged 28. Mr. Barnard was an Associate of the Pharmaceutical Society.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

British Pharmacopœia.—We have no information on the subject. [*Reply to* A. G.—110/30.]

White Resin.—This is the name applied to the natural exudation of the Scotch fir *Pinus sylvestris*. [*Reply to* S. H. H.—110/16.]

Orthoform.—We learn, in reply to an application to the manufacturers, that this preparation in not yet obtainable. [*Reply to* Orthos.—109/45.]

Cheap Stone Bottles.—You will get these from Henry Kennedy and Sons, Barrowfield, Glasgow; from Price and Sons, Bristol; or from Wright and Co., Staffordgate, Harrow Road, W., and at Brierley Hill, Staffs. [*Reply to* S. P. A.—109/9.]

Aluminum Metal.—You can obtain metallic aluminum in ingots, or vessels of any kind made from that metal from The British Aluminum Company, 9, Victoria Street, Westminster, S.W., or from Braby, Frederick and Co., 110, Cannon Street, E.C. [*Reply to* R. F.—109/5.]

Colour of Carboy.—Probably the liquid in the carboy is losing its excess of ammonia through volatilisation. Add a little liquor ammon. fort. to it, and see that the stopper does not leak. A little vaseline smeared round the stopper will render it practically gas-tight. [*Reply to* F. R.—108/27.]

Tensile Strength of Aluminum.—We are not aware of any alloy of aluminum of such tensile strength or hardness that enables it to replace steel in engineering work, but if there be, the firms we have referred you to above will be able to give you all the information you require. [*Reply to* R. F.—109/5.]

Books on Veterinary Surgery.—Probably the following will suit you: Williams' 'Principles of Veterinary Surgery,' price 30*s.*, or Fleming's 'Text-Book of Operative Veterinary Surgery,' in two volumes; Vol. 1 is now issued, and Vol. 2 will appear shortly. This is published at 10*s.* 6*d.* You will obtain these, less discount, from Grattan, Borough High Street, S.E. [*Reply to* L. M.—109/31.]

Use of Title.—You ask if the style "Jones Brothers, pharmaceutical and dispensing chemists," could be legally used if one brother had passed the Major examination and the other the Minor only. The reply is No. The Minor man would be liable for penalties under Section 12 of the Pharmacy Act, 1852. Both must possess the Major qualification before they can jointly style themselves "pharmaceutical chemists." [*Reply to* A. M. Z.—110/13.]

Mixing Liniment.—Dissolve the camphor in the turpentine and add the acetic acid to the spirit. Rub the eggs in the mortar perfectly smooth with half an ounce of tincture of quillaia. Then add several ounces of the turpentine solution at a time, mixing thoroughly until this is all in; then add the mixed spirit and acid. You would get a whiter emulsion by using only four eggs, and including the whites as well as the yolks. [*Reply to* B. F.—110/10.]

Legal Responsibility.—You ask whether any legal responsibility rests with you in the case of your apprentice, who, whilst carrying up to the store room a tin of honey, weighing about sixty pounds, ruptured himself. You would probably be held liable for compensation if your apprentice was acting under instructions or in the ordinary course of his duty. Much, however, might depend upon the reasonableness of the instructions or duty required to be carried out by the assistant, and whether there was any contributory negligence on his part. [*Reply to* F. W. J.—109/38.]

Petrifying Liquid for Stone Surfaces.—We believe a solution of sodium silicate is used for this purpose, but have no special information. Perhaps some reader can assist us in the matter. [*Reply to* I. H. H.—110/21.]

Mercuric Chloride Test-Paper.—Yes, the mercuric salt has been entirely reduced to the mercurous state in your three-year-old test-paper. Probably it has been exposed to the light. [*Reply to* R. F.—110/14.]

Cold Cream.—Neither of the formulæ given in the books you mention are intended to produce a hard preparation. Cold cream should be soft and unctuous. If you require it hard, increase the quantity of white wax by one-half and omit one-fourth of the rose water. [*Reply to* Piperazine.—110/34.]

Malmsey.—This is a strong sweet wine made in Greece, the Canaries, and Madeira from the muscatel grape. It is a corruption of Malvasia, so named from Napoli di Malvasia, in the Morea, where it is made. Probably modern Marsala closely resembles the old wine. It was sometimes spelt Malvoisie. [*Reply to* P.—110/23.]

To Remove Permanganate Stain.—It is almost impossible to advise you, as we have no idea of the material of the fabric stained. Perhaps if dilute sulphuric acid alters the colour of the material it may be restored on again neutralising. Try first damping the stain with dilute sulphuric acid, then washing thoroughly, then immerse in ammonia, and again wash. Ferrous suphate is worse than useless, it is almost certain to produce "iron-mould." [*Reply to* Potass.—110/3.]

Skeleton Leaves.—There are many methods of obtaining these, but one of the best is that recommended by Professor Church. The leaves are immersed for a couple of minutes in boiling water, then transferred to a strong solution of permanganate of potash, and gently heated on the water bath. In an hour or two the cellular tissue may be readily removed with a brush. The skeletons thus obtained are then bleached in solution of chlorinated lime or in sulphurous acid. [*Reply to* W. R.—110/7.]

Cure of Inebriety.—We know of no one drug which will act as a "cure." Besides, the matter is not within our province nor yours. Such cases should be treated by a medical man. The only effectual cure is to place the patient in a retreat, where he is under constant medical supervision. The so-called drug "cures" are either swindles, or else, by producing a marked effect on the patient's mind and acting by "suggestion," the alleged remedies affect a cure in that way rather than by any specific therapeutic virtue which they contain. [*Reply to* C. T. J.—109/32.]

Ivory Dust Jelly.—Although it is well known that ivory dust forms a beautiful jelly when boiled with water, we do not know that any authentic formula has been published for it. Probably, if treated in the same manner as hartshorn shavings in making the old-fashioned hartshorn jelly, a satisfactory product will be obtained. Ivory shavings or dust, 6; water, 24. Boil in a covered pot, then press strongly. Boil the residue with water, 24. Mix, and add sugar, 4. You may flavour with lemon juice or with citric acid and essence of lemon if you like. [*Reply to* Dispenser.—109/20.]

Goulstonian Lectures.—In 1632, Dr. Goulstone, a Fellow of the College of Physicians, left £200 to purchase a rent charge for the maintenance of a lecture to be delivered annually within the College, the lecture to be read by one of the four youngest doctors in physic of the College, upon two or three, or more diseases. The lecture is to be read between Michaelmas and Easter "on three days together, both forenoon and afternoon, on some dead body if possibly it can be procured, which shall then and there be dissected for the diseases treated of, and shall afterwards be buried." This condition is not now insisted on. The terms of the will are that the lecture must be delivered by one of the four youngest doctors, and this is now construed to mean one of the four most recently elected Fellows. [*Reply to* Goulstone.—109/7.]

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Armitage, Ashfield, Bennett, Bullivant, Fraser, Gair, Goatkin, Goodess, Hadfield, Hatrick, Heap, Hill, Hoare, Hogg, Holden, Holding, Holmes, Hyslop, Ince, Jeffery, Merson, Morris, Parker, Perrédès, Postlethwaite, Powell, Reid, Reynolds, Scupham, Smith, Squire, Street, Thompson, Vibert, Waind, Walker, Welford, Wright.

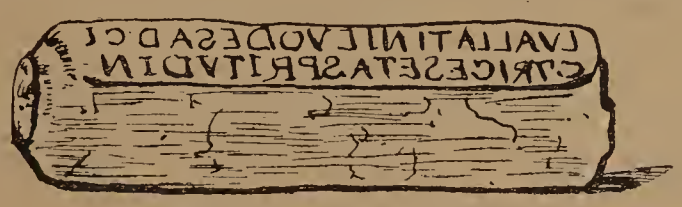
ROMAN MEDICINE STAMPS.

BY C. J. S. THOMPSON.

It is somewhat curious that medical specialism and proprietary medicines appear to have had their advent about the same period. That the latter owe their origin to the Roman specialists we have ample proof from the medicine stamps or stones, which have been discovered from time to time on the sites of old Roman cities in France, Germany, etc., all of which agree in their general characters. These stones generally consist of small quadrilateral or oblong pieces of a greenish schist or steatite, engraved on one or more of their sides. The inscriptions are in small Roman capitals cut intagliate, and consequently reading on the stone itself from right to left, but making an opposite impression when stamped on any plastic material. The stamps are usually engraved with the names of the medical practitioners to whom they pertained, also the names of some special medicine or medical formula and the disease for which the medicine is prescribed or recommended, and there can be no doubt that they were employed by the Roman doctors for marking their drugs, a practice apparently carried on at the various stations throughout Europe.

Impression from a Circular Roman Medicine Stamp.

Most of the stamps discovered are inscribed with the names of medicines or preparations applicable for affections of the eye, and the diseases when specified, are invariably of an ophthalmic nature. It is therefore probable that these stamps were used by oculists alone. The Romans employed the term collyria to both solid and liquid applications for the eye. The solid collyria were composed of various ingredients with a base of gum and starch, and wrought to a pasty consistence. They were used in almost every stage of disease of the eye. Some were known by the names of the oculists who invented them, others from their colour, or from



A Perfect Roman Medicine Stamp.

the name of some great personage who it may have cured. The stamps were employed to impress the soft substance with the required inscription, and also to stamp the labels (pittacia) attached to the vessels of the liquid collyria. Marcellus, in his work 'De Medicamentis,' specially praises the collyrium known under the name of "Evodes." He directs it to be dissolved and diluted in water, and introduced into the eyes with a probe.

The stamp of this collyrium has been discovered, and bears the following inscriptions:—On one side, "The Evodes of Lucius

Roman Oculist's Stamp found at Tranent, E. Lothian, N.B.

Vallatinus for Cicatrices and Granulations"; on the other, "The Mild Crocodes of L. Vallatinus for Affections" (of the eyes).

From this it is evident that Vallatinus prepared more than one special application for the eyes.

A stamp found at Bath in 1731 bears the following interesting inscription:—

"The Leaden Melinum (or Golden Yellow Collyrium) of T. Junianus for clearness of vision," from which we may infer Junianus sold his "Golden Yellow Collyrium" to the colonists and natives of Bath some 1700 years ago. The popular name "Golden Ointment," given to an application for the eyes, is therefore of greater antiquity than is generally supposed, and it may interest pharmacists to know that it was originated by a Roman oculist.

Two other stamps discovered bear the following inscriptions:—

"The Dialepidos or Copper Collyrium of Marcus Julius Satyrus for granulation of the eyelids."

"The Myrrh Collyrium of L. J. Ivenis to be used twice a day mixed with an egg at the commencement of ophthalmy."

Another stamp found at Kinchester in Herefordshire bears the following inscriptions on its sides:—

1. "The Anicetum or infallible Collyrium of F. Vindacius Ario-vistus."
2. "The Nardinum of Spikenard Collyrium of F. Vindacius Ario-vistus."
3. "The Chloron or Green Collyrium of T. F. Vindax Ario-vistus."

These are described by Dr. Simpson in the 'Monthly Medical Journal" for 1851. A stamp discovered at Wroxeter in 1808 is inscribed as follows:—"The Dialebanum of Tiberius Claudius, the physician, for all complaints of the eyes, to be used with egg." This stamp is now in the Shrewsbury Museum.

The most perfect stamp yet discovered (of which we give an illustration) was found at Tranent, near Edinburgh, and is now in the Museum of the Society of Antiquaries of Scotland.

The Roman practitioners seem to have pursued in regard to old cicatrices of the eye, a treatment which is not followed by their successors in modern times, as they used various collyria for the purpose of dyeing or changing the colour of these white cicatrices, and thus imparting to them some kind of tint that rendered the appearance of the eye, and the distinction between the transparent cornea and its cicatrices, less marked and striking. For this purpose galls appear to have been largely used.

It is worthy of note, that Stolus, the first British medical practitioner mentioned in the pages of medical history, and whom Galen describes as *celebris* some 1700 years ago, originated the "Cinnabar Collyrium."

Altogether over sixty Roman oculist stamps have been discovered in different parts of Western Europe at various periods, which proves that medical specialism must have flourished in those early times.

SODIUM IODIDE.

BY JOHN C. UMNEY, F.C.S.

The British Pharmacopœia of 1885 describes this salt as being obtained by a process given in minute detail in connection with potassium iodide, soda being substituted for potash. In these instructions it is directed that the concentrated liquor containing the iodide is to be set aside to "cool" and crystallise.

Roscoe and Schorlemmer (vol. ii., pt. 1, p. 114) and Thorpe, 'Dictionary of Chemistry' (1893, vol. iii., p. 438), state that at a temperature of "20° C. or upwards" sodium iodide separates from solution in anhydrous cubes, but below that temperature it crystallises in deliquescent hexagonal plates to a composition of $NaI2H_2O$. That is to say, that prepared according to the process of the British Pharmacopœia, sodium iodide will probably consist of a mixture of anhydrous sodium iodide and sodium iodide with two molecules of water of crystallisation. A sodium

iodide of such composition is evidently not contemplated by the British Pharmacopœia, inasmuch as the characters and tests include the following :—"10 grs. require for the complete precipitation about 660 grain measures of a volumetric solution of nitrate of silver," *i.e.*, equivalent to 99 per cent. of anhydrous sodium iodide.

The United States Pharmacopœia recognises the difficulty in the preparation of the salt by requiring that "the salt shall be in distinct crystals, in which few monoclinic prisms (containing two molecules of water) shall be found among the regular cubes of anhydrous salt. On drying 1 gramme of the salt at 100° C., it should not lose more than 0·05 gramme in weight—an absence of more than 5 per cent. of water." The German Pharmacopœia (1890) directs that sodium iodide shall contain in 100 parts at least 95 parts of anhydrous salt.

A recent examination of samples of sodium iodide prepared by the principal manufacturers show very considerable deviation from the high standard prescribed in the British Pharmacopœia, and some divergence from the laxer standards of the United States and German Pharmacopœias. These samples contain a quantity of anhydrous sodium iodide, as indicated by precipitation with volumetric solution of nitrate of silver, varying between 81 and 91 per cent., 91 being the highest percentage obtained.

It seems possible that in the case of the British Pharmacopœia the formation of sodium iodide with two molecules of water, under certain conditions, was overlooked, more especially if the details of the process described for its manufacture are followed. The difference between the amount of iodine contained in a preparation consisting almost entirely of the salt containing two molecules of water—such as would appear to be indicated by one containing only the equivalent of 81 per cent. of sodium iodide—and a practically anhydrous salt, is not only a matter of considerable medicinal importance, but also of commercial value. It seems necessary, therefore, that manufacturers of this salt should make a statement as to the impossibility of preparing a salt fulfilling the requirements of the British Pharmacopœia—if it be impossible—and the practicability of preparing a salt corresponding with the requirements of the United States and German Pharmacopœias, if such be more desirable. Doubtless a definite statement on this subject would be welcomed by the pharmacists' committee of the new British Pharmacopœia.

THE ANALYSIS OF SALTS.

The Second Group.

(Continued from page 241.)

The filtrate and washings from the precipitate produced by H_2S are usually rather voluminous. They should be united and concentrated by careful evaporation to the volume of about 50 C.c. The solution will contain now only the salts of those metals whose sulphides are soluble in dilute acids or water. Before proceeding further, careful attention must be paid to several conditions which arise at this stage of the analysis. These are, first, the presence of organic substances, like citric and tartaric acids or sugar and glycerin, and secondly, the presence of phosphates and oxalates.

One of two methods of procedure may be adopted for the separation of the subsequent groups. Ammonia may be added to separate iron, aluminum, and chromium, or ammonia followed by ammonium sulphide may be used. In the latter case zinc, manganese, nickel, and cobalt will be precipitated along with the iron group. The separation by means of ammonia of the iron group alone can only be employed in the absence of organic substances, particularly hydroxy acids, like citric and tartaric, or bodies like glycerin and sugar, which also contain several hydroxyl groups in their molecule. Such substances prevent the precipitation of the hydrates of iron, and in a lesser degree those of aluminum and chromium, soluble compounds being formed, of which the official scale compounds may be taken as a type, in which the metal displaces the hydrogen of the hydroxyl groups. In the absence of organic substances the fluid is concentrated as already mentioned, the sulphuretted hydrogen dissolved in it being thereby expelled. Nitric acid is added, and the mixture boiled to convert the ferrous iron to the ferric condition. If iron be absent the nitric acid treatment may be omitted. This may easily be determined by testing a drop of the concentrated fluid on a white plate with ferricyanide of potassium. If iron be present it is necessary to convert it into ferric salt, because ferrous iron is incompletely precipitated by ammonia. In order to avoid using an unnecessarily large quantity of nitric acid, and so overloading the solution with reagents, it is advisable to add a few drops at a time, boiling and testing the solution after each addition until no more ferr*ous* iron can be detected by the formation of a blue colour when a drop of the solution is mixed on a white plate with a drop of weak *freshly* made solution of potassium ferricyanide. Old solutions of this salt give a blue colour with both ferrous and ferric salts.

The Third Group.

From this solution ammonia precipitates iron, aluminum, and chromium as hydrates insoluble in excess. Although zinc, manganese, nickel, and cobalt form hydrates insoluble in water they are not precipitated here, owing to the solubility of these hydrates in excess of ammonia. Magnesium is also *partly* precipitated as magnesium hydrate by ammonia when the latter is added to a neutral solution of magnesium salt.

$$MgCl_2 + 2NH_4OH = Mg(OH)_2 + 2NH_4Cl.$$

This precipitation only occurs to the extent of half the magnesium present, because the ammonium salt formed, as shown in the above equation, unites with the other half to form a double magnesium-ammonium salt, which is not precipitated by ammonia. The following equation, therefore, more nearly represents the action of ammonia on a *neutral* solution of magesium salt.

$$2MgCl_2 + 2NH_4OH = MgCl_2{\cdot}2NH_4Cl + Mg(OH).$$

If, however, ammonia be added to an acid solution of a magnesium salt, the ammonium salt first formed by the neutralisation of the acid prevents the precipitation of the magnesium by the further addition of ammonia, if sufficient acid be present. This is usually the case with the filtrate from the H_2S precipitate, but in order to make certain that the precipitation of magnesium hydroxide shall not occur you add some solution of ammonium chloride before the ammonia. On the addition of ammonia under the conditions described, the hydrates of iron (ferric), chromium, and aluminum are precipitated. The mixture is boiled, since the latter two are incompletely precipitated in the cold and in presence of excess of ammonia.

Separation of the Metals of Group III.

The precipitate is collected, washed, and dried. The hydrates lose water and are converted into oxides, Fe_2O_3, Al_2O_3, Cr_2O_3 The dried oxides are fused with sodium carbonate and potassium nitrate (or chlorate). The iron oxide is unaffected by this treatment, and remains as an insoluble reddish-brown powder. The aluminum oxide combines with the alkali to form a soluble potassium aluminate—

$$Al_2O_3 + K_2CO_3 = 2KAlO_2 + CO_2.$$

The chromic oxide also unites with the alkali in presencc of oxidising agents, like KNO_3 or $KClO_3$, to form yellow potassium chromate, $K_2CrO_4 = K_2OCrO_3$.

$$\text{(i.)}\ Cr_2O_3 + 3O = 2CrO_3.$$
$$\text{(ii.)}\ CrO_3 + K_2CO_3 = K_2CrO_4 + CO_2.$$

The fused mass is, therefore, boiled with water, any ferric oxide filtered out and the filtrate divided into two parts. One part is examined for chromium by adding an excess of ammonium.

Physiological Action of Liver Extract.—Mairet and Vires have reported to the Société de Biologie a summary of their work on the physiological action of liver extract upon healthy men. When this substance is given the temperature is lowered, the urine increased in twenty-four hours, the excretion of urea and phosphoric increased in relatively considerable proportions; the stools become liquid and more abundant. When the ingestion of liver is discontinued, these symptoms disappear.—*Int. Med. Mag.*, vi., 495, after *Gazette des Hôpitaux*, April 27, 1897.

RE-OPENING OF THE SCHOOL OF PHARMACY.

The fifty-sixth session of the School of Pharmacy was formally opened on Monday, October 4, the chair being taken by Mr. Walter Hills, President of the Pharmaceutical Society of Great Britain, at 3 o'clock. The hall was well filled with the candidates, their friends, and members of the Society, many ladies being present. The first business was the

PRESENTATION OF THE HANBURY MEDAL.

The PRESIDENT said some twenty-two years ago the whole pharmaceutical world suffered an irreparable loss in the death of that prince of pharmacists, Daniel Hanbury, and his friends, wishing to perpetuate his memory in some substantial form, and in one which would stimulate others to labour in the same direction in which he had worked so successfully, formed a fund for the purpose of providing a gold medal, which would be given biennially to workers in that department of science in which Hanbury was *facile princeps*, and the presentation of the ninth medal would be the first business of that day. The Council of the Pharmaceutical Society were the trustees of the fund, the medal being given irrespective of nationality to anyone who, in the opinion of the experts who were appointed to award it, had done good work in the chemistry and natural history of drugs. On this occasion the medal had been awarded to Dr. de Vrij, of the Hague. He did not propose to detain them long with reference to this matter, but he might just mention a few facts. Dr. de Vrij was born at Rotterdam in the year 1813. He was a pharmacist, the son of a pharmacist, and the first portion of his life was occupied in the establishment of his father. His father died when he was still too young to take the pharmaceutical qualification of the Netherlands, but special permission was given him to carry on the business for the benefit of the family. In the year 1835 his attention was specially directed to the study of the alkaloids of cinchona, which he made his special work for the remainder of his life. Prior to that, even, he had translated into Dutch a handbook of chemistry by Roza, which had brought him the acquaintance of several great chemists of the day, amongst others Pelletier and Clementeau, the original discoverers of quinine. Having made his name as a specialist in connection with cinchona and its alkaloids, he was sent out to Java by the Dutch Government in 1857 to promote the cultivation of cinchona in that island, and in about 1859 or 1860 he manufactured quinine sulphate from cinchona grown there. In 1863 he left Java, after performing very valuable work in the development of the cinchona plantations. He also visited India, and did good work in connection with the introduction of the cinchona cultivation there. For this work he received decorations from the Dutch and French Governments. In 1880, for work done in connection with India, he was made a Companion of the Order of the Indian Empire. He had also been an honorary member of the Pharmaceutical Society since 1856. He had been a tremendous worker, and thanks to the kindness of a friend, he had a list of the papers he had published, but as there were more than two hundred on all imaginable subjects connected with chemistry and pharmacy, he would not detain the meeting by reading the titles. He would only repeat that his special line of study had been cinchona and its alkaloids, and it was to his labours, and others like him, that they were now able to obtain quinine at about one-tenth the price it was thirty or forty years ago. They would all regret not having the pleasure of seeing Dr. de Vrij there that day, but the Government of the Netherlands had asked Mr. Maas, the Consul-General, to accept the gold medal, which he should have the pleasure of handing to him. He would conclude by reading a letter which he received on July 14 from Dr. de Vrij :—

"My dear Sir,—I have the honour to thank you for so kindly congratulating me on the distinction bestowed upon me by awarding to me the golden Hanbury Medal of the year. In last June it was just fifty years ago since I made my first visit to England, to represent the Batavian Society of Experimental Philosophy of Rotterdam at a meeting of the British Association for the Advancement of Science at Oxford, and since that time my visits to England were so frequent that my lamented friend, Professor Graham, bestowed on me the nickname of 'the Flying Dutchman.' The consequence of these frequent visits was that I had the honour to come in relation with the majority of your distinguished men of science like Faraday, Sir W. Hooker, Graham, etc., etc. Although the great majority of my scientific friends belong actually to the history of science, I have still the good fortune to possess many friends amongst the younger generation, and therefore I would be delighted to shake again hands with them if I came in October next to London to accept personally the mentioned medal. But unhappily, it is absolutely impossible for me to undertake a journey to London, for although my general health is, notwithstanding my protracted age (84½ years), very satisfactory, and neither five senses nor my intellectual faculties have been influenced by age, my legs have become so very stiff that since my last visit to Birmingham in 1893, when I went to take leave of an intimate dying friend, I have been obliged to relinquish travelling for ever. The award of the medal is the more satisfactory to me, as it is in the meantime a perpetual reminiscence of my lamented friend, Daniel Hanbury. Since he was introduced to me at Ipswich in 1851 I have been in frequent relation and correspondence with him till his untimely death. I have carefully conserved the majority of these letters on scientific subjects, and if you agree with it I would be happy to make a present of these letters to the Pharmaceutical Society, who honours the memory of my lamented friend."

The PRESIDENT then presented the medal to Mr. Maas, with the request that he would assure Dr. de Vrij that he had the best wishes of the members of the Pharmaceutical Society there assembled, who all hoped that he would long continue the unimpaired use of those faculties which he evidently still retained in such abundance.

Mr. MAAS said no duty could be more congenial to him personally than that which he was called upon to fulfil that day. Before saying anything further he should like to read a letter from Dr. de Vrij, addressed more particularly to the President and the meeting :—

"When in 1875 the President of the Pharmaceutical Conference, Mr. Grove, at the end of his opening address, remembered the great loss which pharmacy had recently sustained by the untimely death of Daniel Hanbury, he expressed his hope that his services would secure him a place in the Walhalla of pharmaceutical worthies by the side of his predecessor, William Allan. This wish has been speedily fulfilled by your instituting the Hanbury Medal, which now will be awarded for the ninth time by your Society. As you have selected me, I express my sincere thanks for this honour, which I consider not only as an appreciation of my scientific labours in the interest of pharmacy, but also as a remembrance of my lamented friend, Daniel Hanbury. I made his acquaintance at the meeting of the British Association in Ipswich, and he remained my friend till his death, for his last letter to me was dated January 2, 1875, about three months before. He was always ready to assist me in any investigations, and still I remember his valuable assistance when I was occupied with my study of the real quinedine, of which I published the result in the *Pharmaceutical Journal* of 1857. You will, therefore, easily understand that my relations with Daniel Hanbury near a quarter of a century occupies a large place in my memory and increases the value of the medal now awarded to me. I conclude by expressing my best wishes for the progress of the Pharmaceutical Society of Great Britain, whose residence in Bloomsbury Square I visited for the first time on July 12, 1867, to call on Professor Redwood."

From that letter, and from what had fallen from the President, it was evident that the Hanbury Medal was a very great distinction, because it was awarded by men eminent in a particular branch of learning to one of the most distinguished amongst them. It was also a proof of their appreciation, which would be very pleasant to Dr. de Vrij, because it was given by those who understood and valued his work, which was more than could be said of some medals which were given nowadays ; in fact, he believed an English statesman, Lord Melbourne, once expressed a liking fo, honours about which no sense of merit arose. He believed everyr body present understood and valued the work done by Dr. de Vrij: but to the man in the street his work was practically unknown - but so were the names practically of all those who had gone before him, and who would follow him in that particular direction. Nevertheless, the work that these men did in the quiet surroundings of the laboratory was very important, and should be appreciated by everybody who had received any education. It was only by quiet plodding work that men were able to do the particular work for the relief of humanity with which his name had been chiefly connected. He not only showed great skill and knowledge in his investigations, but also a disinterestedness which might well be imitated by other investigators at the present time. He was the founder of a very important industry in the Dutch East Indies, and his services to British India had been acknowledged on several occasions by the British Government. He had with him a letter written to Dr. de Vrij by the India Office in 1880, conveying to him in the warmest terms the thanks of Lord Cranbrook for the able and exhaustive manner in which he had dealt with the subject of the cultivation of cinchona in India, and thanking him much for his suggestions. The name of Dr. de Vrij would always fill an honoured place among those who were engaged in the same line of work. Although the preparations he at first made had been for some time superseded, his name would always be remembered as one who, with his associates, paved the way for the cheap production of the most valuable medicine to such an extent that what in 1877 cost £13 per pound could now be obtained for less than half that number of shillings. It was no doubt a great disappointment to them all that Dr. de Vrij was unable to be present on that occasion, but if they read his biography, written by Professor Flückiger, they would be convinced that certainly he would have been present notwithstanding his age if his health had allowed him. Before sitting down he must express the thanks of the people of the Netherlands for the great honour bestowed on their distinguished countryman, and through him on the works and labours of the pharmacists of Holland.

Presentation of the Flückiger Medal.

The President then said that, in the ordinary way, the next business would be to receive the Report of the School, but he would take upon himself to interpolate another little piece of business which would come in here very appropriately, although not a part of the official proceedings. Those who were familiar with 'Pharmacographia' would remember that the collaborateur with Daniel Hanbury in that great work was Dr. Flückiger. He died in 1894, and his friends likewise in order to perpetuate his memory subscribed a sum of money, a portion of the interest of which was devoted to a medal to be presented every five years to men, irrespective of nationality, who did good work in pharmacognosy and pharmacography, or the natural history or chemistry of drugs. The first award of this medal had recently been made, and it had been awarded to the esteemed Curator of their museum—Mr. Edward Morell Holmes. The medal was to be awarded alternately by the German and Swiss Pharmaceutical Associations, the first-named having made the first award. At a recent meeting of that Association the President handed the medal to Dr. Paul, who was present, in order that he might convey it to Mr. Holmes, which he would ask Dr. Paul to do. He thought this was a suitable opportunity for this public presentation to be made. Considering that Hanbury and Flückiger worked so long together, and their names were so intimately associated, this occasion might well be called unique, there being the presentation of two medals to represent the life-work of those two distinguished men on the same day. He was quite sure such an event would never happen again.

Dr. Paul said this medal had been founded as they had heard from the President as a worthy imitation of the Hanbury Medal, and for a similar object, but it had the additional attraction that its foundation was instigated by a collaborateur of Daniel Hanbury. It was to be awarded alternately by the Apotheker-Verein of Germany and of Switzerland. This year the German Apotheker-Verein meeting was held in Strasburg, and on his arrival there to attend the meeting, the President informed him that the trustees had been considering the selection of a recipient for the medal, Mr. Holmes' name having been mentioned amongst others, he was asked whether in the event of its being so awarded he would take charge of it for him. Of course he was very willing to undertake that duty, and at the first meeting of the Verein, the recommendation was put by the President, and carried unanimously. Not only on that occasion, but on several previous occasions at meetings of German pharmacists, he had had opportunities of hearing how highly the work of Mr. Holmes in connection with the Museum of the Society was appreciated, and he might add that the honour conferred upon him also reflected considerable credit on the Society of which he was an officer. He had now simply to hand the medal over to Mr. Holmes, and congratulate him heartily on receiving it.

Mr. Holmes said: I little thought six weeks ago that I should be called upon to receive one of the highest distinctions that pharmacy can bestow. As an Englishman I cannot but feel highly flattered that I should have been chosen as the first recipient of this valuable medal, when there are so many others who have done excellent work for pharmacy, and so many other Englishmen, who, like Dr. Paul himself, have contributed much original information of very considerable value. One is almost inclined to think that botanists and pharmacognosists must have been in the majority when the voting for the award took place. The Museum of this Society naturally affords exceptional opportunities of investigating new drugs, since London is pre-eminently the drug market of the world, and opportunities of acquiring and publishing new information are therefore more frequent here. It is nevertheless very gratifying to me to find that my endeavours to make the Museum of real value to pharmacists all over the world are so highly appreciated abroad. I trust that the honour now conferred upon me will serve as a stimulus to further and better work in the future. Then, turning to Dr. Paul, Mr. Holmes said: I beg that you, sir, will convey to the President and Council of the Deutsche Apotheker-Verein my hearty thanks for the medal and my high appreciation of the honour they have thus conferred upon me. The medal will always be a pleasant reminder of the friendly appreciation of my continental fellow-workers in pharmacy. Mr. Holmes also expressed a desire to take that opportunity of thanking the many friends who had sent him kind letters and messages of congratulation.

The President said he need hardly say that this award had been very satisfactory to the Council of the Society, and as their mouth-piece, he might convey to Mr. Holmes their congratulations, and to express the hope that he might long continue to carry on the good work he had been doing for so many years. He could not conceive a pleasanter way of spending half an hour than with Mr. Holmes in the Museum.

The President then called upon Professor Greenish, the Dean of the School, to read his report on the work of the School during the past session.

The Dean's Report.

Professor Greenish said that, before reporting upon the progress of the School of Pharmacy during the past session, it would be desirable to allude first to the changes that had been made in the course of study in the School, in order that the statements he had to make might be correctly interpreted. Previous to the session just ended, the curriculum in the School of Pharmacy consisted of an elementary course, succeeded by an advanced course in the same session. Many students, therefore, who were successful in their examination after completing the elementary course passed on at once to the advanced course in the same session. But the increasing demands made upon the student compelled both teacher and student to work at exceedingly high pressure during the entire session, and relief from this pressure became absolutely necessary. A change was therefore made last year, and under the conditions at present existing, the two courses have been extended, and now commence simultaneously in October, the elementary terminating at the end of June, and the advanced at the end of March. The student who was successful in his examination after attending the elementary course could not proceed to the advanced course until the following session; consequently at the commencement of the past advanced course there were not in the School any students who could be drafted into it from the elementary course, and a considerable diminution in the number of students was to be expected. Moreover, it was to be anticipated that the extension of the time devoted to the elementary course would, notwithstanding a reduced fee, have a deterrent influence on intending students. In the minds of the members of the staff no shadow of doubt as to the desirability of extending the courses had ever existed, but the success of the change still remained to be proved. Seventy-five students in all had attended the School, that being only slightly below the average of recent years, and exceeding the anticipations of the staff. Had it not been for the change in the arrangement of the courses, which had been alluded to, no doubt the average would have been exceeded; in fact, the number of students taking the complete elementary course was practically the same as it was the previous year—an unusually prosperous one for the School. The staff regards with much satisfaction the fact that as many students were desirous of taking the longer course of the past session as the shorter course of its predecessor. The professors had reported on their separate departments as follows:—

Professor Green has no doubt that the new arrangement of the time for study has been very advantageous so far as botany has been concerned. The work which was formerly crowded into six months has been spread over the whole session, and has therefore been done more fully and with greater care. The advantages thus secured have been particularly noticeable in the laboratory work. The first three months were devoted to practical work in morphology, a very important branch of study, which the stress of time had in former years caused to be too much hurried over. A further advantage has been that the lectures on vegetable physiology have been given in the summer term, and have consequently been much more fully illustrated by experiment. The attention and diligence of the students has been up to the standard of former years. At the end of the session the Bronze Medal was won by Mr. Matthews, and the Certificates of Honour by Mr. Perrédès and Mr. Upsher Smith. The advanced course was attended by ten students, a satisfactory number for the first year, as so many of the class of 1895-6 passed their Major examination and left us at the end of July, 1896. The diligence of most of those attending was very praiseworthy, their laboratory work especially calling for commendation. The Silver Medal was awarded to Mr. Stearn, and a Certificate of Honour to Mr. Long. Both the elementary and advanced laboratory work has been carried out under the direction of the Professor by Mr. Lloyd Williams, who has proved himself a most enthusiastic and capable demonstrator.

Professor Collie reports that during the past session the work and general attendance of the students has been perfectly satisfactory, and there seems little reason to doubt that the extension of

ime for study given by the lengthening of the course has been attended by good results. At the end of the elementary course the Bronze Medal for Practical Chemistry was awarded to Mr. H. M. Morgan, and Certificates to Mr. E. T. Jenkins and Mr. E. W. B. Nelson. In Theoretical Chemistry Mr. H. E. Matthews was awarded the Medal, and Mr. E. T. Jenkins and Mr. E. M. Chapman received Certificates. At the termination of the advanced course the Silver Medal in Theoretical Chemistry was awarded to Mr. R. M Stearn, and in Practical Chemistry the Silver Medal was won by Mr. E. A. Umney, and a Certificate of Honour by Mr. R. M. Stearn. In the Chemical Laboratory valuable assistance was given by Dr. Lapworth, Mr. Ashby, and Mr. Frye.

Professor Greenish reported on his own behalf that the Elementary Materia Medica class was attended by forty-seven students, that the work was well maintained throughout the session, and that the conduct of the students was in every respect satisfactory. The Bronze Medal was awarded to Mr. Perrédès, and Certificates of Honour to Mr. Matthews and Mr. Nelson. In the advanced class the advantage of the extension of the course was probably more prominent than in any other department of the School, for it was possible to devote just twice as much time to the important section of the microscopical examination of drugs, to the relief of the teacher and profit of the student. Seven students attended the course, and their diligence and conduct was highly commendable. The Silver Medal was awarded to Mr. H. Long, and Certificates of Honour to Mr. R. M. Stearn and Mr. E. A. Umney. In the department of pharmacy also, the changes that have been made in the course of instruction, the arrangement of the classes, and, in this particular department, in the class rooms have been attended by the most conspicuous and beneficial results. The provision that has been made for conducting the dispensing class in a room specially fitted up for that purpose has been of the greatest advantage, and the students have evinced a lively interest in their work, both in the dispensing room and in the laboratory of pharmacy. In the former, by the systematic arrangement of the work, each student has been afforded the opportunity of dispensing nearly 150 typical prescriptions under close and constant supervision, in the latter of preparing over fifty pharmaceutical preparations of varied nature. The Silver Medal at the completion of this course was awarded to Mr. H. E. Matthews.

Professor Greenish also stated that, in the task, by no means a slight one, of planning and fitting the rooms, arranging the work and supervising the students, he has been ably seconded by Mr. Harold Wilson. The staff of the School deeply regrets the loss by death of one of their most promising students and a prize winner in the advanced class, Mr. R. M. Stearn; they also regret that the School has lost the services of Mr. Littlefield and Mr. Ashby, demonstrators in the Chemical Laboratory. Their places have, however, been efficiently filled by Mr. Frye and Mr. J. A. Dewhirst, the latter an old student of the Society's School.

Scholarships and Prize Winners.

The President having presented the prizes and certificates with a few congratulatory words to the successful competitors,

Professor Green reported on the Herbarium competition. Only two collections had been sent in, neither of which reached the standard which had hitherto been considered necessary in order to entitle the sender to a medal, though both were worthy of certificates of honour. One of these, however, came from a gentleman who had formerly competed and obtained a certificate, and he did not feel justified in asking the Council to award him a second. The only certificate of honour, therefore, would go to Mr. Todd, of Oldham.

The President next stated the substance of the report presented by the Examiners for the Council Prizes, the effect of which was that only one candidate obtained the requisite number of marks, and to him the Pereira Medal had been awarded. He joined in the regret felt by the Examiners that there were not more qualified candidates, but believed this might be to a great extent accounted for by temporary causes, and hoped that next year not only the Pereira but also the Silver and Bronze Council Medals would be awarded.

Mr. E. White next presented the report of the examiners for the Jacob Bell and Manchester Association Scholarships. For the former there were thirty-one candidates, distributed about sixteen centres throughout the country, of whom no less than fifteen obtained sufficient marks to qualify them for the receipt of the prize. The two gentlemen who stood at the head of the list were therefore all the more to be congratulated on their achievement, and as an old Bell scholar he could assure them that success was enhanced tenfold by being associated with the name of Jacob Bell. The other thirteen gentlemen might feel certain that though they had not won the scholarship, the work they had done would carry them well on their way across the *pons asinorum* of pharmacy, the Minor examination. For the Manchester Scholarship there were three candidates, one of whom, having obtained the requisite number of marks, had been awarded the scholarship.

The President, having presented the above prizes with the collection of books from the Hills fund, in the case of the Pereira medallist, thanked Mr. Maas, who had to leave, for his presence.

Mr. Maas briefly thanked the meeting for his cordial reception.

The following is the complete list of awards :—

Practical Chemistry.

Bronze Medal	Harold Marston Morgan.
Certificates of Honour	Evan Jones Jenkins. Wm. Brown Nelson.

Theoretical Chemistry.

Bronze Medal	Harold E. Matthews.
Certificates of Honour	Evan Jones Jenkins. Edgar M. Chapman.

Materia Medica.

Bronze Medal	Pierre E. F. Perrédès.
Certificates of Honour	Harold E. Matthews. William Brown Nelson.

Pharmacy.

Silver Medal	Harold E. Matthews.

Botany.

Bronze Medal	Harold E. Matthews.
Certificates of Honour	Pierre E. F. Perrédès. F. Upsher Smith.

Jacob Bell Memorial Scholarship.
Herbert Payne.
John Evans.

Manchester Pharmaceutical Association Scholarship.
Robert Hilliard Dawson.

Herbarium Competition.
Certificate of Honour, Geo. Todd.

Pereira Medal (Silver) and Prize of Books.
Wm. Arthur Knight.

The President then called upon Professor McLeod to deliver the inaugural address.

The Inaugural Address.

Professor McLeod said: Mr. President, ladies and gentlemen, When your President was kind enough last July to ask me to give an address this afternoon, I felt very great hesitation in accepting, and I still feel that hesitation, because I know that there are men who could have very much better filled the place in consequence of their knowledge of the work of the Pharmaceutical Society and what a pharmaceutical student requires. However, owing to the confidence which has been placed in me by the Council, I have had opportunities during the last three years of seeing a portion of the work which goes on here, and, therefore, I shall not speak entirely in ignorance of my subject, and I will endeavour not to say anything about things I do not understand, and so I can only hope that the professors and students of other subjects than chemistry will not think that I depreciate them if I say nothing about them. I need hardly apologise for speaking principally about chemistry. You students will all become chemists by Act of Parliament. We others cannot call ourselves so. We may speak of ourselves as students of chemistry, lecturers on chemistry, or professors of chemistry, we may belong to the Chemical Society or to the Institute of Chemistry, but if we call ourselves chemists we may be liable to all sorts of pains and penalties. That is not your case, and therefore I think I need not apologise for speaking about chemistry to you. Next I may tell you that chemistry is not all pretty experiments. It is very interesting, it is very fascinating, but you will find that it requires a very large amount of hard work and perseverance. It is not a subject which is easy to many. I

have met often with candidates, not here, but at other places, who have always thought chemistry very hard and repulsive. This, of course, depends on a man's habit of mind. I myself find it extremely interesting, and I dare say many of you do the same, but do not suppose that you will be able to learn chemistry without taking trouble. This is true not only of chemistry, but of all other subjects you have to deal with. The wise man wrote a very wise saying when he said "Whatsoever thy hand findeth to do, do it with thy might." Your might must be used; without that you will not succeed.

The Importance of Neatness.

Never be satisfied with slovenly work; you sometimes see a man fitting up a piece of apparatus to produce a certain effect, and you find fault with him and say "This is not very neat." "Never mind, it will do," he says. Do not get into the habit of saying "It will do." It may answer the purpose for the moment, but you have got yourself into a bad habit, and if you proceed in that way some day when you are making up a prescription, and you think it will do, it will do what you do not desire. Neatness and accuracy are absolutely essential for your work, and I may say that neatness and accuracy are things which we do find amongst the candidates of the examinations here. Of course, after three years of experience here one gradually gets into a feeling that it was always so, and a thing which happens at this examination or the last examination does not produce the kind of surprise that it did three years ago; but I remember at first thinking how wonderfully well the work was done by the candidates. There was a neatness and cleanliness about it which we do not find amongst ordinary students. This, perhaps, is not difficult to understand. Many of the candidates who come up for examinations have undergone an apprenticeship, and this apprenticeship has inculcated in them these habits of cleanliness. I am often surprised at a particular thing which I often tell a man not to do. When he has finished his work he puts his place in order, I say "Do not trouble about that, that is the laboratory man's business"; but, still, it shows a habit of neatness and cleanliness which one likes to see. I believe in the pharmaceutical laboratory; it is required that a man should leave his place in proper order, if I am not mistaken. In the chemical laboratory we do not require this, but a man does it instinctively. One likes to see that, and when it is carried out in the right way, of course it is of the greatest value. One great advantage of the study of chemistry is not only the matter that you learn, but the exercise which it gives your reasoning powers. You cannot learn chemistry properly, you cannot perform chemical experiments properly without thinking what you are going to do and what is going to happen. There was a very good story told some years ago about a celebrated Scotch professor, who, at the commencement of his lecture, took up a little earthenware vessel containing some extract; he put his finger into it, and put his finger to his mouth, and handed the jar round to be treated similarly by the students, saying in the meantime whilst the vessel was going round: "Gentlemen, cultivate your powers of observation." This went on until the vessel came round to him again, the students in the meantime expressing their disgust at the nastiness they had to taste. When the vessel was returned to him he said to them: "Gentlemen, cultivate your powers of observation, if ye had rightly observed, ye wad ha' seen that the finger I put in my mouth was *no*' the finger I put in the gallipot." I do not wish you to suppose that the learning of chemistry is to enable you to find out conjuring tricks, but I do mean to say that one who has studied science, whether chemistry, botany or physics in a proper way, would be very much more likely to find out the meaning of unexpected phenomena than one who has not done so.

The Study of Chemistry and Botany.

Now, with regard to chemistry and botany I should suggest to you students that you should learn them as pure science, not so much in their application at first, as the other work of the School, which is, I believe, applied science. In the other work of the School you learn directly its applications, but in the case of chemistry and botany that is not quite so. You must learn a great deal of the theory, and then the application will come afterwards. Learn everything you are taught, learn as much more as you can beyond what you are taught, but do not ask what is the use of it. There can be no more distressing question that a teacher can be asked than What is the use of what he is teaching? Learn it all, all knowledge is useful, and you will find afterwards that you have made no mistake. About forty-five years ago there was a boy at school who had to learn mathematics. He did not like mathematics: he came home and said: "What is the use of mathematics?" His parents told him: "Learn it because you are taught; you will find it useful some day." I was that boy, and I can only say that if I had taken the advice given to me when I was a boy I should have been a much better man than I am now. There is nothing that I regret more than my very slight knowledge—almost absolute ignorance—of mathematics. It is most useful for you all, therefore, to learn whatever is taught you, and learn as much more as you can. When I am asked "What is the use of learning something?" I feel very much in the same state of mind as a celebrated artist did some years ago when he was suddenly shown a very ugly house in a very beautiful landscape. His friend said to him, "What would you say to the man who built such a house as that in such a place?" His answer was, "I would say nothing to him. I would not speak to him." That is the sort of feeling I have towards a person who wants to know the use of learning something. He will find it out afterwards. Now as far as possible in the matter of chemistry, and other subjects too, put everything that you can to an actual test. Test everything by experiment. It is a long time before you can thoroughly appreciate the description of a phenomenon by words alone so as to realise to yourself what it means. At first you must experiment on every little thing. I do not say, do not take the word of the person who teaches you, or do not trust what is in a book, but I do say, put those statements to the test of experiment if you can. A friend of mine said that no man should write text-books on chemistry unless he had tried every experiment he described. You can imagine that a text-book written in that way would be a small one, but it would be accurate. We must of course accept the evidence of other people, we cannot test everything; but you will find as you grow older that after a time the description gives you nearly as much pleasure as seeing the experiment itself. Quite recently I have gone through an experience of that sort. I had seen an account of some of the chemical works at Niagara, and a few weeks ago I saw them. I recognised the place perfectly. I had seen a description of it illustrated by diagrams from photographs, and all that I had read about I recognised immediately, and there was nothing strange about it. When you get as old as I am you will see that description, if it is accurate, will convey a very large amount of information, and then you can do without actual experiment, but before you reach that point try to do as many experiments as you can in order to familiarise yourself with facts and phenomena.

Apprenticeship and College Training.

Students in a school like this stand in an extremely advantageous position compared with many others. I believe it is the case that some candidates come up for the examinations who have tried to learn all that was necessary in a few months, sometimes by themselves, sometimes only by apprenticeship. Apprenticeship in the old days no doubt taught the pharmacist all that he was required to know. This same kind of thing happened in the engineering profession. You know that some forty or fifty years ago men or boys were apprenticed to an engineer, and they picked up their engineering knowledge as best they could; some teaching was given no doubt, but the greater part of it was picked up by working in the shop. You know that now there are engineering schools being founded all over the country, because it was found that the men who were educated solely by what they saw did not possess the theoretical knowledge which was necessary to enable them to provide for all unforeseen circumstances. It is exactly the same with students in a school like this, they have the opportunity of learning the theory, so that when their practice comes they are ready for any emergency. You will not think, and those outside must not think, that the work is so easy and so simple that it can be got up in a very short time. There was an unfortunate candidate here last week who had some knowledge certainly, but when I spoke to him and asked how he was getting on, he said "I cannot get on at all." After a little time I went to him to give him the small amount of help which an examiner may give, but afterwards he stuck again, and then I said, "How long have you been learning chemistry"? He said, "About three months." It was, of course, hopeless, and the poor fellow had to go away, for he could do nothing. I am afraid that is a case which has happened previously, but you gentlemen cannot make an excuse of that kind, and I think the Council has done quite rightly in increasing the length of time for

the school course from six to nine months. When we first commenced the work here in these examinations three years ago we found that the candidates could do perfectly straight-forward work extremely well. We asked them to determine the quantity of iron in a solution, and gave them the necessary solution, and they did it perfectly. But although their work was good it was not understood, for when we asked them how to make a solution by which they could find out how much iron there was in that substance, they could not tell us, so we thought the best way was to make them learn, and we make them make their own solutions. We have now gone further, and made them make solutions from impure substances, and they can do that. I do not know how much further we are going, but we are certainly improving the work of the students, and necessarily the teaching work. I only hope we are not giving the teachers too much to do, but we are making them teach in a way which will enable the candidate to know what he is doing, and not merely to be able to do it.

The Necessity of Examinations.

One thing I must say to the students is this—do not work for examination. Examinations are a necessity, a very bad necessity, but I do not see what we can put in their place; but do not work for the examination. Remember a short sentence which was given by Huxley some years ago. "Learn to know and not to pass." If you learn to know, the passing follows naturally, get your knowledge as accurate as you possibly can, and when the examination comes there will be no difficulty at all about it. Then will follow medals and libraries such as we have seen to-day, even a Hanbury medal may fall to some of you if you will only go a little further than your work and take to investigation. It may be the fate of some of you to be the only person in a village who knows anything about science, and you may be asked all sorts of questions. Now you must be prepared for the asking of the questions, and you must also be prepared, as far as you can, to answer them, but let me give you one caution, do not do what many people do—put on a profound air of knowledge and answer something which may not be right. Do not be ashamed of saying you do not know if that is the fact; try to learn as quickly as possible and enlighten the person who asks the question. I can quite understand—I am speaking now entirely from theory, not what I know from actual fact—a pharmacist in a small town or village being asked all kinds of questions about all sorts of things because it is known that he has had a scientific education. Let that scientific education be good and thorough, so that you should be able to answer these queries which may be put to you. I said just now, do not work for examinations—examinations are things which follow the work; but begin your work at the commencement of the session. When you begin, remember that there is an examination at the end, and that it must be prepared for, but above all things do not leave the work of the getting up of the examination until a week or so before the examination commences. This is a fatal thing, and a very frequent one. I have known men who have never looked at their lecture notes until the night before the examination commenced. That is a very bad thing. You should always be ready, so that if the Professor asks you a question which may afterwards appear in an examination paper you will be able to answer it at once without having to read up for it. I remember hearing, many years ago, of a young man who was going in for some Government appointment. It was before the days of cramming, but it was at a time when men went down to the country to read, generally with a clergyman. This particular man, who had not succeeded at an examination, went down to the country to read, and very shortly after he had gone to live there, he found it was a nice delightful place, with so much hunting and fishing going on that he could not set himself to work. After six months of these amusements his tutor said "I think you had better prepare for the examination." "Oh, there is lots of time, why should I begin just yet?" At the end of three months more the same question was asked and the same answer was given. It ended in his trying to read up for the examination in the train, and you may imagine the result. That is an extreme case, and very few people do such a foolish thing as that; but there are many who think there is no necessity to commence the work immediately. The work should be begun directly you have the opportunity, and should be carried out in the same earnest manner.

The Study of Qualitative Analysis.

Amongst the different ways in which chemistry is taught, one is qualitative analysis. I dare say I shall be considered very old-fashioned when I say that I believe qualitative analysis is a very excellent mode of teaching if it is properly taught and properly learnt. You must not be satisfied with merely mixing two liquids together and getting a certain result; you must know exactly what has taken place in the whole of the chemical changes. I am perfectly certain that when qualitative analysis is worked at accurately, when the student determines to find ont everything that happens in every test which he applies, he learns a very large amount of chemistry, not all of it, for there is a great deal more to be learnt, but analysis is one very good system of learning. I have heard of a doctor who knew that dilute sulphuric acid had certain therapeutic value, that carbonate of magnesia had another certain therapeutic value, and he thought, therefore, there would be no harm in mixing the two, and it was a long time before his friends could persuade him that a dose of Epsom salts would be quite as efficacious. No person who knew anything at all about qualitative analysis would have made such a mistake as that. Of course, it is an extreme case, but there are many others of the same sort. I am quite certain that you will find there are many things which a student may be tempted to do experimentally which he would not do if he thoroughly understood his qualitative analysis. There is another thing which I should like to say to students; that is, do your hardest to help one another, although you are working together, and one will get the prize, and the others will not, yet if a man knows his work well I hope he will do all he can to help the one who cannot get on so easily. Do not employ these meetings, which will very likely take place in the evening, merely in amusement, do not waste your time at these meetings, which are intended for the purpose of helping one another, but let it be real reading. Smoke if you like, but work at the same time, and do not do anything else which will prevent you understanding what goes on. Men can help one another very much. One student will see at once through a subject, while another will hammer away round and round. He does not like to ask his teacher for fear of appearing too stupid, but he does not mind asking a fellow student. The one who teaches learns a great deal, but your teaching must be accurate, therefore the one who helps must do it with the knowledge that he is doing what is right.

Exercise and Recreation.

I have spoken a good deal of hard work, but do not suppose that I want you to think that you must do nothing but work. You must have some kind of exercise and recreation. It is absolutely impossible to lay down any law on this subject. Some persons may find walking exercise sufficient. That is my case. When I am working here at these examinations—and it is rather hard work—I never think of riding anywhere when I can walk. It does me good, and I can get through the work, but I know that is not sufficient for others. I believe there is in connection with your School a football club and a cricket club, and although I am not an expert in either of those amusements, I am told by those who know all about them that they are most excellent, not only as exercises, but as an educational system. You learn in football and cricket, and all games which are played with large numbers, a principle of discipline which is of the greatest possible value. This disciplinary habit will be useful to you through life, even when you become your own masters. It is necessary for a man to discipline himself as long as he lives, in fact, and the sooner you begin to do it the better. For other recreations it is very difficult to know what to recommend. Cycling, of course, is a very great stand-by at the present time; everybody has a bicycle, and they find it is valuable because it enables them to get rapidly from one place to another and as a means of exercise. Mr. Frank Balfour, an athlete who some years ago lost his life on the Alps, told me he always cycled at Cambridge. He had very little time for exercise, but he got all the exercise he required by means of his bicycle, and he could do this without neglecting his work. There are many other recreations in London which many of you may find perhaps a little tempting, and one cannot help saying that the poor man is often better off than the rich man when he is a student. The temptations which a man with money in his pocket has to undergo do not fall upon the man who has no money, and consequently he is prevented from falling into the extravagances into which the rich man may fall. I remember amongst my student friends there were several who,

when they went out to luncheon, found a convenient billiard-room close by, and remained there for the rest of the afternoon, to the neglect of their scientific education. Whether things are like that in London at the present time I do not know, as it is twenty-five years since I lived here. You want rest also, and let me suggest to you, do not do any work on Sunday; determine to give yourself relaxation on that day. I am speaking now not from a religious point of view, but from a utilitarian point of view. You will be all the better if you have one day in seven without work. I do not mean to say there are not times when you must do some work on Sundays, but do not make it a rule. I am tempted to go a step further and to say you had better use your Sundays properly. I do not want to preach you a sermon, I have no right to do so, but as many of you have been carefully brought up, do not change the principles you have learned, which would much distress your parents and relations, without the very strongest convictions on your own part, and the very strongest belief that you are doing right. When you have passed the examinations, the Major and Minor, when you come to be your own masters, there is still more left to be done, not the work only of your profession, but as you will have received from science a large amount of help, you owe a debt to science. See if you cannot increase knowledge on your own account. I dare say many of you will find it impossible with the work you have to do to devote any time to scientific research, but you may be able to do something, and every little helps. Publish what you have done if you are quite sure it is new; do not publish it if it is not, because people will laugh at you, but if it is new, publish it for the benefit of the world. Afterwards endeavour as you progress to make some discovery which is of great value. We have seen to-day the awarding of the great medal to Dr. de Vrij—a man who has done so much for medicine. You, all of you, I will not say endeavour at once to emulate such a high position as his, but do your best to improve knowledge, not only in medicine, but also of pure chemistry. There are many questions in pure chemistry which a pharmacist will be able to elucidate, and I hope we may hear some day or other that the students who commenced their work on October 4, 1897, will publish researches which are not only of interest to themselves but of value to the world.

The President proposed a cordial vote of thanks to Professor McLeod for the very practical and sympathetic address he had given. He did not propose to comment upon it, but he had been much struck by the tone of sympathy with the student and his difficulties and temptations, which ran through it, and he was quite sure that the words would be of benefit to all who heard or read them.

The Vice-President, in seconding the vote of thanks, called special attention to the exhortation which had been given to young men not to cease work when they had passed the examinations. Such advice was much needed, and he hoped it would be taken to heart by the students.

The vote having been carried by acclamation,

Professor McLeod briefly acknowleged the compliment, and the formal proceedings terminated. Refreshments were provided for visitors in the Examination Hall, and the whole of the School buildings were afterwards open for inspection.

Taka-Diastase in Dyspepsia.—Friedenwald concludes that taka-diastase exerts no influence under normal conditions upon gastric digestion, nor upon cases of nervous dyspepsia with normal motor and secretory functions. In cases of motor disturbances of the stomach with normal secretory functions, such at atony, taka-diastase increases the motor action without in any way influencing the secretory functions or the digestion of starches. In cases of sub-acidity, taka-diastase acts differently, according to whether there is a catarrh or a nervous dyspepsia. In nervous cases it has no effect whatever upon digestion, while in cases of catarrh it appears to have a tendency to increase the flow of acid and promote the digestion of starches. Taka-diastase exerts its most favourable influence in cases of superacidity. It not only promotes the digestion of starches in these cases, but diminishes the excess of acid and increases the motor function. Friedenwald considers that taka-diastase in a great measure replaces the saliva when this secretion is diminished or absent. It then not only digests the starches in the stomach, but serves the other functions of the saliva in stimulating the gastric secretion, and therefore promoting the proteid digestion.—*Int. Med. Mag.*, vi., 496.

PHARMACEUTICAL SOCIETY.

ROYAL COLLEGE OF SURGEONS OF ENGLAND
-8 OCT 97

MEETING OF THE COUNCIL.

WEDNESDAY, OCTOBER 6, 1897.

Present:

Mr. Walter Hills, President.
Mr. G. T. W. Newsholme, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Cross, Grose, Hampson, Harrison, Johnston, Martindale, Park, Savory, Southall, Storrar, Symes, Warren and Young.

The minutes of the last meeting having been read and confirmed,

The President said before passing to the general business of the meeting, he had to record with regret the death of Mr. Bindloss, pharmaceutical chemist, a member of the Society, and a former Divisional Secretary for North St. Pancras, in which capacity he did loyal service.

The Glasgow Conference.

The President then referred to the meeting of the British Pharmaceutical Conference which was held in Glasgow in the beginning of August. He said it had been a very pleasant meeting, and in every way satisfactory with perhaps but one exception, and that was the weather, which was not so much to be wondered at when they considered that they were visiting the west of Scotland. The two lesser excursions on the Tuesday and Wednesday to Loch Lomond and to the Corporation waterworks were unfortunately spoilt by the rain, but this did not reflect at all unfavourably on the efforts of the Local Committee, who had done everything to make the visit of the Conference pleasant. However, the weather made up for its bad conduct on the Tuesday and Wednesday by being simply perfect on the day of the excursion on the Clyde. It was not necessary to speak of the scientific work done at the Conference, but he wished to record his sense of obligation to the members of the Local Committee, and especially to the Chairman, Mr. McAdam; the Vice-Chairman, Mr. Currie; the Treasurer, Mr. Walker; and to the Hon. Secretary, Mr. Anderson Russell, for their kindness in getting up such a splendid programme, and for their great kindness and courtesy towards him as the President of the Society. A few of them had had the opportunity of meeting an old colleague, Mr. Daniel Fraser, at his home. They were probably aware that Mr. Fraser had been in failing health for some time. He should also like to congratulate Dr. Symes, as President of the Conference, on the fact that they had such a very successful meeting. He believed they had had almost the largest, if not the largest, gathering that had ever met at the Conference He also wished to record his thanks to Dr. Symes' able coadjutors, the Secretaries of the British Pharmaceutical Conference, for their labours, which were very great, and had been crowned with such success.

Dr. Symes thanked the President for the kind remarks he had made with reference to himself. He also wished to thank their Scotch friends for the very excellent way in which they had been entertained. The President of the Society was, of course, a very important man, and had necessarily to look at things from a serious point of view, as was evidenced by the way he had referred to the weather, but to his (Dr. Symes) mind the weather was not so very bad. They had all enjoyed their trip to Loch Lomond, though no doubt they were favoured on their return journey by what was known as a Scotch mist. On the Wednesday evening things were managed very much better. The Committee had arranged to take a large number of their friends to the waterworks, and when they got about half-way there the waterworks met them, which was better than having to go all the way to the waterworks. On the Thursday they had such a splendid day that he had hoped it would wipe away all recollection of the rain at all. There was just one other function which had been very successful, and that the President's modesty had prevented his mentioning, being the smoking concert at which he had so ably presided. The President had shown himself to be as good in the capacity of chairman of the concert as they all knew him to be as President of the Society. There was an idea that the Conference existed almost as a social function, but there was one matter that had been referred to at the meeting which was worthy of notice by the Council, and that was with reference to the Medicine Stamp Duty Act. It was his intention to ask the Council to consider that matter.

The President said it would be better if Dr. Symes would give notice of any motion he desired to bring forward on that subject. He should like to add that when at Glasgow he had the pleasure of meeting many old friends and making many new acquaintances. He was especially delighted to make the acquaintance of the President of the Pharmaceutical Society of Ireland, Mr. Wells, and also to renew his acquaintance with Professor Remington, of Philadelphia, and to meet Mr. Champion, the President of the Natal Board of Pharmacy, and many others. He should always look back with pleasure to the Glasgow meeting.

Election of Member.

Benjamin Wyles, Chemist and Druggist, of Southport, who was in business before August 1, 1868, having tendered his subscription for the current year, was elected a "Member" of the Society.

Election of Associates in Business.

The following, having passed the Minor examination, being in business on their own account, and having tendered their subscriptions for the current year, were elected "Associates in Business" of the Society:—

Allenby, Henry E.; St. Albans.
Bowden, William; Wimbledon.

Election of Associates.

The following, having passed the Minor examination and tendered, or paid as Students, their subscriptions for the current year, were elected "Associates" of the Society:—

Duncan, James Greenhill; Portobello.
Eldred, Willie; Hythe.
Harris, Frank Howard; Canterbury.
Wheeler, Ernest John; Eastbourne.
Williamson, Edward; Guisbrough.

Election of Students.

The following, having passed the First examination and tendered their subscriptions for the current year, were elected "Students" of the Society:—

Avery, Charles W.; Hemel Hempstead.
Baker, Walter Henry; Bristol.
Bates, Henry James; New Benwell.
Bellamy, Clement James V.; Caistor.
Blyth, Alec; Colchester.
Burry, David Edmund H.; Picton.
Burton, John Robert; Wakefield.
Cattell, Alice Mary Drucilla; Elmdon.
Collenette, William de F.; Guernsey.
Drewett, Percy Conyers; Whitby.
Evans, Robert Harold; Southport.
Ferguson, Allan Hitchen; Preston.
Flemming, Thomas H.; Huddersfield.
Fraser, David Wilson; Ayr.
Fraser, Hugh William M.; S. Shields.
Gardner, John Wilson; Coatdyke.
Hodgos, Charles E.; Wotton-u-Edge.
Johnson, John Albert; Lincoln.
Kenworthy, George; Barnsley.
Mackinnon, Thomas; Govan.
Matthews, James Gilbert; Birmingham.
Measday, Charles Stafford; Deal.
Miller, John; Blantyre.
Mole, Ernest Mitchley; Leatherhead.
Oliver, Joseph; Hull.
Pickering, John James; Langwathby.
Pilcher, Franklin; Ashford.
Powell, Harold; Dover.
Stainsby, Frederick; Darlington.
Warren, Richard Bleathman; Blandford.
Watson, John Fraser; Sheffield.
White, James Frederick; Leeds.
Wigginton, John H. B.; St. Albans.
Williams, Gwilym Ivor; Ross.
Williamson, David; Douglas.
Witchell, Robert W.; Blaenavon.
Wood, John G.; Berwick-on-Tweed.
Yeo, John Henry Arthur; Liverpool.

Several persons were restored to their former status in the Society upon payment of the current year's subscription and a nominal restoration fee of one shilling.

Report of the Finance Committee.

The report of this Committee was read by the Secretary, including the recommendation that sundry accounts be paid.

The President, in moving the adoption of the report and recommendations, said there was nothing which required any comment. The payments rather exceeded the receipts, but that was always the case at this time of year.

Report of the Benevolent Fund Committee.

The report of this Committee included a recommendation of grants to the amount of £83 in the following cases:—

A registered chemist and druggist (64), who has had three previous grants. (Goole.)

A registered chemist and druggist (68), who has had annual grants since 1892. (Landport.)

A registered chemist and druggist (67), who had a grant in 1895. In feeble health. (London.)

The widow of a registered chemist and druggist (55), whose husband died in May last. She has four children, all of whom are earning only small sums. (London.)

A registered chemist and druggist (64), who has been out of business for twenty years, and has acted as assistant, but cannot get permanent employment. (Liverpool.)

The widow (48) of a chemist and druggist member, who has had two previous grants. (Thornton Heath.)

A former pharmaceutical chemist member (74), who had a grant last year. (Sherborne.)

The widow (51) of a registered chemist and druggist, who has had eight previous grant. In bad health. (London.)

Two applications were deferred for further information, and three were not entertained.

The Secretary submitted a statement showing a balance in hand on the current account of £1021, and on donation account of £164 4*s.* 5*d.*, there being also £6500 invested in Consols. There were 41 annuitants now on the list, 7 having died during the year.

The Committee recommended that six annuitants be elected on Wednesday, December 8, next, also that the following six names be placed on the list of approved candidates:—

Clode, Charles (65), Willesden Green.
Collett, Charles B. (67), Clapham.
Evans, Thomas (74), Liverpool.
Foster, George (83), Hampstead.
Starling, Jane D. (64), Bexley.
Young, Tonkin (69), Barry.

Having regard to the fact that the number of approved candidates did not exceed the number to be elected, the Committee recommended that a special circular should be sent to each subscriber, intimating that under the special circumstances no voting papers would be issued this year, but that this must not be regarded as creating a precedent.

The Vice-President, in moving the adoption of the report and recommendations, said there were on this occasion a great many more casual grants than usual, but that was probably accounted for by the fact that no meeting was held last month. The cases were of the usual character, and had been dealt with in the usual way. With regard to the election of annuitants, it would be noticed that there were six approved candidates, and the Committee having gone carefully into the matter, came to the conclusion that this being the Diamond Jubilee year, in which special attention had been drawn to benevolence, and special efforts had been made on behalf of the Fund (efforts which had been liberally responded to by chemists and druggists throughout the kingdom), it would be only right, if possible, to elect six additional annuitants. The Treasurer would, no doubt, be glad to know that on this occasion the Committee recommended that no voting papers should be sent out, but that the election, being uncontested, should take place on Wednesday, December 8, the day on which the Library, Museum, and House Committee usually met, and it could be got through very briefly. He hoped the Council would unanimously agree to this recommendation. It might perhaps be thought that having obtained subscriptions from members of the trade throughout the country, many of them for the first time, some of them might feel that they ought not to be deprived of the opportunity of voting, but he did not think that would be the case if such a circular as was proposed were issued, stating the special facts of the case.

The motion having been carried unanimously,

The Vice-President moved that six additional annuitants be elected in December next; that the meeting for election be fixed for Wednesday, December 8, at 12 o'clock at noon; and that the Council recommend that on this occasion the six candidates selected by the Benevolent Fund Committee be elected.

Mr. Bottle had much pleasure in seconding the motion. It was a novel proceeding, but they had had the good fortune to receive very handsome subscriptions, both at the dinner and throughout the year, and he had been very desirous of having a Jubilee candidate elected in the person of the remanet from last year, Mr. Young. But there was a difficulty in doing so without breaking through some of the regulations. He was very pleased to see, therefore, that as there were only six candidates on the list, the Committee saw its way to elect the whole of them, which would save the anxiety and expense of a contest. It was stated that this was not to be taken as a precedent, and that had his entire sympathy, though he knew there was one gentleman at least present who was desirous of seeing

the contest abolished altogether. He could not help feeling, however, though he should be very glad to relieve the candidates of the anxiety of a contest, that the interest of the Fund must be considered, and that the elections had a useful effect in calling attention to it.

Mr. Atkins, in supporting the motion, said there must be an election, though there would be no contest, and this distinction was of some importance. It must be understood that this was not to be a precedent, because, while he shared the view that the candidates should be saved a good deal of inconvenience and expense, he was as much convinced as ever that, as it was said that taxation and representation ought to go together, so contributions to benevolent objects, and voting power as the equivalent of those contributions must in the present state of human nature also be associated.

Mr. Hampson said he felt very grateful to the Committee for having taken this step. He should not enter into an argument to-day, although his friend opposite had set the example. He would not say that his arguments were weak, though he did not think them very strong, but he certainly was grateful to the Committee. They seemed to have sat with healing on their wings; they had felt that an opportunity presented itself, and had had not only the intelligence but the benevolence to seize upon it. He would not say anything about the gratitude of the candidates, but surely they would be far more grateful than he could be. The Committee had, of course, safe-guarded its action by stating that it was not to be a precedent, and he was quite willing to wait for a similar condition of heart and mind on the part of the Committee on some future occasion, and it was not at all hopeless that similar circumstances might occur, whether they comprised some special national event, or the condition of the Fund and the number of the candidates agreeing so wonderfully, he was not prepared to say, but at any rate he might say this was the happiest day he had spent at the Council.

Mr. Harrison said he also rejoiced that the Committee had seen its way to take this step, but he should like to explain how the circumstances all pointed in this direction on this occasion. In the first place seven annuitants had passed away during the year, and the Committee having regard to the handsome response made to its appeal, felt that it could not do less than elect six to fill the place of those who were gone, and accordingly decided to recommend the election of six in December. Then it was necessary to examine the cases to be selected for election, and after careful investigation it was found that having regard to the standard of qualifications laid down, there were only six cases which could properly be recommended. The Committee would have failed in its duty in his opinion if for the sake of giving the subscribers an opportunity of using their votes, it had enlarged the list by adding names which he would not otherwise be justified in doing. There was, therefore, no other course to pursue. He quite agreed that this should not form a precedent, but he hoped it would prove an object-lesson as to the mode of election. He could not help thinking that some of their friends who were somewhat timid about making a new departure, on seeing the simplicity and quietude of this election, would be reassured and feel that the interests of the Fund were amply safeguarded.

Mr. Atkins said it had been pointed out to him that out of the thirteen cases before the Committee, to eight of whom grants were made, not one had been a subscriber to the Fund. That showed the catholicity with which the Fund was administered, but he should like to draw attention to the importance of some contribution, however small, being made to the Fund by everyone.

Mr. Young also pointed out that only one of the candidates for an annuity had been a subscriber.

The Vice-President drew attention to the case of a boy aged $2\frac{1}{2}$ years named Walter Percy Buck, whose friends were endeavouring to get him elected an inmate of the Infant Orphan Asylum, Wanstead. He had been unsuccessful once, and his friends were very anxious to secure his election this time. His father was a chemist at Haverhill, Suffolk, who died in November, 1895, leaving a widow and seven children totally unprovided for.

The resolution was then put and carried unanimously.

Report of the Research Committee.

The President announced that a meeting had been held to consider applications for the Burroughs and the Redwood scholarships, the period for applying for which, it would be remembered, had been specially extended to September 30. One pharmaceutical chemist had applied on the condition that he might hold both scholarships. The Committee did not see its way to accede to that request, and it was recommended that no award be made.

Motion of Expulsion.

The President moved :—

"That the reply of Mr. Sampson Taylor Rowe to the communication addressed to him in accordance with Section 17 of the Bye-laws, being unsatisfactory, the Secretary be instructed to remove his name from the list of members of the Society."

The Vice-President seconded the motion, which passed unanimously.

Correspondence.

The President referred to the following circular which he had received from a committee of eminent gentlemen in France who desired to erect a monument to the memory of two great chemists whose names were associated with quinine—Pelletier and Caventou :—

MONUMENT PELLETIER-CAVENTOU.

Comité de Souscription.

Monsieur le Président de la Société de Pharmacie de la Grande Bretagne,

Il vient de se constituer à Paris un comité de souscription pour élever un monument tardif à Pelletier et Caventou, les deux illustres pharmaciens auteurs de la découverte du Sulfate de Quinine.

Le Comité est composé de la façon suivante :

Président d'Honneur,	M. A. Chatin.
Président,	M. Planchon.
Vice-Présidents,	MM. Marty et Moissan.
Secrétaire Général,	M. Behal.
Secrétaire,	M. G. de Mazières.
Trésorier,	M. H. Bocquillon-Limousin.

La découverte si précieuse du Sulfate de Quinine faite par Pelletier et Caventou a rendu de signalés services à l'humanité toute entière, aussi le Comité du monument, représentant toutes les sections du corps pharmaceutique français (Écoles de Pharmacie, Académies, Pharmaciens civils, militaires, des hôpitaux, de la marine et des colonies), fait appel aux Sociétés pharmaceutiques du monde entier.

Il compte sur la solidarité entre les pharmaciens de tous les peuples de l'univers pour ouvrir une l ste de souscription entre pharmaciens pour l'érection d'un monument à Pelletier et Caventou à Paris, *vis-à-vis* de l'École de Pharmacie de Paris.

Le Comité remercie d'avance les confrères qui voudront bien apporter leur obole à cette œuvre humanitaire et pharmaceutique.

Croyez, cher collègue, à l'expression de nos sentiments dévoués et confraternels.

Hy. Bocquillon-Limousin.

Those who were interested in the movement, which had his entire sympathy, wished to make it a world-wide thing, and he wished to announce that the Secretary of the Society would be very happy to receive and forward subscriptions towards this movement.

A letter had been received from Mr. Squire, the Hon. Secretary of the Sheffield Society, expressing thanks for the *Pharmaceutical Journal*, the Register and the Calendar, which had been presented during the past year.

The Bell scholars, Mr. Harold Matthews and Mr Upsher Smith, had addressed a letter to the Council expressing their thanks for the permission which had been given to them to attend the advanced course at the School of Pharmacy free of cost.

Report of the General Purposes Committee.

The Council went into Committee to consider the report and recommendations of this Committee, dealing with legal matters. On resuming, the report and recommendations were adopted, and special resolutions passed, authorising the Registrar to institute proceedings against the persons named.

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THE COUNCIL MEETING.

Before commencing the business proceedings of the Council the President referred to the recent death of Mr. Bindloss, who formerly held the office of Divisional Secretary for North St. Pancras, and in that capacity took great interest in the work of the Society.

The Conference meeting at Glasgow was also mentioned by the President as having been a very pleasant and successful function in every respect except the unfavourable weather which somewhat interfered with the excursion to Loch Lomond and with the visit to the Corporation Waterworks. Those adverse incidents were, however, exceptional, and they were amply compensated for by the general character of the proceedings, especially by the very enjoyable trip down the Clyde, when the excellent arrangements made by the local committee for the entertainment of visitors could be fully appreciated under the more genial conditions, which, though rarely to be counted upon in the West of Scotland, are capable of affording so much satisfaction when realised. Dr. Symes also expressed his appreciation of the very excellent reception the Conference had met with from their Scottish friends.

The additions to the Society comprised 1 member, 7 associates, and 38 students.

The report of the Finance Committee had no especial or unusual interest, and the recommendations were adopted.

On the recommendation of the Benevolent Fund Committee, eight grants, amounting in the aggregate to £83 were ordered to be paid, and the Secretary submitted a statement showing a very satisfactory condition of the Fund. The death of seven annuitants during the past year has reduced the number now on the list to forty-one, and the Committee recommended the election of six annuitants in December next. That being the entire number of approved candidates, their election will take place without contest, and there will not be any occasion to issue voting papers, but the Committee recommended that a special circular should be sent to the subscribers to the Fund explaining the deviation from ordinary practice and pointing out that it is not to be regarded as constituting a precedent for the future. These recommendations were adopted by the Council, but the Vice-President, in moving the adoption of the Report, referred to the possibility that some of those who have subscribed to the Fund this year might object to being deprived of the opportunity of voting for particular candidates, but he did not think that would be the case if the proposed explanatory circular were sent out stating the special facts of the case. Mr. Bottle, in seconding the motion that the six approved candidates should be elected, pointed out that the novel proceeding had his entire sympathy as saving the candidates from expense and anxiety, but though one at least of their number was desirous to see the contest abolished altogether, it must not be taken as a precedent, because the interests of the Fund must be considered, and the election served a useful purpose in directing attention to it. In view of the circumstance that there had been a very considerable addition to the Fund, both at the dinner and in ordinary contributions, he had been desirous to have the unsuccessful candidate at the last election made an annuitant in commemoration of the Jubilee year. That would, however, have involved breaking through some of the regulations, and he was pleased that the Committee was able to recommend the election of the whole number of candidates on the list.

Mr. Atkins, speaking in support of the motion, dwelt upon the necessity for an election, though on this occasion there would be no contest, and he expressed his conviction that contribution to benevolent objects requires as its equivalent voting power to be associated with it, just as taxation and representation require to be associated in the present state of human nature.

The Treasurer expressed gratitude to the Committee for the step that had been taken, and would not follow up the argument introduced by Mr. Atkins; but he anticipated that the candidates would be still more grateful to the Committee for having taken advantage of the opportunity offered on this occasion, and for his own part was content to await the possibility of similar conditions leading to a repetition of the same procedure.

Mr. Harrison pointed out that the course recommended by the Committee had been on this occasion the result of very exceptional circumstances, which all tended in the same direction, and that no other proceeding was possible, but it might happen that if the new departure was found to work with simplicity and advantage, experience might remove the fears as to the interests of the Fund being safeguarded.

The President announced that the Research Committee has not been able to make an award of the Burroughs or the Redwood Scholarships.

In conformity with notice given the President moved that the name of Mr. Sampson Taylor Rowe be removed from the list of Members of the Pharmaceutical Society. This was seconded by the Vice-President and carried unanimously.

Reference was then made to a circular issued by a Committee which is collecting subscriptions for the erection of a monument in memory of the French pharmacists, Pelletier and Caventou, and the President added that the Secretary of the Society would be happy to receive subscriptions and forward them to the Committee carrying out the work.

After the report of the General Purposes Committee had been considered, the recommendations were adopted and special resolutions were passed authorising the Registrar to institute proceedings against various persons reported to have infringed the provisions of the Pharmacy Act.

ANNOTATIONS.

The Duties of Local Secretaries of the Pharmaceutical Society, briefly outlined, are to report any cases of infringement of the Pharmacy Acts which come under their notice, and to give the Registrar assistance privately in carrying out prosecutions; to inform the Registrar of the change of address or of the death of registered persons; to collect once a year the subscriptions for the Society and for the Benevolent Fund, and to endeavour to obtain for the Society and the Benevolent Fund the general support of chemists and druggists by inducing non-members to join the Society and to subscribe to the Benevolent Fund; to send to the Editor of the *Pharmaceutical Journal* local information of general interest to the Society; to assist the Council in its endeavours to promote or to oppose Bills before Parliament by communicating with Members of Parliament, getting signatures to petitions, and generally taking such action as the Council may deem desirable in the interest of the Society. The last-mentioned desideratum may fitly be regarded as covering the whole duty of a local secretary, and according to his interpretation of those words his occupancy of the post will prove advantageous or the reverse. It should not be expected, however, that any one pharmacist in a large town should imperil his business interests by devoting an unreasonably large proportion of his time to such implied duties as calling upon other chemists in that town.

Systematic Visits are, at the same time, more directly useful than is generally recognised, and the difficulty involved might be obviated by the local secretary availing himself of the assistance of friends in the craft, who should share his peripatetic labours. This, of course, is no new idea, but an extension of the plan in accordance with which certain important centres are now served by assistant local secretaries. The point is that there is no need to ask, or wait for, the Pharmaceutical Council to take action in the matter—sufficient volunteers ought to be forthcoming in most centres from the ranks of registered assistants, no less than men in business, and the carrying out of some such plan could not fail to be productive of quite as good results if the matter were arranged informally. Evidence is not wanting that a thorough canvass of the whole country would probably result in a considerable accession of strength to the ranks of the Pharmaceutical Society, and at the very least no harm could result from a better acquaintance of the members of the craft in the different districts. The existence of general good feeling is the first and most important step towards union for mutual aid and protection, and it lies in the power of local secretaries of the Society to do much in the direction of creating such good feeling.

Though the Services of Local Secretaries are purely gratuitous and their duties are voluntarily undertaken, it is desirable, as was pointed out last week, that those duties should be effectively carried out, or, as an alternative, that the office should be vacated in favour of someone who is prepared to do what is required. The Pharmaceutical Society cannot afford, at the present time, to have merely ornamental representatives, and the electorate ought to regard it as incumbent upon them to see that workers, and not drones, are appointed for the ensuing twelve months. It may happen in certain instances that some compunction is felt at the prospect of substituting younger and more active men for representatives who have done good service in the past, but are not now prepared to devote the necessary time and energy to the work. But sentiment can be allowed no place in matters which closely affect the struggle for existence, and we venture to suggest that no self-respecting pharmacist who is imbued with a desire to benefit his craft will manifest a desire to cling to office when his day of usefulness has passed. Any local secretary who is in doubt concerning this point should have no difficulty in ascertaining the facts of the case, and above all things he should satisfy himself that his reappointment will be a source of gratification to his fellow townsmen who are engaged in the practice of pharmacy.

The Trade in Secret Remedies and other medical grievances are the cause of some strong language in an article in the *Times*, commenting on the various addresses delivered at the opening of the Medical Schools for the new session. The whole enormous system of quack medicines and quack advertisements is there said to be conducted on the lines of implied disparagement of doctors; "and druggists, who sell the advertised preparations at a large profit, lend a great, if but a tacit, influence in the same direction." The medical profession as a whole is described as keeping silence in the meanwhile, though it is urged that perhaps its members might do something by concerted action to diffuse among the public a better knowledge of the bases of medical science, and of the aims of those by whom that science is cultivated and applied. Even the hospitals absolutely necessary for medical education can only be supported in England, it is asserted, by a system of discreditable touting, and the advancement of medical and surgical knowledge is retarded at every step by the influence of ignorant people. "The truth is that the position of the medical profession in England is one which leaves much to be desired, not only from the point of view of practitioners, but also from that of the public. The individual doctor, as a rule, is held in high esteem by his patients and neighbours, and is a trusted and confidential friend in many families; but the profession as a body does not occupy a corresponding position. Medical advice, on subjects on which it should be decisive, is too commonly neglected both by the civil government and by local, so-called 'sanitary' authorities." Perhaps, it is remarked, the members of the medical profession are themselves to blame for the condition into which things have been suffered to drift, as the profession as a body has taken no pains to establish and defend its position, though it is assailed, not avowedly, but indirectly, from a great many quarters. "Sciolists masquerading as philosophers, smatterers too ignorant even to be aware of their ignorance, are constantly accustomed to deliver themselves in print of what they call their opinions on medical questions. No quack is too dense a blockhead or too gross a swindler to be petted and advertised by some fashionable lady."

The Reference to Chemists and Druggists, in the foregoing remarks, though perhaps not expressing the exact truth, is unfortunately to a great extent only too true. Leaving out of sight the question of the alleged "large profit," it is very evident to the man in the street that some druggists lend much support to a system of quack medicines and quack advertisements, which is conducted on lines of implied disparagement of doctors. And though medical men are quite capable of taking care of themselves in this matter, without the need of outside assistance, it does appear desirable to enter a protest against the manner in which many registered chemists prostitute their qualification in the interests of the makers of proprietary preparations recommended for medicinal use. For no milder term can fitly be applied to the practice which so widely prevails, of announcing in the windows of pharmacies that the proprietors are agents for the sale of this or that proprietary medicine. And when the article referred to in such notices is a secret preparation which some

advertising quack is impudently attempting to foist upon the British public, the lack of prudence and even of common decency displayed by the chemist can only fill one with wonder that such carelessness of self-interest should prevail.

Proprietary Medicinal Preparations are apparently a necessary evil of the drug trade, but there is no reason why chemists and druggists should make that evil worse. They ought studiously to refrain from exhibiting, recommending, or even mentioning, such preparations in their pharmacies, and it is a matter for serious consideration whether they ought not to cease to stock them. At any rate they should religiously keep them out of sight, and take advantage of any legitimate means that may be available for discouraging their sale. The mischief that has resulted from making a large number of British pharmacies agencies for pushing the sale of these abominations in the past is only too palpable to-day, and with the almost total loss of the profit accruing from an unclean branch of trade, there ought to be no difference of opinion amongst reasonable men of the undesirability of further encouraging that branch. The heroic attempts of the P.A.T.A. to preserve the final remnant of profit in that direction from slipping away is commendable in its way, and the pseudo-philanthropic efforts of Mr. Thomas Beecham and other proprietors are doubtless deserving of some slight degree of credit, but the only proper course now open to conscientious chemists who, for the present, feel unable entirely to cease to stock proprietary medicines, is to insist on all such preparations being sold at the face value fixed by the proprietors.

Mr. C. B. Allen, we are glad to note, agrees with us on that point, and his letter is commended to the attention of our readers. Profit on the sale of proprietaries must, sooner or later, come to be regarded as a thing of the past. In effect, it is that now in the case of a large number of chemists. If, then, there remains nothing to hope for in that direction, and if, at the same time, it appears impolitic for the moment to sever all connection with that branch of trade absolutely, it yet remains to chemists to retain the confidence of their customers by declining to sell proprietary articles except at a face value. As Mr. Allen suggests, reduce the existing face value if necessary, or raise the wholesale price, but whatever else is done, let all chemists who sell a given article ask the same price for it, and decline to sell it for less. They must come to regard this trade as an addition to their business which brings no direct return, but, as serving the public convenience, may be accompanied by some slight indirect return. Not that such an attitude is the one to be most warmly commended, for it must always occupy a secondary position to total abolition. Meanwhile, however, we must rest content with the best means available for the time being, and that would appear to be on the lines indicated by Mr. Allen.

The Hull Grocers' Association appears, curiously enough but not unnaturally perhaps, to be in full sympathy with one of its members who, having broken the law and been duly punished, is now employing his leisure time in whining like a schoolboy without sufficient spirit to take his whipping manfully. So far does the great heart of the Association beat at one with his own that, as we gather from the *Grocers' Journal*, the members have agreed to his proposal to condemn strongly the manner in which the Pharmaceutical Society carries out the law against grocers in regard to the sale of "patent" medicines containing minute quantities of poison. In a manner that is at once child-like and bland, these East Yorkshire Solons have expressed the opinion that the law prohibiting the sale of poisons was never intended to apply to "patent" medicines; and, more than that, they consider that to allow any but the Government or municipal authorities to levy any penalties on private traders is indefensible in practice and opposed to the spirit of justice, as it "enables a private society for its own benefit to harass and annoy traders and enrich themselves" (*sic*). Needless to say, the delegates of the Association on the General Purposes Committee (? of the Grocers' Federation) are to be instructed to bring the matter before that body. And now must the Pharmaceutical Council tremble.

The Case of Walter Percy Buck, on whose behalf votes are solicited to secure his election as an inmate of the Infant Orphan Asylum at Wanstead, is fully deserving of support, and all readers of the Journal are urged to do their utmost in the matter. The boy's father was a chemist at Haverhill, Suffolk, whose widow and seven children were left totally unprovided for at his death two years ago. No further recommendation of the case should be necessary.

Mr. Peter Lund Simmonds, whose death at the advanced age of eighty-three years is announced, was at one time well known as a writer on applied science, in addition to which he took an active part in the management of several international exhibitions. He was born at Aarhuus, Denmark, in 1814, but spent most of his life in this country. He was a very laborious and industrious worker, and wrote extensively about agriculture, food supplies, and commercial matters generally, his best-known book being on 'Waste Products and Undeveloped Substances.' Moreover, he was a not infrequent contributor to the pages of the *Pharmaceutical Journal*, and at one time proprietor and editor of the *Technologist* and of the *Journal of Applied Science*. According to the *Times*, Mr. Simmonds acted as superintendent of one of the departments of the British section of the Paris Exhibitions of 1867 and 1878, and manager of the British section at Amsterdam, 1869 and 1883, and at Antwerp, 1885. During the last years of his life he had been in reduced circumstances, and found a refuge among the brethren of the Charterhouse.

Manners Made in Germany appear to have been unduly prominent at the Moscow Medical Congress, according to a correspondent of the *Practitioner*. He says the Congress was overspread by hordes of Austro-Germans, who waited in rows outside the doors before any reception, and then made a football rush for the buffet, where they remained in rows six deep for the remainder of the evening, on the "J'y suis, j'y reste" principle, not stirring even to let a lady get an ice. "They were well organised. For months beforehand committees had been at work in Berlin and Vienna, the meetings being presided over by such men as Virchow and Politzer. Nor were these eminent persons mere figureheads. Professor Virchow, for instance, actually attended some thirty meetings of the Berlin Organising Committee. The Teuton, therefore, was very much in evidence in every part of the Congress, entirely owing to his own strategical forethought and disciplined 'pushfulness.'" It is stated that nearly every German professor whose name is known outside his own lecture-room was present at the Congress, and, like the old Highland chiefs when they went forth in state, each leader of German medicine came to Moscow "with his tail on," each one bringing with him a posse of admiring and dutiful retainers who acted as a "claque." The French—of whom there were little more than two hundred present, with only some half-dozen men of note among them—were simply swallowed up in the whirlpool of triumphant Teutonism. The Germans, in fact, treated the whole affair as a family gathering, and the Franco-Russian

"alliance" seemed to count for nothing as far as the Congress was concerned. The British contingent was even smaller than the French, but the Russians are described as having been more willing to go out of their way to do something for the former than for the Germans. Finally, it is stated that the refreshments were on a most lavish scale—free luncheons every day, a feature which the *Practitioner's* correspondent says appeared to be particularly appreciated by our German friends.

Pharmacy in California does not appear to be in a desirable condition, to judge from the remarks of a correspondent residing in San Francisco, who supplies a very pessimistic review of the state of the retail trade in that go-ahead city. Cutting of prices is described as being the order of the day; in fact, the place is represented as being the worst in that respect ever met with in a large experience. Even first-class pharmacies retail many proprietary preparations at cost, and altogether the outlook does not appear encouraging in the capital of California.

Acetylene Gas is the subject of an official notice sent out by the Home Office, the contents of which are deserving of attention on the part of our readers, many of whom are doubtless in the habit of making and using the gas. It appears that the Explosives Department of the Home Office has had under consideration the question of the restrictions to be applied to the manufacture and keeping of acetylene gas, and has conducted various experiments with the object of gaining information on this matter. The results are said to show conclusively that acetylene gas *per se* is violently explosive when under a pressure of something less than two atmospheres, whereas at a pressure of less than an atmosphere and a half it appears to be reasonably free from liability to explosion provided it is not admixed with oxygen or atmospheric air. It is considered sufficient for commercial and practical purposes to allow a pressure of twenty inches of water above that of the atmosphere, or, roughly, about one and one-twentieth atmospheres. Accordingly, it is proposed to draw the safety line at that point, and to declare acetylene to be an "explosive" within the meaning of the Explosives Act, 1875, when subject to a higher pressure. In France and Germany the authorities have fixed the limit of danger at one and a half and one and one-tenth atmospheres respectively, and they have also imposed prohibitions or restrictions on the keeping or manufacture of the gas when it is at a higher pressure.

A Handsome Series of Gifts is reported as having fallen to the share of Owens College, Manchester. At the half-yearly meeting of the Court of Governors of Owens College, held at Manchester this week, it was announced that Mr. R. C. Christie, who has already been one of the most generous benefactors of the College, has offered to the College a sum of fifty thousand pounds —being a third of the balance of the estate of the late Sir Joseph Whitworth, which was at Mr. Christie's disposal as one of the three residuary legatees—and expressed a wish that the sum may be used for the erection of a College Hall. The chairman also announced that two anonymous friends of the College have offered a sum of ten thousand pounds for the erection of suitable buildings for the physical laboratory of the College, and a further sum of five thousand towards its maintenance. The third gift announced emanates from Mr. Edward Holt, a member of the Manchester City Council, who has given fifteen hundred pounds towards the cost of the newly-erected gymnasium of the College. Fortunate Manchester, and sensible citizens who realise in such a satisfactory manner how to dispose of their surplus money to advantage!

MEDICAL JOTTINGS.

The General Medical Council.—As indicated last week, the probability is that either Sir Walter Foster or Mr. Victor Horsley will be elected to occupy the seat on the Medical Council which was so unexpectedly vacated by Dr. Rentoul. The *British Medical Journal*, whilst paying a tribute to Mr. Horsley's brilliant reputation as a surgeon, and acknowledging his high position in the scientific world, attained at a comparatively early age, as well as his valuable work as Chairman of the Medical Defence Union, yet definitely supports the candidature of Sir W. Foster, on account of his previous experience during his ten years' tenure of a seat at the Council, and the services he rendered the profession then and whilst Parliamentary Secretary to the Local Government Board during the last Liberal administration. The *Lancet*, on the other hand, thinks that Mr. Horsley has greater claims on the electors, as at the last election he stood aside in favour of candidates who were actually general practitioners, and on this occasion he entered the field in ignorance that Sir W. Foster would offer himself for election.

Sir Walter Foster had an awkward quarter of an hour at a meeting in support of his candidature held last week at the rooms of the Medical Society in Chandos Street. The "previous question" was moved with the view of superseding a resolution of confidence in Sir Walter, and Dr. Bateman brought under the notice of the meeting a pamphlet entitled the "Young Man," containing an account of an interview with the candidate. On the front page was his portrait in his consulting-room, then followed the hours when he could be consulted, also a copy of a post-card from Mr. Gladstone eulogising Sir Walter's powers of diagnosis in regard to Lord Randolph Churchill, and the "foresight and insight" shown in regard to his case. In the same publication were advertisements of two doctors whose names had been struck off the Medical Register for advertising at the time when Sir Walter occupied a seat at the Council. The candidate, when replying, said he had the misfortune to be a public man as well as a doctor, and that at the time he gave the information to the interviewer he did not know that any medical details would creep into the report. He had done all in his power to stop any further circulation of the pamphlet when his attention was drawn to it. A resolution in his support was carried by a large majority; but, according to the *Lancet*, many who were present abstained from voting.

Advertising by Medical Men in lay journals has been the subject of a somewhat amusing controversy between Dr. Campbell Black, of Glasgow, and the Editor of the *Medical Press*. Some few years back it was customary for medical publishers to insert whole column advertisements of their books in the *Times* and other papers, but owing to pressure on the part of one of the medical organs this was discontinued, much to the annoyance of many authors who hitherto had what they considered perfectly legitimate means of bringing themselves into prominence through their publications. Some medical authors, however, at the present time are less trammelled by tradition than others, and amongst them is Dr. Campbell Black, who contends that "the struggling young man" has a perfect right to write a book and bring it under the notice of the "educated community" in any honourable and honest manner which seems good to him. The *Medical Press* demurs to this, but Dr. Black asks the Editor to explain how it is that the annual students' number of that periodical is distributed to public institutions, clubs and large hotels. Dr. Black asks that if his advertisement in that publication is thus brought under the notice of educated laymen, wherein can it be wrong for him to do the same thing through his advertisement appearing in the lay press?

The Sale of the Medical Library belonging to the late Sir Morell Mackenzie takes place on Friday this week at Messrs. Hodgson's rooms in Chancery Lane. It comprises a large number of English and foreign works on diseases of the throat, nose, and ear, and standard books on medicine and surgery, sets of hospital reports and medical periodicals.

St. Mary's Hospital, Paddington, which has been closed for two months for extensive repairs, has been re-opened for the reception of patients. The out-patients' department resumed work last Monday.

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 312.)

Reuter (Amidophenetol in Phenacetin).—On melting phenacetin with pure chloral hydrate a violet colour appears if *p*-amidophenetol be present; otherwise a slight rose tint will be produced.

Reynolds (Acetone in Urine).—Shake the distillate from urine with freshly precipitated mercuric oxide; if acetone be present acetone-mercury will be formed and the filtrate will respond to tests for mercury.

Reynoso (Iodine).—Heat a mixture of barium peroxide, water, starch paste, and hydrochloric acid until gas begins to come off, then add the liquid. A blue colour will result if the latter contains iodine.

Rheoch (Free Mineral Acids).—See Mohr's test.

Rhien (Fixed Oils in Essential Oils).—Pass steam through the oil till it distils over, and shake the residue with ether, which will take up fatty matter.

Rice (Carbolic Acid).—Place 10 Gm. of potassium chlorate in a test tube, cover with an inch layer of hydrochloric acid, and add 1⅓ volume of water. After removing most of the gas evolved, by blowing through a glass tube, pour ammonia cautiously on the surface of the mixture, and then a few drops of the suspected liquid. In the presence of carbolic acid the ammoniacal layer will be coloured brown to rose-red.

Richardson (Naphthol).—Dissolve 0·04 Gm. of naphthol, and 0·5 C.c. of normal sodium hydroxide solution in 1 or 2 C c. of water, then add 0·05 Gm. of sulphanilic acid dissolved in 5 C.c. of normal sodium hydroxide solution, and 0·02 Gm. of sodium nitrite dissolved in 5 C.c. of normal sulphuric acid. Under those conditions *α*-naphthol gives a dark blood-red colour, changing to brown upon adding dilute sulphuric acid, whilst *β*-naphthol produces a reddish-yellow colour.

Riche and **Bardy** (Methyl Alcohol in Spirit).—Mix 10 C.c. of the sample 15 Gm. iodine and 2 Gm. amorphous phosphorus, and distil the iodides into 30 C.c. water. Separate and mix with 5 C.c. of aniline, kept cool in a flask, after an hour add water and excess of sodium hydrate solution and boil. Take 1 C.c. of the oily layer which rises to the surface and mix with 10 Gm. of a mixture of clean sand, 100 parts; salt, 2 parts; copper nitrate, 3 parts; heat in a glass tube to 90° C. for 8 hours, then exhaust with warm alcohol, filter, and make up to 100 C.c. with more alcohol. If no methyl alcohol is present the colour is red, but if a trace of methyl alcohol is there the tint will be more or less violet, and will give a standard colour to a skein of white wool.

Richmont (Nitric Acid).—Mix the solution to be tested with concentrated sulphuric acid and, when cool, pour on the top a layer of concentrated ferrous sulphate solution. The presence of nitric acid is indicated by a reddish colour changing to purple and brown. Also called Desbassin's reaction.

Rideal (Antimony, Arsenic, and Tin).—These elements in minute quantities are detected by means of electrolytic couples of platinum iron, copper platinum, and zinc gold. See *Chemical News*, 51, 292.

Rideal (Hydrolysis of Butter Fat).—Heat the melted butter-fat with sulphuric acid, and then after destroying the sulphurous acid formed by permanganate, distil off the volatile fatty acids, which are titrated as in the Reichert-Meissl process of butter analysis. (See *Analyst*, xviii., 165).

Rideal and **Green** (Nitrous Acid).—This is a volumetric method based upon the diazo reaction with aniline. Determinations of nitrous acid with less than 0·1 per cent. error can be made even in presence of reducing agents when permanganate is obviously inadmissible. See *Chemical News*, 49, 173.

Rideal and **Rosenblum** (Compounds of Chromium).—This is a method based upon fusion with sodium peroxide, and gives the precautions and details necessary in order to ensure accurate results. (See *Journ. Soc. Chem. Ind.*, 1896, p. 1017).

Rideal and **Stewart** (Total Proteids).—By precipitating an aqueous solution of a meat extract by chlorine, a precipitate of constant composition is obtained, which can be dried over sulphuric acid or kjeldahled. (See *Analyst*, Aug., 1897).

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

Riegler (Albumins).—Asaprol (calcium naphthol-sulphonate) precipitates albumins, albumoses, peptone, and pepsin in acid solutions, but only the three last-named compounds yield precipitates which dissolve upon warming.

Righini (Myrrh).—Pure myrrh is dissolved by a solution of an equal weight of ammonium chloride in 15 times as much water.

Riley (Chlorine).—Mix 1 part of the suspected substance, 1 part of potassium bichromate, and 3 parts of sulphuric acid in a beaker glass, and within this suspend a smaller beaker containing ice. Chlorochromic acid is given off and condenses on the suspended beaker. On adding to the liquid a few drops of ammonia with an excess of acetic acid, and some solution of lead subacetate, a yellow to orange colour results.

Rinnmann (Zinc).—A green colour results when zinc oxide is moistened with solution of cobaltous nitrate and strongly heated on charcoal.

Ripart (Mounting Medium).—Mix 75 parts each of camphor water and distilled water, 1 part of glacial acetic acid, 0·3 part of cupric acetate, and 0·3 part of cupric chloride.

Ripart-Petit (Preservative Fluid).—Mix 75 Gm. each of camphor water (not saturated) and distilled water, 1 Gm. of glacial acetic acid, and 0·30 Gm. each of copper acetate and chloride. Objects fixed in this stain instantaneously with methyl green. Osmic acid or mercuric chloride may be added to increase the fixing action.

Ritsert (Glycerin).—No change should occur within 5 minutes on heating to boiling 1 C.c. of glycerin with 1 C.c. of ammonia water, then adding 3 drops of a 5 per cent. solution of silver nitrate. This test was intended to detect the presence of arsenous oxide, acroleïn, or formic acid, but it seems doubtful if it will suffice for that purpose.

Ritsert (Phenacetine).—On boiling 0·1 Gm. of phenacetine with 1 C.c. of concentrated hydrochloric acid for 1 minute, then diluting with 10 C.c. of water, and filtering after cooling, the liquid gradually assumes a ruby-red colour on adding 3 drops of 3 per cent. chromic acid solution.

Ritsert (Sulphonal).—The odour of mercaptan is given off on heating sulphonal with gallic or pyrogallic acid.

Ritthausen (Protein).—A violet colour is produced on dissolving protein in dilute sulphuric acid, adding excess of potash solution, and then a few drops of saturated solution of copper sulphate.

Robert (Albumin in Urine).—A white zone appears if albumin be present on pouring a layer of urine upon concentrated solution of sodium chloride in 5 per cent. hydrochloric acid.

Robin (Alkaloids).—On mixing 1 part of the material with 2 parts of cane sugar, adding 1 or 2 drops of pure sulphuric acid, and stirring with a glass rod, the following colours are produced:—Violet, changing to brown (atropine sulphate); cherry-red, changing to violet (codeine); rose, rapidly changing to violet (morphine hydrochloride); mahogany colour, persistent (narcotine); greenish, bright yellow, changing to dark coffee colour with yellow margin (quinine sulphate); bright red (salicin); reddish, changing to dark coffee colour (strychnine); dark green (veratrine).

Robinet (Morphine).—A rapidly disappearing blue colour is produced on treating a neutral solution of a morphine salt with dilute ferric chloride solution containing some oxychloride.

Robins (Gelatin Masses).—Soak 1 part of "colle de Paris" gelatin in 7 to 10 parts of water, and combine with one of the following colouring masses:—(1). Carmine colouring mass Rub 3 Gm. of carmine with a little water and enough ammonia to dissolve it, then add 50 Gm. of glycerin and filter. Next add by degrees a mixture of 5 Gm. of acetic acid and 45 Gm. of glycerin until a slightly acid reaction is obtained. Add 1 part of this mixture to 3 or 4 parts of the gelatin vehicle. (2). Copper ferrocyanide colouring mass. Mix 20 C.c. of concentrated solution of potassium ferrocyanide and 50 C.c. of glycerin and add slowly, with agitation, to a mixture of 35 C.c. of concentrated copper sulphate solution and 50 C.c. of glycerin. At the moment of injecting combine with 3 volumes of vehicle. (3). This is a modification of Beale's Prussian blue glycerin mass. Add to 50 C.c. of glycerin 90 C.c. of saturated solution of potassium sulphocyanide, and to a similar quantity of glycerin add 3 C.c. of solution of ferric chloride. Mix the two solutions, add a few drops of hydrochloric acid, and combine with 3 volumes of vehicle. (4) Cadmium colouring mass. Dilute 40 C.c. of saturated solution of

cadmium sulphate with 50 C.c. of glycerin and add a mixture of 30 C.c. of saturated solution of sodium sulphide with 50 C.c. of glycerin. Then combine with 3 volumes of vehicle. (5) Scheele's green colouring mass. Mix 80 C.c. of saturated solution of potassium arseniate and 50 C.c. of glycerin, then add 40 C.c. of saturated solution of copper sulphate mixed with a similar quantity of glycerin, and combine with 3 volumes of vehicle.

Robinski (Silver Staining Method).—Allow 0·1 to 0·2 per cent. solutions of silver nitrate to act on objects to be stained for 30 seconds.

Roch (Albumin in Urine).—A precipitate is yielded with salicyl-sulphonic acid solution.

Rochleder (Caffeine).—On heating with hydrochloric acid and potassium chlorate (or with freshly-made chlorine water) and evaporating gently, caffeine produces a yellowish-red colour, which changes to violet on the addition of ammonia.

Rollett (Freezing Process).—Small portions of tissue are placed on the stage of a freezing microtome, after immersion in the white of a freshly laid egg, then frozen and cut with a well cooled knife.

Romei (Fuchsine in Fruit Syrups).—Fruit syrup coloured with fuchsine yields that colour to fusel oil when shaken with it.

Romei (Water in Ether).—Well-dried potassium carbonate is insoluble in pure ether, but forms a dense solution in any water present.

Roosevelt (Iron Pyrogallate Stain).—Mix 20 drops of saturated solution of ferrous sulphate, 30 Gm. of water, and 15 to 20 drops of saturated solution of pyrogallic acid.

Rose (Biuret Reaction for Albumins).—The albumin solution is rendered alkaline with soda lye and a dilute copper sulphate solution (17 or 18 Gm. in 1 litre of water) added drop by drop, with constant shaking. The solution first becomes rose-red, then violet, and finally blue, the last appearing reddish when compared with normal copper sulphate solution. Compare Brücke's biuret reaction and Posner's reaction.

Rosenbach (Biliary Colouring Matter).—On carefully adding to the urine a few drops of 5 per cent. chromic acid solution, a green colour is produced, which changes to brown on adding more of the reagent. In Rosenbach's modification of Gmelin's test, on filtering the urine and letting a drop of nitric acid run down the side of the moist filter, a yellow to violet and green colour results.

Rosenstiehl (Aniline). See Runge's aniline reactions.

Rosenstiehl (Paratolindine).—On adding nitric acid to a solution of paratolindine in sulphuric acid, the latter becomes bluish-violet, then red and brown.

Rosin (Biliary Colouring Matter).—In the presence of biliary pigments, a green ring forms on pouring a layer of a few cubic centimetres of dilute iodine solution upon the urine.

Ross (Phosphoric Acid).—On dissolving a phosphate in a borax bead, and adding sodium tungstate, the bead becomes blue in the reducing flame.

Rossbach (Poisonous Alkaloids).—The action of the alkaloids upon infusoria is tested, and the degree of dilution estimated from the intensity of the action.

Roth (Fixed Oils).—Sulphuric acid (sp. gr. 1·4), saturated with nitrous fumes is mixed with the olive or other oil to be tested, and the colour and solidifying point noted. Compare Poutet's elaidin reaction.

Rouget (Methylene Blue Method).—Modify Dogiel's procedure by employing for muscles of Batrachia a 0·5 per cent. solution of methylene blue in 0·6 per cent. salt solution.

Rouget (Silver Staining).—Expose tissues repeatedly to the action of weak silver nitrate solutions (1 in 750 or 1000), and wash with water after each bath. Reduce in glycerin.

Rousselet (Preservation of Rotifers).—Place water containing the Rotifers in a watch-glass, and add at intervals a few drops of a mixture containing 3 parts of 2 per cent. cocaine hydrochloride solution, 1 part of methylated spirit, and 6 parts of water. When the cilia cease to beat, add a drop of Flemming's liquid or of 0·25 per cent. osmic acid solution, and after that has acted for not more than half a minute, remove the Rotifers with a pipette, and wash them by passing 2 or 3 times through distilled water contained in watch-glasses. Finally, mount in a mixture of 2·5 parts of formalin, and 37·5 parts of distilled water.

Roussin (Crystals).—Ruby coloured crystals, reflecting dark blue, separate gradually from the oily mass obtained on mixing solutions of nicotine and iodine in ether.

Royère, De la (Fixed Oils).—A red coloration is produced on treating a few drops of the oil with 2 drops of fuchsine solution, to which just enough alkali has been added to decolorise it. The coloration is produced by the free acids contained in the oils, and according to Halpher the value of the test is limited by the fact that mineral oils may also contain acids. The acids in oils used as lubricators may also be neutralised by alkaline soaps, though the presence of the latter can be easily detected by the red colour produced on adding a solution of congo red just coloured violet by hydrochloric acid.

Rubner (Glucose and Milk Sugar).—A red precipitate results on adding lead acetate and ammonia, then warming the solution.

Rümpler (Free Acids in Fixed Oils).—An emulsion is formed on shaking the oil with a solution of chemically pure sodium carbonate. Caustic soda must be absent.

Runge (Aniline).—(1) Chlorinated lime solution gives a purple-red colour, which changes to rose-red on adding acids. In Rosenstiehl's modification of this test ether is added after adding the chlorinated lime solution. This takes up the brown product formed with impure aniline, and leaves the solution blue. (2) A pine shaving moistened with a dilute solution of aniline hydrochloride or other salt is coloured yellow.

Runge (Cane Sugar).—On adding dilute sulphuric acid and concentrating, blackening is caused.

Runge (Carbolic Acid).—A pine shaving moistened with hydrochloric acid is coloured blue by carbolic acid.

Rust (Carbolic Acid and Creosote).—Collodion forms a jelly with carbolic acid, but not with creosote.

Ryder (Double Imbedding Process).—After the celloidin bath, soak objects in chloroform, then remove into a mixture of chloroform and paraffin, heated to not more than 40° C., and finally into a bath of pure paraffin.

(*To be continued.*)

PHARMACEUTICAL SOCIETY.

EXAMINATIONS IN LONDON.

October, 1897.

MAJOR EXAMINATION.

Candidates examined	12
,, failed	7
,, passed	5

Allen, Samuel Joseph.
Bell, Arthur Henry.
Davies, Percy.
Kerruish, Thomas Maltby.
Thompson, Sidney Cooke.

EXAMINATIONS IN EDINBURGH.

October, 1897.

MINOR EXAMINATION.

Candidates examined	117
,, failed	81
,, passed	36

Barron, Thomas.
Beattie, Edward.
Bell, James Thomas.
Bettis, William Henry.
Blackburn, Albert Edward.
Bowker, James Skinner.
Castlelow, Walter Thomas.
Cathro, Thomas Gorrie.
Cook, William.
Corder, Herbert Scott.
Crockart, William.
Davidson, George Graham.
Davidson, George Hutchison.
Docker, James.
Duncanson, James.
Ferrier, James.
Gray, James Goodman Miller.
McAdam, Alexander Milne.
McEwen, William.
McQueen, Sween Duncan.
Maloney, James Patrick.
Meldrum, Martin.
Newall, Joseph.
Nicolson, Albert.
Peterkin, Henry.
Porteus, James Paul.
Profit, Thomas.
Robertson, Alexander.
Sutherland, John Young.
Taylor, Archibald.
Topping, Walter.
Turnbull, Charles Stevenson.
Walmsley, Joe.
Wandless, William Hood.
Wheeldon, Richard Harold.
Whitworth, Wilson.

PROCEEDINGS UNDER THE PHARMACY ACT.

PROSECUTION BY THE TREASURY.

On Monday last Joseph Wallace, of 4, Albany Terrace, Regent's Park, appeared before Mr. Lushington, at the Bow Street Police Court, in answer to four summonses taken out by the Treasury, charging him with selling a poisonous drug without labelling the article as "poison," and without entering the sale in a book.

Mr. Bodkin said in this case he appeared for the prosecution, which had been undertaken by the Treasury, and in the first place he would remind His Worship of the language of the section of the Pharmacy Act, under which the prosecution was instituted. Section 17 of the Pharmacy Act, 1868, made it an offence for any vendor of an article containing a poison in the first part of the Schedule to sell the same to a person unknown to the vendor, or without labelling it with the name and the word "poison," or without making the prescribed entry in a book for that purpose. In June of the present year Mr. Partridge, the informant, went to the defendant's premises, and there purchased a bottle of what was described as Wallace's Specific No. 1. That bottle had no label of any sort or kind. Mr. Partridge was unknown to the person who sold him the bottle in question; the nature of the contents was not described in any way, nor was the word "poison" upon it. The bottle was afterwards taken to Dr. Luff, who made a careful and exhaustive analysis of it, and he found that the mixture was very similar to that which was found in the previous case, but the percentage of aconitine, which was an active alkaloid poison, was somewhat higher than in the former case, there being 1/23rd of a grain of aconitine. Aconitine was a very dangerous poison, and even 1/23rd of a grain in one liquid ounce would, under certain circumstances, cause danger to the person taking it. If he proved that the defendant had caused this poison to be sold without taking the proper precautions under Section 17, he should submit that the offence had been clearly made out.

John Partridge gave evidence that in consequence of information received he went to the defendant's premises on Friday, June 11, and there saw a female, from whom he received a bottle of Wallace's No. 1 Specific. The bottle had an Inland Revenue stamp over the cork. Having paid 2*s.* 9*d.* for the bottle he took it away. He knew nothing personally of Mr. Wallace or the person who served him. He was not asked to give his name or address, and nothing was written in the book. The word "poison" was not upon the bottle. On July 2, he took the bottle in the same condition as that in which he had purchased it to Dr. Luff. After receiving Dr. Luff's report upon the contents, the summons was applied for.

Detective-Sergeant Francis Boswell, S Division, deposed that on November 16 last he went to the defendant's residence and asked him if he was the proprietor of Wallace's specific. Defendant said he was the proprietor and maker. In witness's presence Mr. Wallace swallowed the contents of one of the bottles, and seemed none the worse for it. He was instructed by the Treasury to call at defendant's house, as they had received a communication from Mr. Wallace, asking that someone connected with the prosecution should call and seal up the bottles. Mr. Wallace said that the Specific No. 1 was a patent medicine, and that the effect of the poison in it was counteracted.

Dr. Arthur P. Luff, Official Analyst to the Home Office, stated that on July 2 he received from John Partridge the bottle which had been produced. When he received the bottle the Revenue stamp was intact. He saw no reference anywhere on the bottle to the substance aconitine, nor any poison label. The bottle contained a fluid ounce of liquid, which smelt and tasted to some extent of either whisky or brandy. It was rather difficult to say whether the spirit was an inferior whisky or superior brandy. He had made a detailed analysis of the contents of the bottle, and found 1/23rd of a grain of aconitine, which was a known alkaloid poison that was extracted from the root of the monk's-hood plant, or aconite. This was a very powerful poison, in fact, the most powerful known. Tincture of aconite, B.P., was a well-known preparation, containing 1/25th grain of aconitine. This was its standard strength. The aconitine found in the bottle was slightly stronger. The smallest fatal dose of tincture of aconitine, British Pharmacopœia, would be 1/8th part of an ounce. The quantity found in the bottle he analysed might be fatal to a person suffering from a weak heart. Aconitine had a very peculiar sensation to the taste, it tingled the tongue and was followed by numbness. The poison was so powerful that even the 2000th part of a grain would be sufficient to cause the feeling. Witness placed a drop of the diluted solution on his tongue and it produced the sensation he had described. Unfortunately there was no chemical test for this poison, and therefore in connection with testing it, he had experimented upon mice, having injected the 500th. part of a grain into a mouse. At the same time he injected a similar quantity of ordinary aconitine which he purchased into another mouse of the same weight and of the same species. Both the mice died at the end of eighteen minutes, with precisely the same symptoms, namely, those of aconitine. Coupling the sensation in the mouth with the experiment upon the mice, he had no doubt whatever that the poison in the bottle which he analysed was aconitine. The poison had a depressing effect upon the heart; while digitalis, which was the best antidote to aconitine, had an exciting influence on the heart. He had not specifically tested the contents of the bottle for digitalis. There was no chemical test which in witness's opinion could be relied upon for detecting aconitine. All the authorities recognised that physiological test was the only one that could be relied upon, namely, experiments upon mice and the tongue. He was aware that Professor Dunstan had published a test for aconitine, but subsequent experience had shown that that test was not reliable for a minute quantity, though it was for a large quantity. He had experimented with that test on many occasions. He had no doubt whatever, from his analysis of the bottle in question, that it contained a preparation of the plant known as aconite. Further, he had no doubt that what he found in the residuum was aconitine.

Mr. Schultess-Young said it was not for him to say whether the defendant's patients regarded him with the greatest admiration or not, or whether the Act of Parliament was intended to be levelled against persons of education like Mr. Wallace, who had been able to do good to a large number of persons, but he had to deal with the case and to take certain technical objections, which he would at once proceed to do. If the 16th Section of the Act was to be regarded as operative, it entirely destroyed the case for the prosecution. That section provided that "nothing hereinbefore contained should extend to or interfere with the business of any legally qualified apothecary or of any member of the Royal College of Veterinary Surgeons of Great Britain, or with the making or dealing in patent medicines." Section 2 provided that "The several articles named or described in Schedule A shall be deemed to be poisons within the meaning of this Act"; and the Schedule contained "Aconite and its preparations." There had been no attempt to prove that Mr. Wallace sold or authorised the sale of the bottle in question. Section 17 provided that "Any person otherwise than is hereinbefore provided shall, upon a summary conviction before two Justices of the Peace in England or the Sheriff in Scotland, be liable to a penalty not exceeding five pounds for the first offence, and to a penalty not exceeding ten pounds for the second or any subsequent offence, and for the purposes of this section the person on whose behalf any sale is made by any apprentice or servant shall be deemed to be the seller." There was no attempt to prove that the bottle sold to Mr. Partridge was sold either by an apprentice or servant, or that the defendant could be held to be liable for the sale in question. It had been decided that an apprentice was a "person" within the meaning of the section, but no conviction had ever taken place where the person was not an apprentice or servant.

Mr. Bodkin said if there was anything in the point raised by his friend it would be unnecessary to pursue the inquiry further, and therefore he would at once answer them. Both the points taken by his friend involved a fallacy. The Act from Section 1 to Section 16 dealt with the position of chemists and druggists who did not pass through certain qualifications in Section 15. Section 16 provided that nothing hereinbefore contained should interfere with the business of a dealer in patent medicines, and Section 17 commenced with a declaration. That Section distinctly provided that aconite, or its preparations, was a poison which it was unlawful to sell. Section 16 had really nothing to do with Section 17. With regard to the next point, namely that of agency, he would merely refer to the evidence given by Boswell, who stated that the defendant admitted he was the proprietor of the medicine. To suggest that a sale by an independent agent would not bind the actual vendor would be to defeat the object of the Section.

The Magistrate said he was not prepared to hold that an apprentice or servant was not an agent.

Mr. Schultess-Young said he was instructed not to press the technical points too far, but he did think, upon the question of agency, that if Mr. Wallace sold through an agent, and that agent was not an apprentice or servant, that the agent was the proper person to be brought before the Court.

The Magistrate said he could not read the section in that way.

Mr. Schultess-Young said the real point at issue was whether the bottle sold to Mr. Partridge contained an appreciable quantity of poison, and upon that he would rest his defence. He thought it was extremely unfair that a person should go to Mr. Wallace's house and buy a single bottle, which he kept for an indefinite time and then make that bottle the subject of the present charge; so that the defendant was unable to have an independent analysis made. He should be able to prove by independent testimony that the bottles sealed up by Boswell were all taken from the common stock, and he should call Dr. Winter-Blyth and Mr. Cuppock, of Leicester, to prove that they did not contain poisonous mixture. Evidence had already been given that Mr. Wallace drank the contents of a whole bottle, and did not seem to be any the worse for it. He should show that persons had taken the contents of a bottle, and if he did this he thought it would go a long way towards disproving the case. The analysts whom he should call would prove that they had prepared the mixture according to the specification, and found that the directions there given did actually result in the entire destruction of any poisonous element, and gave rise to a positively harmless and inert mixture. Mr. Wallace, who possessed a most valuable preparation, was entitled to deal with it if he did not infringe the provisions of the Act. These were practically the points upon which he should base his case. He submitted that Dr. Luff was in the wrong in saying that it was a deadly compound. The matter was one which was to be tested by physiological results. Experiments on mice were all very well in their way, but the Act was not intended to protect mice, but men. If there was no true analysis of aconitine—no true chemical test of it—then he quite coincided with Dr. Luff in saying that you could not better tell whether a certain thing was a poisonous compound or not than by giving a whole bottle to a number of persons. These persons he should call, and he should also call the lady secretary of Mrs. Wallace, who had the entire control of the stock, who would state that the bottles were all taken from one common stock, and that there was not the slightest difference between one and the other. The point on which he strongly relied was that the compound made according to the specification was a similar and identical compound to that which was in the bottle analysed by Dr. Luff.

The Magistrate: So the only thing he had to deal with was the sale of the bottle to Partridge, the contents of which had been analysed by Dr. Luff.

Mr. Schultess-Young said he was in the awkward position of not being able to get any portion of the contents of that bottle.

The Magistrate said he could not go into evidence as to the contents of other bottles.

Mr. Bodkin asked whether his friend disputed the analysis of Dr. Luff?

Mr. Schultess-Young said he certainly did. He could prove that when the preparation was made according to the specification the analysis of the compound would agree with the analysis which had been made by Dr. Winter-Blyth. He should contend that Dr. Luff had made a mistake in his analysis. It was a remarkable circumstance that the Pharmaceutical Society, who always opposed the grant of patents which contained any scheduled poison, should not have opposed the granting of this particular patent.

The Magistrate said he had nothing to do with that point.

Mr. Schultess-Young said strictly he had not, but the fact must not be overlooked that the Patent Office had granted the patent, and that the Pharmaceutical Society had not objected.

The Magistrate having stated that it would be impossible to finish the case that day,

Mr. Schultess-Young suggested that during the adjournment two of the bottles which had been sealed up should be analysed, one by Dr. Luff, and the other by Dr. Winter-Blyth, and in the event of there being any discrepancy that the defendant should have the benefit of the doubt.

Mr. Bodkin objected to that course being taken, and

The Magistrate, in adjourning the case *sine die*, suggested that Dr. Luff in the interim should prepare the compound according to the directions given in the defendant's specification, and analyse the contents.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Advertisements and Orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

Articles and Reports sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

Correspondents should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for Illustrations should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Queries addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

Reprints of Articles cannot be supplied unless authors communicate with the Editor before publication of the articles. The right to reproduce all original matter and illustrations published in the Journal is strictly reserved.

LETTERS TO THE EDITOR.

The Anti-Cutting Movement.

Sir,—The letter which appeared in your last issue, bearing the signature of Thos. Beecham, must have been read by a considerable number of retail chemists throughout the kingdom, and I have no doubt that a large section of them will heartily agree with the comment you have made upon it. When an advertiser, so widely known as Mr. Beecham is, submits his views to the Press upon the much-discussed question of cutting prices, it has to me, quite apart from any participation I may have in the distribution of his commodity, a very curious interest, for I am not yet able to understand the disposition which leads the advertising proprietor as a general rule to accept as a fact the principle that some departure from face value is necessary. Mr. Beecham, as is well known, has spent a colossal sum in bold and persistent advertisement. He has practically coined a phrase which, in its relation to the value of his property, has become almost a household axiom, so that it seems strange to find him commending for their common sense a body of men who are doing all they can to reduce the value of his proprietary, in public estimation, to the lowest possible margin over the first cost; whilst he also offers to use his influence in endeavouring to bring about a like result whenever his aid is sought for that purpose, and submits a form of agreement which he considers will suffice to secure both profit and unanimity. In considering this and similar schemes, my contention is that every proprietor who has created his business by advertisement is actually damaging the value of his property when he assents to any scheme which has for its object the retailing of his proprietaries at less than their face value, and Mr. Beecham must excuse me when I say that I can see no common sense in the arrangements which he is prepared to foster and endorse. If Mr. Beecham believes that a larger sale is secured for his specialty by retailing it at 10½*d.*, then he should forthwith lower the face value to 10½*d.*, keeping his wholesale terms where they are now, or better still, he might advance his wholesale prices as nearly as possible to 1*s.* 1½*d.*, and use his increased return for still further advertisement. In dealing with proprietaries from the manufacturer's standpoint, no other policy than this appears to be a logical one.

Kilburn, October 6, 1897. Charles B. Allen.

Sir,—The importance of Mr. Beecham's letter published in your last week's issue cannot be over-estimated. It is a public utterance on the vexed question of cutting by one of the largest adver-

tisers in the world. Undoubtedly Mr. Beecham's action is an attempt to regulate retail selling prices. The proprietor of, in all probability, the most largely advertised medicine in the world is prepared to admit that cutting interferes with the sales of his article, for we are sure Mr. Beecham has no wish that we should recognise in what he has done at Southampton anything but a desire for the mutual benefit of himself and the traders of that town. Personally, I appreciate very highly what I believe to be an honest attempt on the part of Mr. Beecham to do something in the right direction. His action contrasts most favourably with the stoical indifference of American proprietors, who come over here expecting to monopolise the benefits of looking after pale people, or attending to disordered livers. I have little hesitation in taking for the P.A.T.A. its fair share of the credit for the decided action taken by Mr. Beecham against cutting. Having admitted so much, it will be seen that it is in no spirit of antagonism that I point out the following facts. Mr. Beecham offers to send agreements, with the minimum selling prices of his articles ready printed for signature by rival traders in various districts, and offers to go out of his way to coax the refractory ones. I quote the prices printed by Mr. Beecham:—

Advertised prices	9½d.	13½d.	2s. 9d.
Minimum selling prices	7½d.	10½d.	2s. 3d.
Wholesale prices as quoted from prominent lists	7s. 6d.	10s.	27s. 6d.
Mr. Beecham's prices for £5 lots, cash with order, carriage forward	7s.	9s. 6d.	25s. 6d.

The outcome of Mr. Beecham's kindly meant interposition is that the Southampton chemists who purchase through the wholesale houses agree not to sell the smallest size below what they pay for them, nor to part with the large size below 6*d.* per dozen less than they pay for them. In addition to this loss, they have to pay carriage. To the others who buy direct in £5 lots a profit of something under 10 per cent. is secured, the carriage coming out of that 10 per cent. The above figures provide the most eloquent argument which could possibly be used in proving the necessity for the P.A.T.A. Mr. Beecham's calculation showing on a quick turnover 100 per cent. per annum leaves out of consideration entirely the cost of even this quick turnover. If the goods were distributed by a slot machine, something would have to come off even then for working expenses, if it was only a yearly coat of paint for the machine. We do not think that Mr. Beecham would expect that chemists should exempt his goods from bearing their proper quota of the working expenses of the establishment, and there can be no doubt that even the £5 buyers under Mr. Beecham's arrangements at Southampton would be selling below cost price. We think Mr. Beecham would do well to follow the lines, say, of the proprietors of Dr. Scott's pills, in adding his articles to the protected list, at the minimum retail selling price of 1*s.*, allowing the trade to buy wholesale at 10*s.* per dozen, with a 10 per cent. margin to the wholesale houses. He would then be securing what he is evidently anxious to get, namely, the goodwill of the trade, and by so doing, out of the 32,000 licence holders he would not have more than a score to oppose the terms. I think he will see that the trouble he is at present taking is not only unnecessary but is doomed to failure. Whilst fully admitting Mr. Beecham's good intentions in the matter I am convinced it will not be to the interests of the rank and file of the trade in any district to fall in with the proposed terms. It is only playing into the hands of the monopolist trader. It is rather surprising that Messrs. Day's Southern Drug Co. have laid themselves open to an attack, which we quite anticipate will be made by some chemist or other on the following lines. In the bold advertisement which Day's have been publishing in order to damage the P.A.T.A., they cried out about the chemists' ring. What a lovely opportunity the recent events at Southampton will afford for someone advertising throughout the district: "The Southampton Ring—Day's Southern Drug Co. have joined a ring to force up the prices of Beecham's pills. They are bound to sell at 10½*d.*—our price 9½*d.*"? It is to be hoped that now Mr. Beecham has publicly shown his concern for the well-being of his customers he will take the earliest opportunity of placing the trade in his article not only in Southampton but throughout the whole country on a fairer basis. A letter addressed to the P.A.T.A. instructing us to add his article to our list is all that he has to do.

London, October 4, 1897. W. S. Glyn-Jones.

The Duties of Local Secretaries.

Sir,—In this week's *Pharmaceutical Journal* you enlarge upon the duties of local secretaries. Can you help me to obtain the following information:—1st. How many local secretaries are there in Scotland, and how is it divided up? 2nd. How often per annum have the chemists been visited, if at all, by the local secretary? 3rd. How many chemists has each local secretary on his roll? 4th. Is it only those who pay a guinea per annum to the Society who receive a visit from, and have a voice in the election of the local secretary? 5th. Is it the duty of local secretaries to report to the Pharmaceutical Society cases of infringement of the Pharmacy Act? I reside in a not unimportant county town in Scotland, and have never seen the local secretary, and do not know who he or she may be, or where they reside.

Scotland, October 2, 1897. County Town (111/17).

*** In accordance with a scheme drawn up by the Executive of the North British Branch, Scotland is divided into forty-five districts, with a local secretary for each. How often those local secretaries have visited the chemists and druggists in their respective districts is not recorded, nor do we know with how many each one is assumed to be in touch. Only members of the Society and Associates in Business are entitled to take part in the election of local secretaries. It is one of the duties of local secretaries to report any cases of infringement of the Pharmacy Acts which come under their notice, but there is nothing to prevent any pharmaceutical chemist or chemist and druggist doing this independently.—[Ed. *P. J.*]

Medical Men and Chemists.

Sir,—I think it would be a good plan if all the local pharmaceutical associations throughout the country would have the "leading article" from last week's Journal entitled "Medical Men and Chemists" reprinted in the form of a neat circular and posted with a penny stamp to all the medical gentlemen in the different districts; it might have the effect of preventing to some extent the pernicious habit of prescribing "patent" medicines, etc., which is becoming a perfect terror to all chemists. Perhaps some other chemist can suggest some better plan of informing the medical profession of their folly.

October 4, 1897. H. H. L. (111/23).

Local Organisation in Pharmacy.

Sir,—As one takes up the Journal week after week, it is interesting to note the efforts being put forth on all sides towards "consolidation and organisation," "securing living profits," "raising the social status of the pharmacist," etc., and one cannot help wondering whether it is producing any alleviation of the burdens which chemists feel so acutely. Some of the best known "chemists' associations" are continually clamouring through some of their officials for recognition of the results they are achieving, and of the example they are setting to their fellows in other, but less wide-awake, centres. Their claims are, in some respects, just and patent; they do encourage social meetings, balls, dances, and dinners *ad nauseam*, and they do inspire a veneration for the "light fantastic" in the minds of the junior members of our calling. But what good comes of it all? Men at trade meetings preach early closing, and these are often the very same individuals who keep their places of business open latest; others are very great on increasing the stringency of our examinations or enforcing a curriculum, and at the same time seek to elevate (?) our calling and render it more attractive by underselling even the much-maligned co-operative stores. Trade meetings are, I understand, intended—partly, at any rate—to foster brotherly feelings between chemists. Have they accomplished this object? If they have, the improvement in their deportment has escaped me so far. I may say that, generally speaking, the best men to do business with are either those belonging to such an association, but evincing merely a lukewarm interest therein, or else those who remain outside altogether. The reports of the meetings I have read always tend to strengthen the conviction that such meetings are excellent for a holiday or to afford amusement; but as for accomplishing any lasting benefit one may as well expect Mr. Beecham to put his pills on the P.A.T.A. list to be retailed not under 1*s.* 1½*d.* per box. It is time, as Mr. Kelly suggests, to have done with "talk." What do chemists want? They apparently desire various will-o'-the-wisps, they are publishing details of the castles they propose building in the air, and all the time are opening up the way for grocers and other outsiders to take away part, at any rate, of our patent medicine trade. We think we have protection, but where does it come in? Why not admit that the Pharmacy Act is a failure, abolish exami-

nations, let anyone who chooses practise pharmacy, and thus bring our calling into line with the free-trade tendencies of the day?

Plymouth, October 4, 1897. E. T. Wood.

Wanted, an Association of Public Dispensers.

Sir,—I trust the suggestion of your correspondent "Disgusted" will meet with the support it deserves, and that he will make himself known that we may help him in his object. If he is prepared to make a start I am sure there are many ready to follow. The Public Analysts, the Inspectors of Weights and Measures, the Sanitary Inspectors, and others have all made themselves felt by being associated together. Why not dispensers? I hope to hear further from your correspondent on the subject. I shall also be pleased to meet all dispensers engaged in the Poor Law service at a meeting of Poor Law officers, to be held at St. Saviour's Board Room, John Street West, Blackfriars, S.E., on Tuesday, the 12th inst., at 7 p.m.

London, October 4, 1897. W. E. Miller.

Sir,—It is not apathy alone that has prevented the formation of a dispensers' association, but a reluctance to take the initiative lest it should imperil their appointment, that has held so many back from being the instigator of such a movement. In these democratic days of federations, leagues, and trades' unions, that objection should no longer exist, as all skilled workers are by the unwritten law expected to combine for their mutual benefit. The pages of a trade journal are not, however, suitable for the discussion of ways and means; if all who are sufficiently interested in their own well-being will communicate with me—at 5, Sidney Road, Bowes Park, N.—suggesting a time, place, and date for a preliminary meeting, I will endeavour to arrange to suit the convenience of the greater number.

London, October 4, 1897. Disgusted (111/24).

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

Tooth Stoppings.—If you will specify what kind of stopping you specially require, we shall be glad to furnish a suitable formula, but space and inclination to supply formulæ wholesale are lacking. [*Reply to* Dent Deter.—109/43.]

Botanical.—1. Not a scale moss; send a specimen protected from pressure; 2. *Marchantia polymorpha*; 3. *Pleuropus sericeus*; 4. *Tortula intermedia*; 5. *Barbula unguiculata*; 6. *Camptothecium lutescens*. [*Reply to* 860.—111/21.]

Canada Balsam.—There is only one kind of Canada balsam. It is very fluid when first imported, but becomes thicker on keeping, owing to loss of volatile oil, and partly, possibly, to oxidation as well. You can easily thin down your thick balsam by adding a little rectified oil of turpentine to it, and warming it on the water-bath. [*Reply to* S. H. H.—110/16.]

Tartaric Acid Substitute.—This is similar to the sample No. 2 sent by W. H. and recently reported on in the Journal (see *ante*, p. 296). It contains no tartaric acid, the charring being due to the presence of some starch, about ten per cent. The acidity is due to the presence of about 60 per cent. of "superphosphate" of calcium. [*Reply to* E. R. B.—110/9.]

Sack.—Sack was not an old "English" wine. The word is a corruption of the French "sec." Probably it was a kind of sherry, for Falstaff speaks of "sherris sack," or a dry mountain wine, known as "vin sec" in French. It has been stated that modern Canary is identical with the old sack, but this is doubtful. At a later period the term was used indiscriminately for various sweet wines. [*Reply to* P.—110/23.]

Reference Work on Pharmacy.—Coblentz is the best work for reference; Caspari is more suitable for students. Both works are in the Society's Library. [*Reply to* H. S.—110/29.]

Substances Enclosed in Indian Carpets.—The material sent consists of seeds of *Nigella damascena*, rhizome of *Acorus calamus*, and some unrecognisable leaves. [*Reply to* W. H. W.—111/7.]

Recipe Book.—We have no knowledge of the book except from the printed particulars supplied by the publishers, and doubt whether it is worth the price asked. [*Reply to* C. E. R.—111/9.]

Toilet Cream.—Lanoline, 10; oil of sweet almonds, 10; boric acid in finest powder, 10. Mix thoroughly, and perfume with eau de Cologne, 2. If you like you may add a little precipitated sulphur or zinc oxide. [*Reply to* Tolu.—111/15.]

Pocket Lens.—Get one of the aplanatic lenses made by C. Baker, 244, High Holborn, W.C., to magnify five, ten, and twenty diameters. Mounted for the pocket, they cost fifteen shillings each, and the lowest power will be found most generally useful. [*Reply to* W. B.—111/5.]

Books on Teeth Extraction.—Woodburn's 'Teeth Extraction,' 5*s.*; Taft's 'Practical Treatise on Operative Dentistry,' 18*s.*; Harris' 'Principles and Practice of Dentistry,' 28*s.*; Tome's 'Dental Surgery,' 16*s.* You can obtain these from Grattan, Tabard Book Store, Borough High Street, S.E., or through your local bookseller. [*Reply to* X. Y. Z.—110/22.]

Tobacco and Cigars Free from Nicotine.—Tobacco from which nicotine is alleged to be almost entirely removed is manufactured by Messrs. F. and J. Smith, Glasgow, and though experts assert that in removing the alkaloid the delicate aroma must also be removed, this particular brand does not bear out that contention. [*Reply to* W. N. S.—110/11.]

Blighted Wheat.—The cause of the trouble is *Vibrio tritici*. Copper sulphate would probably form a suitable dressing, or you might employ "Bouillie Bordelaise." To prepare this, take of copper sulphate, 2 lbs.; quicklime, 1 lb.; and water, 10 gallons. Dissolve the sulphate in part of the water, slake the lime separately and stir thoroughly with more water, then pass though a sieve into the copper solution, stir the mixture well, and add the rest of the water. [*Reply to* G. P. H.—109/36.]

Eucalyptus Dentifrice.—Powdered orris root, 2 ozs.; powdered cuttle fish bone, 2 ozs.; powdered Castile soap, 2 ozs.; prepared chalk, 8 ozs.; oil of eucalyptus globulus, 15 ♏; oil of peppermint, 3 ♏; oil of green mint, 1 ♏; oil of cassia, 5 ♏; oil of geranium, 5 ♏; carmine, 6 grs. Rub the carmine with the powders, adding a little solution of ammonia, and then rubbing well until quite dry and free from ammoniacal odour. Then add the oils. The addition of a little carbolic acid to above makes a good compound carbolic dentifrice. [*Reply to* Ignoramus.—111/11.]

Liquid Preservative for Milk, Butter, Meat, etc.—Formalin suitably diluted is by far the best general preservative for foods, and is most probably harmless. The powders used for this purpose are generally nothing but boric acid, or sometimes a mixture of boric acid and borax with salt added. It will hardly pay you to make formalin, but you can procure it from any wholesale house. [*Reply to* Tolu.—111/15.]

OBITUARY.

Greenshields.—On September 28, William Greenshields, Chemist and Druggist, Petersfield, Hants. Age 54. Mr. Greenshields had been a Member of the Pharmaceutical Society since 1887.

Luff.—On September 29, William Luff, Chemist and Druggist, Oxford. Aged 52.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Allen, Bayley, Blackwell, Day, Deal, Dowling, Floyd, Glyn-Jones, Hayes, Hill, Jones, Long, Miller, Moore, Morris, Nall, Robert, Shepherd, Spence, Spilsbury, Vinson, Welford, Wood.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH
15 OCT 97
LIBRARY

PHARMACY THIRTY YEARS AGO AND NOW.*

BY WALTER HILLS,
President of the Pharmaceutical Society.

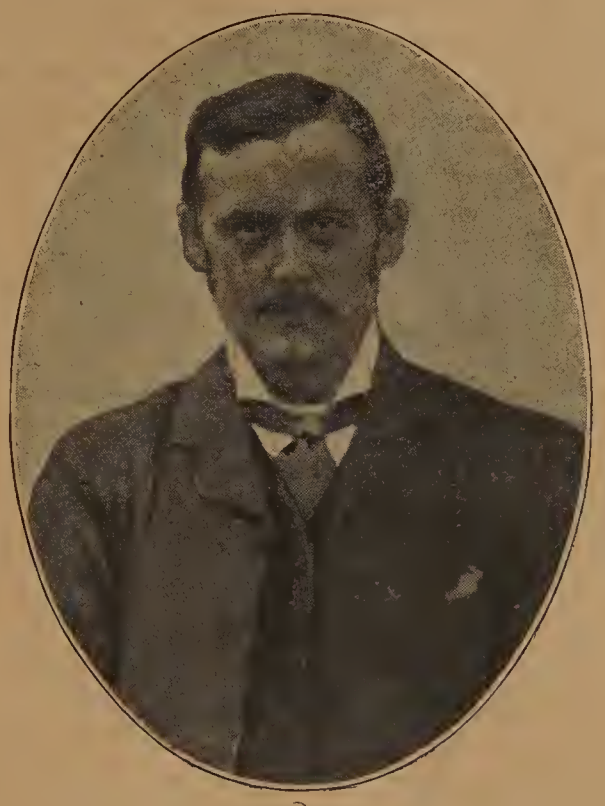
On receipt of the kind invitation conveyed by your Secretary some two months ago that I should give an inaugural address to the students of the Sheffield School of Pharmacy I hesitated as to the answer I should send, because the duties attaching to the position which I have the honour to hold are somewhat arduous, and leave me little leisure to undertake further responsibility. The following considerations, however, led me to accept the invitation. I called to mind that you had been good enough to ask me to address you on a previous occasion. I also recollected that in this noteworthy Jubilee year Sheffield alone of all the provincial cities was honoured by a special State visit on the part of Her Majesty, and what other course could I take than respectfully follow her example? Then I felt it would be a great pleasure to support my friend and colleague and your excellent fellow-citizen, Mr. Newsholme, who has ever taken a warm interest in the success of your Society, and who is now the Vice-President of the Pharmaceutical Society. Lastly, I was glad to have the opportunity of showing my heartiest sympathy with the efforts that are being made to promote and stimulate technical education in the provinces.

Provincial Schools and Their Work.

I am intensely interested in the success of our School at Bloomsbury Square, but I am also earnestly desirous that there should be other schools carrying on similar good work in all the great provincial centres. The history of the persevering efforts that have from time to time been made in this direction is not as bright as I could wish, but I look forward to the time when there will be a more satisfactory state of affairs, though I fear that provincial schools will continue to labour under considerable difficulty until there is a more general and wide-spread desire on the part of our young men to obtain a sound education in the sciences on which the art of pharmacy is founded, and until a definite curriculum of study, which some of us think so desirable, is made compulsory.

A curriculum such as has been contemplated in a draft Bill submitted to Parliament by the Council of the Pharmaceutical Society would, in my opinion, not only promote the prosperity of provincial schools, but also prove of immense benefit to students. Unfortunately this opinion did not appear to be actively shared by pharmacists generally throughout the country, for the Bill was treated with apathy, and a small amount of opposition was sufficient to prevent it from becoming law.

But I must not forget that the immediate object of my presence here to day is to address the students of your School, and to offer to them, as well as to students of other schools who may read my remarks, a few words of encouragement and counsel.



MR. WALTER HILLS,

President of the Pharmaceutical Society of Great Britain.

I would therefore at the outset ask you, my younger friends, these questions: What are your objects and aims in the career on which you have entered? and have you a resolute determination to realise success in that career? Success surely does not mean a till poorly furnished, notwithstanding close and constant personal attention to the petty details of restricted business, with little time or energy to look outside one's immediate surroundings and to take any practical share in the promotion of general pharmaceutical interests. And yet such is too often the unfortunate position of many in our ranks whose industry and integrity cannot for a moment be called in question.

Business Integrity a Condition of Success.

That integrity in business is still a necessary prelude to success, and that it is a conspicuous feature in the pharmaceutical calling, all will admit. That industry is as needful as it ever has been is a statement that requires no proof, and is one on which it is quite unnecessary for me to dilate, especially before a Yorkshire audience. I would only remind you of the well-known words of the wise man, which are as true now as when they were uttered: "The hand of the diligent maketh rich." I think it may be truthfully said that pharmacists are as a class conspicuous by their industry and by devotion to the duties and demands of their calling. All will admit that work in itself is beneficial.

> "The more we have to do
> Better we do it and more rapidly;
> The mind beats into higher pace and flies
> With less exertion winged at utmost speed,"

but it is the constant anxiety as to the future, too often, alas! associated with pharmacy, that tends to render life rather a struggle for existence than a joyful progress.

> "Labour in its fullest force
> Heightens the blood, gives to the limbs their strength
> And scales by storm the noblest heights of thought;
> It is the daily cark and constant dread
> That fret the body down to wretchedness."

What other qualifications then it may be asked are necessary in order to ensure a reasonable measure of success?

Pharmacy Thirty Years Ago.

Before I endeavour to suggest an answer to this question, it may be interesting to compare the practice of pharmacy as it was carried on some thirty years ago with its present condition. Let us go back in thought for a generation, calling to mind that 1867 was the year preceding the passing of the Pharmacy Act under which we are still practising, and that it saw the publication of the second edition of the British Pharmacopœia, the first edition of which had been published only three years previously. At that time one might have found in town and country alike old-established pharmacies showing every sign of prosperity and furnishing fairly good incomes to their owners. Those were the days when medical men believed in the efficacy of drugs and prescribed them freely and in a form which gladdened the hearts of dispensers. Official remedies were the rule and not the exception. Galenical preparations, such as fresh infusions and decoctions, were frequently ordered, and with the exception of the finer chemicals, most of the medicaments prescribed were such as could be prepared

* Address to the students of the Sheffield School of Pharmacy, delivered Thursday, October 14.

in any well-equipped pharmaceutical laboratory. The administration of the blue pill and black draught was often found an efficacious preliminary treatment, and was followed by frequent doses of a mixture which was scarcely ever prescribed in a concentrated form, very often, indeed, in separate draughts of one to two ounces. The most common basis of ointments was lard, which could be prepared with the greatest facility by the pharmacist in his laboratory. At that time there were no limited companies trading in drugs and dispensing prescriptions, and though medicines were supplied on the most liberal terms to the poor, "cutting" was unknown.

Changes that have taken Place.

I need hardly say that the present condition of things is very different from that which I have briefly described. Patients now are dosed less frequently, whilst their medicines are often prescribed in a concentrated and occasionally in a dangerously potent form. The growing tendency on the part of medical men to prescribe less physic may be duc partly to the more accurate knowledge of the action of drugs which many of them undoubtedly possess, and partly to the fact that in the medical curriculum, notwithstanding its extension, too little time is devoted to the study of Materia Medica and to the art of prescribing. It must also be borne in mind that the general health of the public has vastly improved during the last thirty years, whilst patients have become more fastidious and requiring, so that medicines must be exhibited in a more palatable form than was formerly thought necessary. Hence it is that an opportunity has been furnished to the enterprising manufacturer to produce a great variety of specialties which meet the apparent requirements both of prescriber and of patient, but which are not hailed with delight by the dispenser unless such specialties are the product of his own laboratory. The fact, if such it is, that less medicine is prescribed, is one that meets with the approval of the pharmacist only when he himself is the patient.

Again, the unfortunate system of co-operative trading under the protection of law as well as the disastrous and only too common method of cutting prices, adopted in many cases by apparent necessity, but, as I think, with too little consideration, have introduced methods of business almost unknown to our predecessors, which cannot be regarded with satisfaction.

But there are great changes also in the official handbook of pharmacy, the Pharmacopœia of 1885 with its addendum being a very different work from that of 1867, and principally in these two particulars :—(1) The introduction of what are known as synthetical remedies, which can be verified only and not manufactured by the pharmacist, and (2) the standardisation of many drugs and of their preparations. We are now on the eve of the production of another edition of the British Pharmacopœia, of which I am of course precluded from speaking in detail, but which, besides retaining these distinguishing features of its predecessor, will undoubtedly be marked by greater precision of description and generally by a more practical recognition of the advances that have been made in the sciences of chemistry and botany. Progress in this direction we must all view with the greatest satisfaction, though the resulting changes demand increased knowledge and skill on the part of those who intelligently and conscientiously make use of the Pharmacopœia.

A Wider Knowledge Required To-Day.

It appears, then, that whilst a wider knowledge is required by the pharmacist of to-day than was necessary for his predecessor in order to carry out satisfactorily his duties as a compounder of medicinc, there is also, from a variety of causes, an increasing difficulty in procuring adequate remuneration for his labours. The practical question then suggests itself, How is he to meet the altered condition of things which, however he regards it, must be faced? A writer has said that "knowledge of my way is a good part of my journey." I would, therefore, ask you to consider with me in what direction the course of medical practice is now tending, and in what way the pharmacist may under these altered conditions be of increasing service to both doctor and patient, and at the same time thereby improve both his reputation and his pecuniary position.

It must always be borne in mind that the pharmacist was made for the public and not the public for the pharmacist, and, therefore, he has no *primâ facie* right to find fault with what has been recently described by an eminent medical man in these words, "the chief progress that has been made in medicine during Her Majesty's reign has been to teach people to do without it."

There is no doubt that there has been a great improvement in the general health of the public during recent years, as has been lately pointed out by the President of this year's Congress of the Sanitary Institute, who stated that during the last quarter of a century the English death-rate had been reduced from 22 to 18 per annum by the joint labours of sanitarians in the prevention of disease and of doctors in curing it.

Whilst in former days the doctor was too often disposed merely to treat the symptoms of disease and mitigate the pain of the patient by a morc or less empirical use of drugs, the aim of his highly-trained successor is not only to alleviate prescnt suffering, but also to endeavour to trace the cause of the mischief and thereby put himself in a better position to deal with the disease and to prevent its recurrence.

The Pharmacist as a Scientific Expert.

In his endeavours to discover the source from which the malady springs the physician frequently desires to have some accurate knowledge of the water or the milk which the patient has been drinking, or in order to obtain a satisfactory diagnosis of the disease he may require a report on the urine or even of the sputum, such as he has not the time or the convenience to carry out for himself. To whom, then, does he more naturally look for assistance in these and similar investigations than to the pharmacist in his own immediate neighbourhood, if he is assured that the latter is capable of carrying them out satisfactorily? And when such work is undertaken by the pharmacist another link between him and the doctor may be forged, resulting in benefit to both as well as to the public.

The pharmacist who is able and ready to undertake this kind of work soon becomes known as an expert in such matters, and thereby obtains a fresh source of income; at the same time his reputation is advanced and his claims for something more than a trader's profits in the dispensing department are less likely to be questioned by the public.

And would not a closer relationship established between the doctor and the chemist help to expedite a more general transference of dispensing from the surgery to the pharmacy? It would be interesting to know if, during the thirty years of which we are taking a hasty retrospect, there has been any appreciable advance in this desirable direction. It would be difficult, perhaps, to obtain accurate information on the point, but pharmacists would indeed be rejoiced if prescribers would, whenever and wherever practicable, relinquish the practice of dispensing medicines for their patients.

The area of knowledge requisite for both medical man and pharmacist is constantly widening; it would seem natural, therefore, that with this extension each should more fully recognise the de-

sirability of dissociating the two functions, prescribing and dispensing.

There are many other ways in which the pharmacist may advantageously utilise his scientific knowledge if he keeps his eyes open to the constantly changing requirements of the public. These ways are frequently suggested to him by his customers and neighbours who are in the habit of resorting to him for advice and help in many of their everyday difficulties, and who thus pay him the compliment of regarding him as a living encyclopædia, as well as a friend in need.

Before I leave this part of my subject I should like to call your attention to a valuable paper on "Botany as a Business Investment," by Mr. E. M. Holmes, which appeared in the *Pharmaceutical Journal* of September 11, and in which the writer points out several ways in which a sound knowledge of that science may be turned to practical account.

The Value of Adaptive Capacity.

I have just shortly indicated in what direction I think it possible that the pharmacist may frequently add to his reputation and income, but there are many other ways in which he will be able to effect the same end, if in the first place he has the necessary knowledge, and in the second possesses what is equally important—the capacity to adapt himself to different conditions as they arise, and to meet and cope with difficulties as they occur. It has been said that "Talent is something, but tact is everything. It is not a sixth sense, but is the life of all the five. It is the open eye, the quick ear, the judging taste, the keen smell, and the lively touch; it is the interpreter of all riddles, the surmounter of all difficulties, the removal of all obstacles." And another authority has remarked that "The secret of man's success resides in his insight into the moods of men and to his tact in dealing with them."

Now in order to obtain a position satisfactory to himself and creditable to his calling, what general and technical knowledge should the pharmacist possess?

The general education of course cannot be too liberal, but the minimum should be that required to pass such an examination as is proposed in the new bye-laws.

Much of the technical knowledge and skill required for the successful pursuit of pharmacy should be obtainable behind the counter and in the laboratory during the period of apprenticeship or pupilage, and certainly no pharmacist should hold himself out as a teacher of youth unless he has the time, ability and convenience for conscientiously carrying out his duties towards his pupils.

Necessity of School Training.

But however capable and conscientious the master, and however diligent the student, it is in my opinion very desirable that a definite course of teaching, theoretical and practical, in a well-equipped school should be followed.

There are many such schools, notably the School of Pharmacy in Bloomsbury Square, and for the convenience of those who reside in the provinces, there are others at various centres such as that connected with your Society.

And here I would like to point out that it is very desirable that pupils and apprentices who, before the commencement of their apprenticeship, have not had the opportunity of studying chemistry and botany, should, either by private study or, still better, by the help of such a school as yours in Sheffield, pay special attention to these two branches of science, at first apart from their technical bearing. Pharmaceutical chemistry and pharmaceutical botany are not distinct sciences, though chemistry and botany may have a technical application in pharmaceutical as well as in various other directions; it is important, therefore, that the general principles regarding them should first be mastered. If the student wishes to follow to the best advantage systematic course of materia medica, for example, he will find that a knowledge of chemistry and botany is almost a necessity, and such knowledge is now obtainable during the period of apprenticeship in your School as well as in many others in different parts of the country.

And whilst speaking of materia medica, I would remind you that this subject is one of the greatest interest and importance to the pharmacist, and one on which he should have an extensive and special knowledge. How much there is to learn from the writings of such authorities as Hanbury and Flückiger, and how much still remains for further investigation, with regard not only to many of the drugs that have long been in use, but also to the newer drugs which are constantly being brought into notice by travellers and others!

My young friends, use your opportunities to the best of your abilities, learn all you can, do not be diffident in asking your teacher to elucidate difficulties that may present themselves to you, and finally conquer them. Read and work systematically, always bearing in mind that the chief object to animate your work should be self-improvement rather than mere preparation for examination.

Some of the subjects in which you will be examined for the Minor, such as pharmacy and dispensing, are very obviously in the closest connection with the duties which you will have to perform in the exercise of your calling, but I desire to impress upon you the importance of making yourselves thoroughly acquainted with physics, chemistry, and botany, the branches of science upon which the art of pharmacy is mainly based, and a practical and intelligent knowledge of which will be of undoubted service to you in after life. I say practica and intelligent, for it is by the practical and intelligent application of your knowledge that you will find the best road to success.

The Major Qualification.

I need hardly add that I consider it very desirable that you all should go through a course of instruction for the Major examination and obtain the qualification of pharmaccutical chemist. There are many advantages to be gained by taking this further step, and I regret that such a large proportion of our young men appear to rest satisfied with the Minor qualification, which has been recognised by the Pharmacy Act of 1868 as sufficient for the safety of the public. Many reasons could be urged in favour of proceeding to the Major examination, but I have not time to discuss them on this occasion. If there were no other, surely the acquisition of further knowledge—knowledge which may be turned to practical account—should be sufficient to stimulate a larger number to qualify as pharmaceutical chemists.

Here I would like to remind you that for those possessing the Major qualification opportunities are now offered in the School of Pharmacy at Bloomsbury Square for obtaining more advanced knowledge, and that there are Redwood and Burroughs scholarships, which were founded to assist students anxious to obtain further experience in chemistry, but which unfortunately are not just now being utilised.

Cultivate a Professional Spirit.

Discussions have at times arisen as to whether our calling may be considered a profession. I do not propose to debate the point, but I think it will be admitted that one distinguishing mark of a profession is that its members are jealous of the honour and interested in the progress of their common calling. Ruskin has said "Education is the leading human souls to what is best and making what is best of them. The training which makes men happiest in themselves also makes them most serviceable to others." And

Lord Bacon has said "I hold every man to be a debtor to his profession; from the which, as men, of course, do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and ornament thereunto."

Therefore if you wish to promote a professional spirit in your calling you will all in due course become loyal and interested members of the Pharmaceutical Society, whose objects and efforts are for the advancement of all that is conducive to the interests of pharmacists and to the progress of pharmacy, though the measure of its usefulness both to the individual and to the general body depends largely on the amount of support accorded by its members.

Before I conclude I should like to impress upon you the importance of paying attention to the interests of the body as well as to those of the mind. *Mens sana in corpore sano.* Be systematic in your bodily as in your mental exercises. I say this because at our examinations I see so many men who appear to have neglected this obvious duty. I would therefore strongly advise you all as you have opportunity to associate yourselves with some form of athletics or outdoor exercise. A strong and healthy body not only makes life more enjoyable, but also enables the mind to work with less labour and to greater advantage.

Finally, one word more as to success. I am not one of those who think that material success invariably attends all well-directed efforts. Misfortune comes at times to those whose integrity, industry, and knowledge cannot be disputed. But there is a success to which all may attain in the formation of a character conspicuous by its honesty of purpose and by its brave devotion to duty amidst all discouragements, a character which will command the respect of all, and will finally prove far more valuable than the possession of material wealth.

> "Live on brave lives, chained to the narrow round
> Of Duty; live, expend yourselves, and make
> The Orb of Being wheel onward steadfastly
> Upon its path—the Lord of Life alone
> Knows to what Goal of Good; work on, live on."

NATURAL HISTORY NOTES.

The Ownerless Cur.—All naturalists and most men are friends of the dog. To such, a very able article on the "Ownerless Cur," in a late number of the *Veterinary Record*, will carry the conviction to most observant readers that the writer is correct when he states that if, as certain authorities have lately stated, there were a class of ownerless dogs prowling about the streets, getting a precarious living on garbage, everyone must have noticed them. They would appear mostly at night. They would be found in stable yards and back gardens, but it is well known that they are not. To see a dog in London streets between midnight and 6 a.m. is a rare sight. To find them hiding away in yards is unknown. "The Dogs' Home" should show an enormous class of weary and worn emaciated animals. It does nothing of the sort. That poor people keep and distribute puppies is quite true, but they do not turn them out at six months or any other time. If they did, a heavy proportion of the dogs seized would be puppies. As a fact, they are not. There is no evidence of a class of "ownerless curs," and all conclusions, official and others, founded on its existence are logical blunders.

Black Eggs.—According to a writer in *Les Nouveaux Remèdes*, black eggs are not uncommon from ducks, who are extremely fond of acorns. The colouring matter of their egg-shells is rich in iron, the resulting combination of tannin and iron is stated to result in black eggs. According to the same authority bright red eggs may be obtained from fowls by feeding them with lobster shells (presumably boiled). We cannot state the original source of these statements, but they bear obvious evidence of Transatlantic origin.

Change in the Habits of Wild Animals Owing to the Advance of Civilised Man.—The notoriety gained some years back by the New Zealand "Kea," which from being a "farmer's friend," developed into one of his most dreaded enemies, through the acquired taste of the huge cockatoo for the kidney fat of living sheep, is paralleled in many other instances in our colonies. In a recent note in the *Zoologist*, Dr. Schonland relates how the chacma baboon has now become a regular scourge in some parts of Cape Colony, for an unexpected reason. It is perfectly notorious that it has largely taken to killing lambs, for the purpose, chiefly of sucking the milk with which they have filled their stomachs. The reason that it has, if anything, increased in the colony during recent years is two-fold. First, the alarming spread of the prickly pear (*Opuntia* sp.) in some districts has provided it with almost impenetrable shelter and abundant food, as it is very fond of the fruit and also eats the leaves. Secondly, it has become so cunning that only by means of artful manœuvres can one get a shot at it. A friend of the writer whose wife could approach a troop of baboons without disturbing them, borrowed, one day, her cloak and hat, and then went out. They let him approach to very close quarters, and two of them were shot before the remainder got into shelter. Sometimes the farmers of a district combine, and during the night surround their sleeping-place. As soon as the day breaks and the baboons try to escape they are shot down in large numbers, but this method of reducing their ranks is not always practicable. The baboon is not the only South African animal which has during recent times changed its habits. Thus the so-called "wet-gat spreouw" (*Spreo bicolor*) was formerly never known to touch fruit, its food consisting chiefly of insects, but during recent years it has, at all events on some farms with which Dr. Schonland is acquainted, become very destructive to fruit. Another case which possibly comes under the same category is that of the Maanhaar jackal, *Proteles cristatus*. The Cape Government was paying a high reward for this animal, because it was supposed to be destructive to small stock. Dr. Schonland protested against this, as in his experience nothing but insects had been found in the stomachs of these animals. He was astonished to find this statement was met with a howl of indignation proceeding from farmers living in other districts, who were positive that this animal was a dangerous enemy to their flocks; and if they are correct, the Maanhaar jackal must have changed its habits during recent years and in certain districts only, when possibly with the advance of civilisation its natural food is failing.

The Mongoose in Europe.—Those of our readers who have read with pleasure the delightful 'Jungle Book' of Rudyard Kipling, and who, influenced by Rikki Tikki Tavi, may wish to keep a mongoose, will be glad to learn that this is by no means impossible. M. Loyer has succeeded in keeping one for about a year in the environs of Paris, and in the *Bulletin de la Société Nationale d'Acclimatisation* gives an interesting account of the habits of his pet. Although at first rather savage, she soon became quite tame, and allowed herself to be handled and caressed. Her diet consisted of raw butcher's meat, and on her own account she would eat anything she found, dead fish, dead birds, and small mammals, frogs, and reptiles. She played with her victims like a cat before devouring them. She equally attacked water rats and moles, and had a great fondness for birds' eggs.

Applied Entomology.—Although entomology is often looked upon in this country as a useless hobby and one which is only worth the attention of individuals in the two extremes of life, youth and old age, such is not the case abroad or even in our colonies. The practical application of entomological knowledge has frequently been made with benefit to agriculture. Thus in Hawaii, the islands were almost devastated by imported insect pests, such as scale insects, and it was not until an Australian ladybird, *Vedalia cardinalis*, was imported and acclimatised that any headway could be made against the plague. This experiment proved a success; the insects became perfectly naturalised and rapidly increased in numbers, and speedily cleared off the harmful scale insects. Another useful introduction to the same islands has been also a ladybird, *Cocinella repanda*, from Australia and Ceylon, which clears off aphides from sugar-canes and coffee plants. Another Australian beetle, *Cryptolæmus montrouzieri*, has been introduced with success to clear off a highly injurious species of *Pulvinaria*. In addition to this numerous other species have been acclimatised to the general benefit of agriculture.

BRITISH MEDICAL ASSOCIATION.

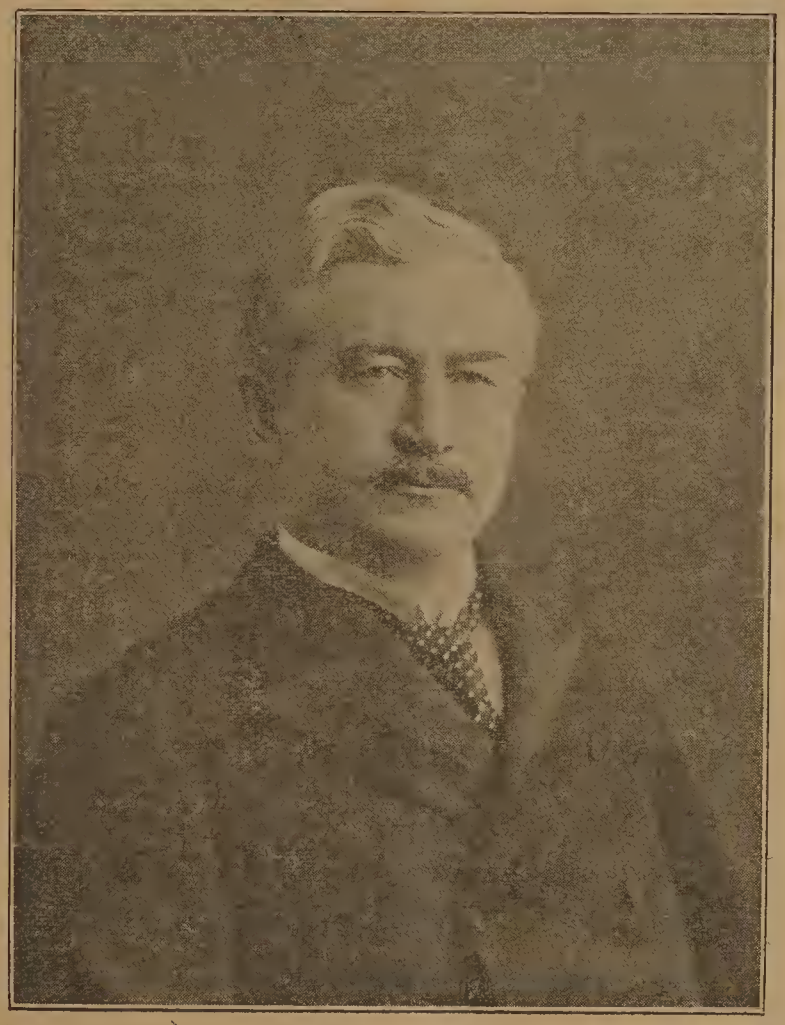
MEETING AT MONTREAL.

TUESDAY, AUGUST 31.

THE scene is changed, the setting shifted, a new company hold the boards. From the "Queen City of the West" interest has moved, and now centres in the commercial metropolis of the Dominion. One characteristic remains unchanged. It is British; and one dominant note, "Canada first," still prevails. Interest in this Montreal sequel is maintained at the same high level as that which prevailed at the Toronto meeting. The disciples and followers of Æsculapius and Hippocrates bring as ardent an enthusiasm and richly-ladened votive offerings as were ever offered at the shrines of the gods of science or philosophy. This meeting possesses some features of more than usual interest. For the first time since its organisation sixty-seven years ago the British Medical Association meets outside the United Kingdom. It is also probably the first occasion when members of the profession from other countries will contribute an equal share with their British *confrères* to the proceedings of the meeting. On such an important occasion it seemed fitting and appropriate that the first exercises should be of a devotional character. Appropriate, also, was it that the most beautiful Anglican church in the Dominion should be selected in which to hold, and her most eloquent prelate conduct, such a service.

His Lordship of Niagara, Bishop Dumolin, was never more impressive and never received more rapt attention. Selecting his text from Acts, x., 38, in the course of his discourse he drew attention to the similarity of the work of the medical calling and the Church, the duty of each to "go around doing good." The formal opening took place in the large auditorium of the Windsor Hotel, which is the headquarters of the Association. Not only was the attendance large, but the function was of a most pleasant character. The chair was occupied by Dr. Robert Saundby, of Birmingham, President of the Council, and, accompanying him on the platform, beside the officers of the Society, were His Excellency the Governor-General, Licut.-Governor Chapleau and his A.D.C., Major Sheppard, Mayor R. Wilson-Smith, Lord Strathcona of Mount Royal, and Lord Lister.

Dr. Saundby explained that the business of the Association had to be transacted in Britain. Accordingly a meeting for that purpose had been held in Exeter Hall, London, on July 27, and then adjourned to Montreal, the only duty devolving upon him at present being to introduce the new President. Dr. Roddick assumed charge of the meeting, and in a few gracefully-turned sentences expressed his appreciation of the honour done him, recognising the fact, however, that such was intended more for his country than himself.



From a photograph by Wm. Notman & Son, Montreal.]

DR. RODDICK,

President of the British Medical Association.

Dr. Roddick then called upon the Mayor of Montreal to welcome the Association to the city. His Worship responded to the call, and in a brief speech during which he referred to the city's commercial capabilities, her educational advantages, and her great men, through whose munificence these advantages were enjoyed, he extended the hospitality of the city to the distinguished visitors.

Sir A. Chapleau, the eloquent Lieutenant-Governor of the province of Quebec, was then introduced, and extended the same hearty welcome beyond the city limits, assuring the Association that he spoke from the heart in welcoming them, and hoping that their stay might be prolonged, winding up an eloquent speech with the following: If he could, without the advice and the assistance of his constitutional adviser, give them the freedom of the Province of Quebec, he would do it, as his predecessors, the old Governors of the Province of Quebec, had done, but he had no need to do that—every citizen of their province had already given them the freedom of the country. It had been said in England by the most authorised representative of Canada that Canada was a nation and that liberty was its nationality. Yes — they were free and they owed it to the generosity of their beloved Queen — they owed it to the generosity of the British Parliament, but they owed it still more to the generosity and to the liberty of the British people themselves. There in their province their loyalty was free, their affections free, their national preference free, and that loyalty was as solid and everlasting as truth was truth and heart was heart in man.

The Governor-General of Canada (the Earl of Aberdeen) was then introduced, and said that as his was the third speech of welcome on that occasion he trusted that their visitors would believe and thoroughly realise that they were indeed thrice welcome. Canadians, who were ever ready to welcome every man, if he were not an idler, to their country, could not fail to welcome with both hands and with every feeling of cordiality a gathering so representative, so distinguished, so beneficial in its aims, as that which that great Association composed. As the whole included the parts so the Dominion included not only the city of Montreal but also the province of Quebec. As he could not hope to exceed the preceding speeches in quality there was nothing for it but fill in the quantity. This he did by bidding the Association hearty welcome to the Dominion.

Dr. J. G. Aclaine, Hon. Local Secretary, then called over the roll of delegates of foreign countries and medical societies, and of the representatives of the branches of the British Medical Association. Those in attendance were formally presented to the President and Lord Aberdeen, the first thus called upon being Professor Richet, the representative of the French Republic and of the Faculty of Medicine of Paris. Dr. O'Donnell, representative

of the Manitoba Medical Association, on being introduced, said that when he was leaving Winnipeg to attend the meeting of the Association a letter from the Premier of Manitoba was placed in his hands, and he was authorised on behalf of the Premier of Manitoba to invite the British Medical Association to hold its next meeting, or some meeting in the very near future, in Winnipeg.

Dr. Roddick called upon the President of the Council (Dr. Saundby), who said that that very pleasing invitation could not, of course, be received at that moment. It must, with Dr. O'Donnell's permission, be referred to the meeting of the Council in London. The Council would be very glad to give it due consideration, and in the meantime he begged to thank the Premier of Manitoba on behalf of the Association for the honour which he had done to them.

Dr. Roddick then delivered his presidential address, his subject being "Canada, its Medical Life and Resources." In this he dealt at length with Canadian climatic conditions and health resorts; the effect of the Canadian climate on European races; Canadian spas; medical education and medical schools in Canada; the teaching of hygiene, clinical teaching, nurses and nursing, and medical legislation in the Dominion. In conclusion, he claimed that in more than words has Canada shown herself worthy of her high heritage, worthy of a part in the Empire, worthy to share in its trials and its triumphs.

THE WINDSOR HOTEL, MONTREAL.

Lord Lister, in moving a vote of thanks to Dr. Roddick for his valuable and eloquent address, said he could testify from personal experience to the value of one of the health resorts to which Dr. Roddick had referred, having just returned from three days in the Muskoka region. He had never seen a more lovely country, and he could not conceive of a more healthy district. One felt some doubts whether special health resorts were necessary for Canada, for the whole population struck him as being remarkably healthy as compared with that of the mother country.

Sir James Grant, of Ottawa, in seconding the motion, expressed the pride and gratification which all Canadians felt at the visit of the Association to the Dominion. They were also pleased to see the visitors from the other side of the line. They were one people, the only difference being that the progenitors of their American friends landed on Plymouth Rock, while the progenitors of the Canadians paddled up the St. Lawrence in order that they might enjoy under the British flag the principles of civil and religious liberty.

Dr. Saundby briefly expressed the obligations of the Association to the Governor-General, Lieutenant-Governor Chapleau, and the Mayor for their presence, and that closed the proceedings.

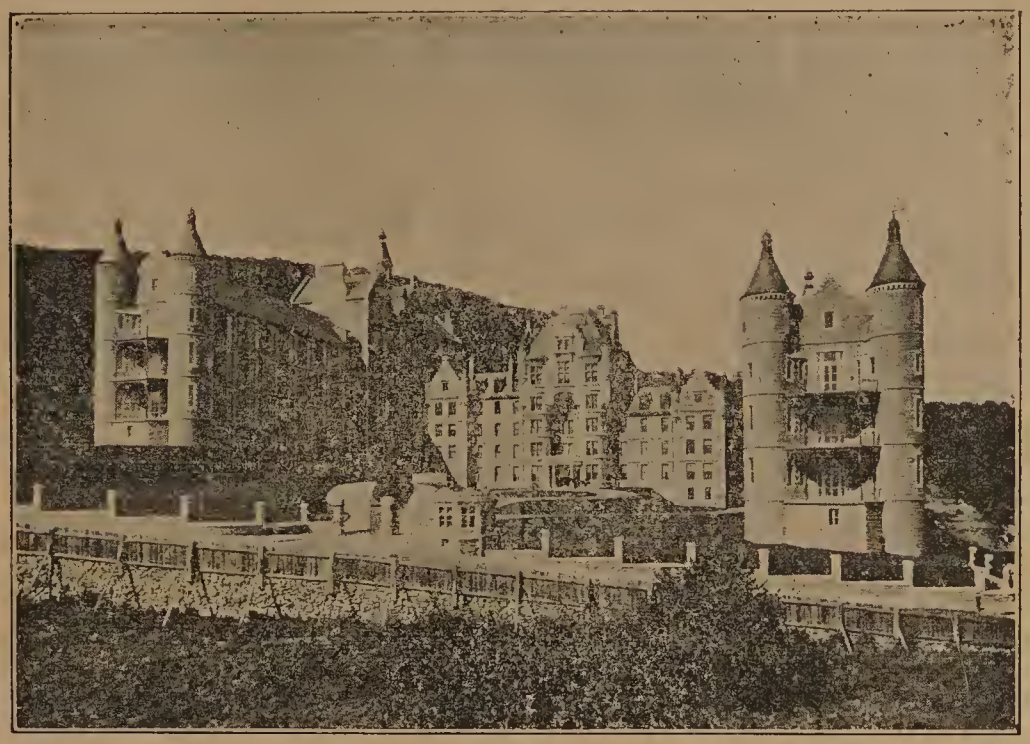
In the evening a reception was tendered the Association by the Medical Faculty of Laval University. This was a brilliant function. His Excellency the Governor-General, the Lieutenant-Governor, and His Grace Archbishop Bruchesi received the guests. After the reception the assemblage proceeded to the magnificent Promotion Hall, which was tastefully decorated for the occasion, to hear the lecture of Professor Richet, of Paris, on "The Work of Pasteur and the Modern Conception of Medicine." He spoke of the reconciliation of medicine and science, of Pasteur's life-work, the microbic theory of disease, antiseptic surgery, the union of medicine and science, serum therapeutics, and the Röntgen rays. Without laboratories, he pointed out, the clinical department must remain incapable of scientific advance, and this condition of stasis is assuredly undesirable. For in spite of all the progress which has been made, much yet remains to be done. Are not tuberculosis and cancer, for example, the disgrace of medicine? All medical men present were appealed to whether, in the presence of such painful modes of death, they did not feel themselves humiliated to the bottom of their souls by their powerlessness. It was urged that this feeling of their present powerlessness against disease ought to stimulate them to work. The work to be done is enormous, and none must grow weary of the task. Physiologists must seek new facts, they must seek and seek again, seek always without being afraid of the boldest hypotheses, and without putting any limit to their audacity, without troubling their heads as to the practical consequences which may flow from their discoveries, having only truth, divine truth, for their object. And it was the duty of medical men to follow with the warmest interest both the general effect and the detailed results of biological discoveries, in order to attempt to find some practical application for them. From this unceasing collaboration progress would be born. But

McGILL UNIVERSITY, MONTREAL.

it is necessary that men of science and physicians should both be animated with these two governing sentiments—faith in science and love of man.

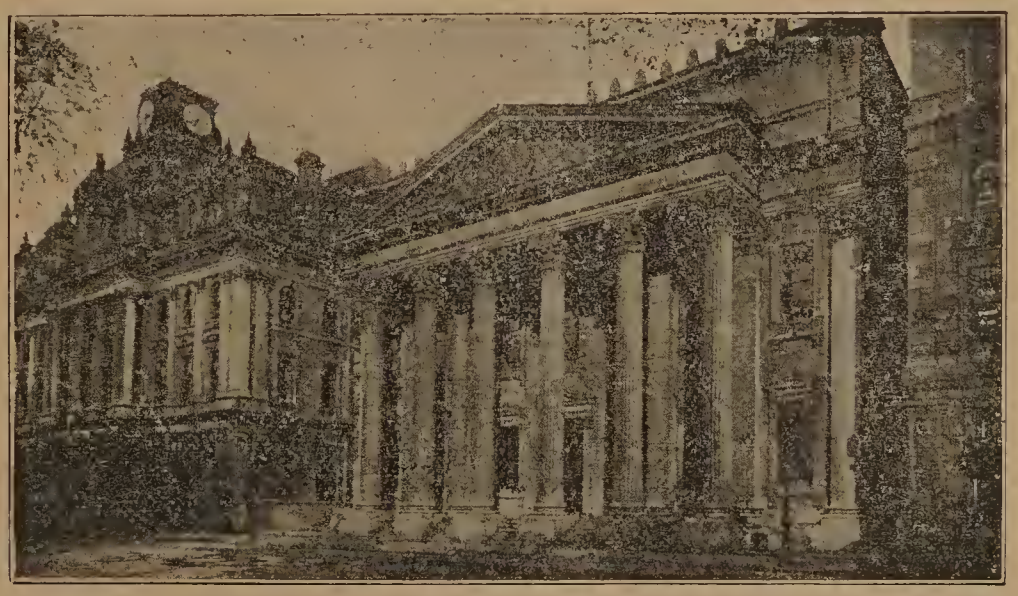
WEDNESDAY SEPTEMBER 1.

This morning saw the beginning of active work in the Sections. Bright and early all ten of them got under way, and the crowd which from 9 to 9.30 filled the reception room and overflowed into the corridors and out into the town, soon scattered to the different points of interest. The balance between the ounce of prevention and pound of cure is still maintained. While one division of the forces is actively engaged in operations to dislodge the enemy that has entrenched itself within the citadel, the other division have been equally energetic in searching out its origin, once having discovered that one taking such precautions will prevent further incursions. The defensive division was the centre of most interest to-day. Section C, or "Public Medicines," gave attention to public sanitation. After the President's address, the subject of "Mandatory Measures in Dealing with Contagious Diseases" was discussed. The Section of Pharmacology and Therapeutics also spent an interesting morning discussing "Insomnia and Hypnotics" after the reading of the President's address.



ROYAL VICTORIA HOSPITAL, MONTREAL.

In the afternoon the Association and its guests enjoyed one of those rare treats which, like ambrosial fruit, satisfies but never satiates. When the historian of medicine in the last half of the nineteenth century undertakes his task he can very appropriately preface it with the text "There were giants in the earth in those days." Koch, Pasteur, Löffler, Virchow, Roux, Lister form a galaxy of as brilliant lights as ever illuminated the medical world, but Osler shines with as clear if not a clearer radiancy than them all, and to-day will in nowise dim the lustre. For two hours he held the rapt attention of a brilliant and critical audience, and at the close but one opinion prevailed, that the subject had been handled by a master's hand. At the close of the address a special convocation of McGill University was held, and the honorary degree of LL.D. was conferred on the Right Hon. Lord Lister, M. Charles Richet, of Paris, France, Sir Walter Foster, Sir William Turner, Dr. Henry Barnes, Prof. Michael Foster, Dr. W. H. Gaskell, Mr. Christopher Heatle, F.R.C.S., Dr. Alex. MacAllister, Dr. R. Saundby, and Dr. Claud Wheelhouse. At the close short addresses were delivered by Lord Lister, Prof. Richet, Prof. Michael Foster, Lord Strathcona, of Mount Royal, and the Governor-General, Lord Aberdeen.



MONTREAL POST OFFICE AND BANK OF MONTREAL.

THURSDAY AND FRIDAY, SEPTEMBER 2 AND 3,

were repetitions of the previous day for the Association, all the Sections working industriously from 9 o'clock in the morning until 1 p.m., the papers read and discussions following being of the highly technical character interesting only to the initiated. In the afternoon of the 2nd a most interesting discourse on "The Surgeon of Old in War" was delivered by Mr. Mitchell Banke, F.R.C.S., in the Windsor Hall, and on the 3rd in the same place Dr. Herman M. Briggs, of New York, spoke on "Preventative Medicines in New York." Dr. Briggs prefaced his address by a graceful tribute to England as leaders in the science of preventative medicines, acknowledging that to her all nations looked for guidance in sanitary matters. The very high standard of public health in Britain he attributed in a large measure to the influence of the British Medical Association. He then went very fully into the New York methods, and traced their history since the health department was first organised by an Act of the State Legislature until the present time, when New York is admittedly one of the cleanest cities on the American continent. This being the final business meeting of the Association, Lords Aberdeen and Strathcona were elected honorary members.

Dr. Roddick moved, seconded by Dr. Henry Barnes, "That in the opinion of this meeting the organisation of a system of district nursing throughout the various provinces of the Dominion would afford invaluable help in the treatment of disease, and be a great benefit to the sick poor of this colony."

Dr. H. P. Wright, Ottawa, wanted to know how nurses were to be maintained in isolated positions in the West.

Dr. Roddick explained that small hospitals would be erected at certain points with three or four nurses, one of whom would always be on duty there, and the others available for sick calls from the surrounding districts. A doctor would reside in the vicinity. The resolution committed the Association to no particular scheme. With this explanation the resolution was adopted.

A hearty vote of thanks was tendered to Dr. Roddick for the manner in which he had presided over the sessions of the Association, and this brought the meeting to a close.

The social functions of the meeting have been by no means the least successful feature of a very successful gathering. The houses of Montreal's most hospitable citizens have been wide open for the entertainment of the strangers within her gates.

Successful excursions to interesting points have been planned and

carried out, both by boat and rail. The principal of these, because of its novelty, was the run down the "Lachine rapids" on one of the O. and R. steamers. Delightful garden parties and afternoon teas filled in the time between section meetings and public addresses. Successful to brilliancy also were the entertainments of a more public character. Laval and McGill conversaziones, the annual dinner at "The Windsor," the Mayor's luncheon on Mount Royal, each vied with the other in point of interest, but chief among them was Lord Strathcona's reception at his palatial residence in Sherbrooke Street. There youth and beauty met to "chase the glowing hours with flying feet." Nature and art combined to transform the spacious grounds into a fairyland of bowers and nooks, in which Britisher and Canadian hobnobbed with their American cousin, all petty jealousies and national rivalries laid aside for the occasion, and each equally proud of the achievements of the great race to which they belong.

SATURDAY, SEPTEMBER 4.

The visit of the British Medical Association is drawing to a close and the members are rapidly scattering. Some with their faces turned to the East are homeward bound; some still following the setting sun are speeding away across the continent, some up the Ottawa to the capital, and others visiting the republic south of Canada. The meeting just closing will live long in the memory of Montreal's citizens, and let us hope also that of the visitors. From a scientific standpoint the meetings were valuable to those in attendance, and important to the medical profession as a whole, but to the citizen not particularly interested in medicine the significance of this meeting, as well as that of the scientists in Toronto, lies in the evidence they furnish of the unity of Great and Greater Britain. Beside which, the visitors to Canada's shore must return home with very much enlarged ideas regarding the Dominion, its people, and its resources.

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 332.)

Sabanin-Laskowski (Citric Acid).—Yellow colour on heating with excess of ammonia in a sealed tube at 120° C. for six hours. On pouring out and allowing to stand for several hours, the colour changes to blue.

Sachsse (Glucose).—Dissolve 18 Gm. of mercuric iodide, 25 Gm. of potassium iodide, and 80 Gm. of potassium hydroxide in water and make the solution up to 1 litre. Each 40 C.c. of this solution equals 0·1342 Gm. of glucose.

Sachsse-Heinrich (Glucose).—In this modification of Sachsse's reagent the quantity of potassium hydroxide is reduced to 10 Gm. The reagent is heated to boiling point and the glucose solution (containing about 5 per cent.) added until the mercury salt is entirely reduced. Hydrogen sulphide is used as an indicator, being added to a small portion of the solution after acidulating with acetic acid.

Sahli (Staining Nerve-Centres).—Sections of material hardened in bichromate are washed in water for 5 or 10 minutes and stained dark blue with concentrated aqueous solution of methylene blue. They are then rinsed with water, stained for 5 minutes in saturated aqueous solution of Säurefuchsine, rinsed with alcohol, and passed into a large quantity of water. Or, instead of rinsing in alcohol, use alcohol containing from 0·1 to 1 per cent. of caustic potash, differentiate the stain in water, clear the sections with cedar oil, and mount in balsam dissolved in cedar oil. For obtaining a specific stain of nerve-tubes the sections are stained for a few minutes or hours in a mixture of 24 parts of saturated aqueous solution of methylene blue, 16 parts of 5 per cent. solution of borax, and 40 parts of water. The sections are then washed in water or alcohol until the grey matter can be clearly distinguished from the white, cleared with cedar oil, and mounted in balsam.

Salkowsky (Carbolic Acid).—A blue or greenish colour is produced on adding to carbolic acid one-fourth its volume of ammonia and a few drops of solution of chlorinated lime, then heating gently.

Salkowsky (Carbon Monoxide in Blood).—Mix 1 part of the suspected blood with 19 parts of water, and add an equal volume of soda lye (sp. gr. 1·34). Carbon monoxide causes the mixture to become turbid and at first whitish, then light red; after some time red flakes separate out on the surface of the rose-coloured liquid. Normal blood is coloured a dirty brown by soda lye.

Salkowsky (Cholesterin).—Dissolve a few centigrammes of the substance in 2 C.c. of chloroform and shake the solution with 2 C.c. of concentrated sulphuric acid. In the presence of cholesterin the chloroform becomes blood-red, and the acid assumes a greenish fluorescence. If this test is applied as a zone reaction, a brownish-red zone appears. Breathing on the chloroform solution is said to change the red colour to blue, green, and yellow.

Salkowsky (Creatinin).—See Weyl's reaction.

Salkowsky (Peptone in Urine).—Acidulate 50 C.c. of urine with hydrochloric acid and add phospho-uranic acid. Wash the precipitate that is formed, warm it on a water bath, dissolve in a little soda lye, and add a few drops of 1 or 2 per cent. copper sulphate solution. Peptone causes a red colour.

Salkowsky-Leubes (Mucin in Urine).—The urine is treated with 2 volumes of absolute alcohol, the precipitate collected and re-dissolved in water. The solution gives a cloud with acetic acid insoluble in excess, but soluble in hydrochloric or nitric acids.

Salzer (Alcohol in Essential Oils).—The same as Puscher's test.

Sandlund (Iodine in Urine).—Treat 5 C.c. of urine with 1 C.c. of sulphuric acid (1:5) and 2 or 3 drops of sodium nitrite solution (1 Gm. in 500 C.c.), then shake up with carbon bisulphide, which becomes coloured if iodine be present.

Sankey (Staining Nerve-Centres).—Stain in a 0·5 per cent. solution of aniline blue-black and, in order to obtain a differential stain, wash out for 20 to 30 minutes in chloral hydrate solution.

Sargent (Bleaching Method).—Soak insects to be bleached for a day or two in a mixture of hydrochloric acid, 10 drops, potassium chlorate, 30 grains, water, 1 ounce. Wash well.

Sattler (Silver Staining).—Preparations stained with silver nitrate are exposed to light for a few minutes in water acidulated with acetic or formic acid.

Saul (Eserine).—If a solution of eserine, or one of its salts be heated to boiling, and a few drops of strong nitric acid added, an orange-coloured liquid is obtained, which on addition of caustic soda in excess yields an intensely violet solution. The violet colour is changed to pale orange by acids, and restored by alkalies.

Saul (Tannin).—To about 0·015 Gm. of tannin in 3 C.c. of water add 3 drops of 20 per cent. alcoholic solution of thymol, and then 3 C.c. of strong sulphuric acid. Thus treated gallotannic acid yields a turbid rose-coloured solution, whilst gallic acid remains practically uncoloured.

Schaal (Alkalimetry).—Alizarine is coloured yellow by acids, and rose-red by alkalies.

Schacht (Benzoic Acid).—The acid from Siam benzoin decolorises an alkaline solution of potassium permanganate, but that from other sources merely alters the colour to green.

Schack (Peppermint Oil).—A blue-green colour is produced with fused salicylic acid; on dissolving the mixture in alcohol, the solution is blue by transmitted, and red by reflected, light.

Schäfer (Cinchonidine in Quinine Sulphate).—Dissolve 1 Gm. of quinine sulphate in 9 Gm. of absolute alcohol, and 3 Gm. of 5 per cent. sulphuric acid. After standing for a day with occasional shaking, any cinchonidine present will have separated out as tetrasulphate, that salt being only slightly soluble in alcohol. By dissolving in water and precipitating again with caustic soda solution, the cinchonidine can be obtained pure (m.p. 199° C.).

Schäfer (Naphthol Yellow).—Warm 10 to 20 Gm. of the material with 40 C.c. of 50 to 60 per cent. alcohol. Naphthol yellow colours the alcohol yellow, the colour being removed by hydrochloric acid, whereas that produced by saffron is unaffected.

Schäfer (Nitrites in Urine).—Decolorise 3 or 4 C.c. of urine with animal charcoal, then treat with an equal volume of acetic acid (1:10), and 2 drops of 5 per cent. potassium ferrocyanide solution. Nitrites cause a yellow colour.

Schäfer (Quinine Sulphate).—Dissolve 1 Gm. of crystallised (or 0·85 Gm. of anhydrous) quinine sulphate in 35 C.c. of boiling water, add a solution of 0·3 Gm. of crystallised neutral potassium oxalate in 5 C.c. of water, and add distilled water to make up

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

41·3 Gm. Place the vessel in a water bath heated to 20° C. for half an hour, shaking occasionally, and filter through glass wool. On adding a drop of caustic soda solution to 10 C.c. of the filtrate no turbidity should be produced if the quinine sulphate was free from allied alkaloids.

Schaffgot (Magnesia).—By using a solution of 235 Gm. of ammonium carbonate and 180 C.c. of ammonia water (sp. gr. 0·92) in 1 litre, magnesia can be precipitated without the addition of fixed alkalies.

Schällibaum (Serial Sections).—Attach sections to slides by the aid of a mixture of 1 part of collodion and 3 or 4 parts of clove or lavender oil, spread thinly with a small brush. After arranging the sections, heat gently until the oil has evaporated.

Schär (Blood).—See Hühnefeld's turpentine solution.

Scheele (Arsenous Acid).—A solution of copper sulphate in excess of ammonia water produces a light green precipitate with an arsenite.

Scheibler (Alkaloids).—Phospho-tungstic acid or its sodium salt produces precipitates similar to those thrown down by phospho-molybdic acid. Prepare the reagent by adding 100 Gm. of sodium tungstate and 60 to 80 Gm. of sodium phosphate in 500 C.c. of water acidulated with nitric acid. Otto simply adds phosphoric acid to a solution of sodium tungstate. See Sonnenschein, Jungman, and De Vrij.

Schell (Cocaine).—Upon mixing cocaine hydrochloride with calomel and moistening or breathing on the mixture, it is blackened by partial reduction of the calomel. Compare Lenz's reaction for pilocarpine.

Schenk (Carbolic Fuchsine).—This stain is prepared by dissolving 1 Gm. of fuchsine and 5 Gm. of crystallised carbolic acid, in 10 Gm. of alcohol, and 100 Gm. of distilled water. Or, a 5 per cent. aqueous solution of carbolic acid may be saturated with concentrated alcoholic solution of fuchsine, saturation being indicated by the formation of a metallic-looking pellicle on the surface of the liquid. The stain is washed out with alcohol followed by clove oil.

Schenk (Fixing Fluid).—Solution of uranium acetate is used' its properties resembling those of picric acid. It has a mild fixing action and a high degree of penetration, and may be combined with methyl green.

Scherer (Brucine).—Evaporate to dryness with nitric acid, on platinum foil, and warm the residue with caustic soda solution, when a yellow liquid remains, which upon further heating forms an oily drop.

Scherer (Inosite).—Evaporate an aqueous solution almost to dryness with nitric acid, and treat the residue with ammonia and a trace of calcium chloride. On further concentration a rose-red solution results.

Scherer (Phosphorus).—A black stain is formed on heating the substance to 30-40° C., and exposing a slip of silver nitrate test paper to the vapours given off. See Hager's test for phosphorus and other hydrides.

Schering (Alkaloids).—Phospho-tungstic acid is used as a precipitant. See Scheibler's test.

Schering (Iodates in Iodides).—A yellow zone is formed on adding to the solution a crystal of tartaric acid.

Schiefferdecker (Digestion Fluid).—Pieces of tissue epidermis are macerated for 3 or 4 hours at about body temperature, in a saturated aqueous solution of pancreatin.

Schiefferdecker (Methyl Mixture).—A mixture of methyl alcohol, 5 C.c. ; glycerin, 50 C.c. ; and distilled water, 100 C.c., is used as a dissociating fluid for retina and central nervous system. Several days are required for complete dissociation.

Schiff (Aldehydes).—The reagent employed is fuchsine-sulphurous acid. See Guyon's reagent.

Schiff (Cholesterin).—(1) A red coloration appears on treating cholesterin with concentrated sulphuric acid, or evaporating with nitric acid and then adding ammonia water. (2) A violet colour is produced on adding a mixture of 2 volumes of sulphuric or hydrochloric acid, and 1 volume of dilute ferric chloric solution.

Schiff (Sulphurous Acid).—A grey stain appears on exposing mercurous nitrate test paper to the vapour of sulphurous acid.

Schiff (Urea).—A violet or purple colour is formed on treating a solution of urea (urine) with furfurol and hydrochloric acid, and upon standing an insoluble brown mass separates out.

Schiff (Uric Acid).—An alkaline solution of the acid reduced silver nitrate or carbonate. On moistening filter paper with a solution of silver nitrate, touching the moistened spot with a little dilute sodium carbonate solution, and dipping the paper into the suspected solution, a black spot appears on the paper.

Schimmel (Menthol in Peppermint Oil).—Take about 20 Gm. of the oil and 30 C.c. normal alcoholic sodium hydroxide solution, heat in a flask with reflux condenser for 1 hour, then titrate the uncombined alkali with normal sulphuric acid, using phenolphthalein as an indicator. Each cubic centimetre of alkali used equals 0·156 Gm. of menthol (which exists as ester, *i.e.*, combined menthol). The saponified oil is then washed with water till free from alkali, and next boiled for 1 hour with an equal volume of acetic anhydride, and 2 Gm. of anhydrous sodium acetate. The product is washed first with water, then with very dilute sodium hydroxide solution, dried with anhydrous sodium sulphate, and filtered. From 8 to 10 Gm. of this acetylised oil is then saponified with 50 C.c. of alcoholic sodium hydroxide as before, and the uncombined alkali titrated with normal sulphuric acid. Then, when S = the weight of acetylised oil, A = the number of C.c. of sodium hydroxide solution used, P = the percentage of total menthol, $P = \frac{A \times 15{\cdot}6}{S - (A \times 0{\cdot}042)}$.

Schlagdenhauffen (Alkaloids).—A black colour is produced on treating alkaloids with an aqueous solution of pyrogallic acid to which an alcoholic solution of mercuric chloride has been added.

Schlagdenhauffen (Alkaloids and Glucosides).—Only alkaloids give a precipitate in the cold or at 60°–70° C. with a mixture of equal parts of a 3 per cent. alcoholic solution of guaiacum resin and saturated alcoholic solution of mercuric chloride. This test serves to distinguish alkaloids from glucosides.

Schlagdenhauffen (Magnesium Salts).—A brownish-red colour or precipitate is produced on adding a golden-yellow solution of iodine in 2 per cent. soda or potash solution.

Schlickum (Arsenic).—A yellow zone appears on pouring a layer of a liquid containing arsenic upon a solution of 0·02 Gm. of sodium sulphite and 0·4 Gm. of stannous chloride in 3 or 4 Gm. of concentrated hydrochloric acid.

Schlienkamp (Nux Vomica).—A crimson colour, disappearing on cooling, is produced by adding a little sulphuric acid and evaporating.

Schlossberger (Textile Fibres).—A concentrated solution of freshly precipitated and moist nickelous hydroxide in ammonia dissolves silk but not wool or cotton. Compare Persog's reagent.

Schmans (Staining Nervous Tissue).—Use English blue black in 0·25 per cent. solution in 50 per cent. alcohol, with the addition of a little picric acid. Stain sections for an hour.

Schmid (Metallic Salts).—A solution of phosphorus in carbon disulphide throws down coloured precipitates when shaken with aqueous solutions of the salts.

Schmidt (Glucose).—Ammoniacal lead acetate solution causes a brownish-red precipitate upon warming with diabetic urine or other glucose solutions. Cane sugar does not cause the reduction. Compare Rubner's solution.

Schmidt (Nitric Acid).—A reddish zone appears on mixing a solution containing nitric acid with an equal volume of a solution of 20 drops of aniline and 10 Gm. of dilute sulphuric acid in 90 Gm. of water, then pouring the mixture in a layer upon concentrated sulphuric acid.

Schmitt (Saccharin).—Acid the liquid strongly, shake out 3 times with a mixture of equal volumes of ether and petroleum ether, treat the extracts with caustic soda solution, evaporate to dryness, and heat the residue to 250° C. for half an hour. Next dissolve the solid mass in water, acidulate with sulphuric acid, and shake out with ether. Saccharin, if present, will be found in the ethereal extract as salicylic acid, as can be proved by applying ferric chloride, after evaporating off the ether.

Schneider (Aceto-Carmine).—Add carmine to boiling 45 per cent. acetic acid until saturated, and filter. A drop of the concentrated solution may be added to a fresh preparation under the cover-glass, but for slow staining dilute to 1 per cent. strength.

(*To be continued.*)

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Potassii Acetas.—The precipitate given by solution of tartaric acid is hydrogen potassium tartrate, which is one of the least soluble potassium salts—

$$KC_2H_3O_2 + H_2C_4H_4O_6 = KHC_4H_4O_6 + HC_2H_3O_2.$$

This reaction is utilised for the detection of potassium, for the acid tartrate is only soluble in about 250 parts of water at ordinary temperatures. The delicacy of the reaction is diminished by one or two factors, the conditions of which must be thoroughly understood before the test can be used intelligently. Note, in the first place, that when tartaric acid is added to a neutral potassium salt an equivalent amount of free acid is produced from the acidulous radicle with which the potassium was previously combined—

$$KCl + H_2C_4H_4O_6 = KHC_4H_4O_6 + HCl.$$

This free acid (and particularly the mineral acids) exerts a solvent action on the acid tartrate and prevents its appearance in weak solutions. The reaction becomes, therefore, more delicate if sodium hydrogen tartrate, $NaHC_4H_4O_6$, be employed in place of tartaric acid, since a neutral sodium salt is then formed in place of free acid. Compare the following equation with the preceding one—

$$KCl + NaHC_4H_4O_6 = KHC_4H_4O_6 + NaCl.$$

It is now obvious that if the solution to be tested is not neutral but contains already free acid the delicacy of the tartrate test for potassium is still further lowered. From this it follows that the solution, if acid, should be neutralised by addition of sodium hydrate or carbonate (not ammonium, because this base also forms an insoluble acid tartrate). On the other hand, presence of free alkali may interfere with the reaction if sufficient tartaric acid or acid sodium tartare be not added to produce a distinct acid reaction. For the neutral potassium tartrate is freely soluble in water, and if only enough reagent be added to produce this, no precipitate results. Consider the following equations for a solution containing potassium hydrate :—

(i.) $2KHO + H_2C_4H_4O_6 = K_2C_4H_4O_6 + 2H_2O.$

(ii.) $2KHO + 2H_2C_4H_4O_6 = 2KHC_4H_4O_6 + 2H_2O.$

Acid tartrate of potassium also exhibits the phenomenon of supersaturation—that is, water will retain in solution for a time more of the salt than corresponds with its actual solubility. Such supersaturated solutions only slowly deposit the excess of dissolved substance; hence, in dilute solutions, precipitation only occurs after standing some time, but it may be hastened by stirring or shaking. This test has been discussed rather fully in order to show the student the necessity for knowing always not only the reagents which produce certain reactions, but also the *conditions* under which these reactions must be carried out to produce the proper result. Only in this way can he become a reliable analyst, able to cope successfully with problems of practical analysis. The use of abridged analytical notebooks and charts is particularly pernicious if it induces the student to perform his analysis by the mechanical addition of certain reagents without considering the limitations of each test and the conditions under which they proceed.

Potassii Bichromas.—A solution of this salt in water behaves as if it contained the real bichromate, $KHCrO_4$, analogous to other bi- or acid salts like $KHSO_4$. When such a solution is crystallised, water is eliminated—

$$2KHCrO_4 = K_2Cr_2O_7 + H_2O,$$

and crystals of the anhydro-chromate, $K_2Cr_2O_7 = K_2CrO_4,CrO_3$, are obtained. Analogous anhydro salts are seen in borax, $Na_2B_4O_7 = 2NaBO_2,B_2O_3$; Nordhausen sulphuric acid, $H_2S_2O_7 = H_2SO_4,SO_3$; and potassium pyrosulphate, $K_2S_2O_7 = K_2SO_4SO_3$. The last salt is obtained by strongly heating the acid sulphate, water being eliminated—

$$2KHSO_4 = K_2S_2O_7 + H_2O.$$

The name bichromate is, therefore, strictly speaking, not the best name for the red chromate of potassium. When red chromate of potassium is used as an oxidising agent the chromium is reduced to the lower state of oxidation corresponding to the oxide, Cr_2O_3. When the salt is heated to a temperature above its melting-point, oxygen is given off,

$$2K_2Cr_2O_7 \left\{ \begin{matrix} 2K_2CrO_4 \\ 2CrO_3 \end{matrix} \right\} \left\{ \begin{matrix} Cr_2O_3 \\ 3O \end{matrix} \right.$$

Most of the chromates of the heavy metals are coloured bodies. When its aqueous solution is heated with rectified spirit and sulphuric acid reduction to green chromium salt occurs, the ethyl alcohol of the rectified spirit being oxidised to aldehyde or acetic acid according to the relative amounts of the substances reacting. This oxidation of ethyl alcohol successively into aldehyde and acetic acid is characteristic of all *primary* alcohols, that is, bodies containing the $-CH_2OH$ group (compare secondary and tertiary alcohols in your text-book of organic chemistry), each alcohol yielding an aldehyde and acid containing the same number of carbon atoms as itself. Thus ethyl alcohol, C_2H_6O, yields an aldehyde, C_2H_4O, and an acid (acetic), $C_2H_4O_2$. The empirical formulæ just given serve to show the relationship always existing between a primary alcohol and its corresponding aldehyde and acid; *i.e.*, when the alcohol is oxidised the first stage is the formation of its aldehyde (*alcohol dehydrogenatum*) accompanied by the removal of two hydrogen atoms by the oxidising agent, $C_2H_6O - 2H = C_2H_4O$. The aldehyde by further oxidation passes into the acid, one atom of oxygen being taken up, $C_2H_4O + O = C_2H_4O_2$. The constitution and relationship of these three important classes of organic bodies will be more fully dealt with in another place.

THE FLOWERS OF OCTOBER.

These are few in number, and consist chiefly of the September plants, whose flowering season has been prolonged by favourable weather. The following medicinal species may be looked for :—*Achillea millefolium*, *Agrimonia eupatoria*, *Anthemis nobilis*, *Artemisia absinthium*, *A. vulgaris*, *Borago officinalis*, *Cichorium intybus*, *Colchicum autumnale*, *Melilotus officinalis*, *Mentha pulegium*, *Tanacetum vulgare*, *Verbena officinalis*, and *Viola odorata*, the last which, in gardens and in a few sheltered sunny spots, is producing autumn flowers. This month is a suitable time for examining the fruits of many medicinal plants. Those of *Æthusa cynapium*, *Atropa belladonna*, *Bryonia dioica*, *Datura stramonium*, *Ecballium officinarum*, *Physalis alkekengi*, *Quercus robur*, *Rhamnus catharticus* and *R. frangula*, *Rosa canina*, *Solanum dulcamara*, *S. nigrum*, and *Tamus communis* are worthy of notice. In the case of *Æthusa*, the two vittæ on each commisural or flat surface of the fruit should be noticed, as these are absent in *Conium*. In *Atropa* the fruit will be observed to differ from a typical berry in being superior. In *Bryonia* the two cotyledons should be noted, there being only one present in *Tamus*. In *Datura* the capsule is spuriously four-celled below, but two-celled above, the axile placenta being joined half-way up the capsule by a growth from the midrib of the carpel. The septifragal dehiscence of the fruit should also be noted, and the reniform shape of the seed, and the curved embryo immersed in albumen. *Physalis alkekengi* is remarkable for the accrescent inflated calyx. The different shape of the endocarps in the two species of *Rhamnus* should be noted, and the fruit of the dog rose be compared with the dry œterio of the buttercup or clematis, the fruit being, in fact, an inverted œterio in the rose, lining what is regarded by some as a hollowed pedicel, and by others as the calyx tube. The fruits of the Spanish and horse chestnut can now be compared, the former consisting of a capsule containing fruits (with stigmas) and the other of a capsule containing one or more seeds. The curious fruit of the pomegranate (balausta), is also now obtainable at the fruiterers' shops. The walnut affords an instance of the tryma, and the *Ecballium* of the Pepo. There is perhaps no better time during the whole year in which to study the structure of fruits, and to compare them with the chapter on fruits in Green's 'Botany.' In botanical gardens a few medicinal plants are still in blossom, including *Asclepias vincetoxicum*, *Chenopodium ambrosioides*, *Crocus sativus*, *Heuchera americana*, *Nicotiana tabacum*, *Ricinus communis*, *Ruta graveolens*, and *Saponaria officinalis*. The beautiful fungus *Amanita muscaria* may also still be found under birch trees in woods.

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THE RESPONSIBILITY OF THE CHEMIST.

In some instances, which have happily been of very rare occurrence, it has been our duty to record incidents of a lamentable character, in which fatal results have been due to accidental substitution of one medicinal agent for another. A case of this kind has recently been the subject of a coroner's inquest at Gainsborough, and is reported at page 356*a*. The circumstances there disclosed do not call for comment otherwise than by the expression of profound regret and sympathy for those who have suffered. But at the same time they serve to illustrate in a very forcible manner the great difference between the business of a chemist and druggist and any other kind of trading occupation, as well as the importance of a chemist being personally able to vouch for the nature and quality of every article supplied from his shop. If modern conditions preclude the possibility of having all medicinal preparations made in his own establishment and under the chemist's direct supervision, it is indispensably necessary that every article obtained from the wholesale druggist—or from the factory which has in many instances absorbed the work that was formerly done by the individual pharmacist—should be examined in such a manner that the seller can be as certain of its nature and quality as if he had made it himself. Nothing short of that is sufficient to enable the chemist to give his customers an adequate guarantee that the confidence they must necessarily place in him is well founded; nothing short of that will afford the chemist security against a contingency that may be as disastrous to all concerned as the mistake in the Gainsborough case.

It is sometimes said that the chemist cannot under present conditions afford to test all the articles which he has to buy ready made; but it appears much more certain that, while claiming the title of chemist, he cannot afford to trust implicitly to the wholesale druggists from whom he obtains his supplies. However high may be the repute of these wholesale houses, the business they carry on is so much more of the nature of trade than that of the retail chemist that there is a corresponding greater risk of mistakes being made, consequently reliance upon them can never replace the personal assurance which the chemist must provide if he desires to be regarded as something more than a mere distributor of other people's goods, and to protect himself as well as his customers. The heads of wholesale houses, it must be remembered, are not necessarily registered chemists, whilst many of their warehousemen who actually handle the drugs are frequently only very imperfectly acquainted with the nature and properties of the substances amongst which they labour. The pharmacist is in a different position, being directly responsible to the public, and by the application of chemistry the responsibility of the pharmacist has been very considerably augmented in regard to the safe handling of poisons. As compared with former times, when the majority of pharmaceutical preparations were comparatively harmless, the pharmacy now bristles with articles which have a potency that renders them extremely dangerous, although they may not all come within the definition of legal poisons. Considering the multiplicity of such articles at the present time and the fact that so many of them are in daily use, there is reason for congratulation that accidents are so rare, and this fact speaks highly for the care generally exercised by chemists.

THE PRESIDENT'S ADDRESS.

Sheffield students have been fortunate for many years past in being addressed from time to time by pharmacists of the highest repute, who have given to them freely out-of the abundance of the intellectual riches that men gain by experience only. This year is no exception to the usual rule, and the students who have listened to, as well as the infinitely greater number who will read, what the President of the Pharmaceutical Society had to tell them, ought to be able to realise, if they have not realised before, what prospect faces them in the pursuit of the calling they have decided to make their own. It is, perhaps, not always recognised so fully as it ought to be that the pharmacy of to day is not identical with that of a quarter of a century ago, but the changes have indeed been very great, as well in the sciences upon the application of which pharmacy as an art is based, as in the practice of medicine, and consequently that of pharmacy. To the individuals who have to bear the brunt of great changes the novelty of the situation is apt to become exceedingly irksome; but the pharmacist of to-day ought to be prepared for constant change, and, if he be so prepared, he will never be found wanting, and may reasonably hope for a fair measure of success as a business man. Science continually tends to become more exact; medical systems are always in a condition of unstable equilibrium, but pharmacy goes on for ever, and the pharmacist who would be up-to-date must be content to advance accordingly. Mr. Hills was particularly happy in his sketch of the possibilities that present themselves to the pharmacist who is sufficiently worldly-wise to fit himself to act as a scientific expert. The pharmacist should undoubtedly be the popular exponent of all that is new in matters scientific, especially as regards applied science, and in that direction the prospect open before him is illimitable. But, to take proper advantage of the opportunities thus afforded him, the pharmaceutical student must see to it that the foundations of his knowledge are secure. His general education should be second to none, he ought to regard no time as misspent that is devoted to securing a comprehensive grasp of the physical and natural sciences, and his technical training must be such as to render him a master of his own profession, fit to meet the best men in other professions on terms of perfect equality. Many workers in pharmacy have already attained to that eminence, and many more will do so if they act upon the advice given to them by the President in his Sheffield address.

ANNOTATIONS.

The Winter Session is now fairly begun, and we are receiving reports of meetings and notices of further meetings from all parts of the country. The President of the Pharmaceutical Society has delivered a most interesting and encouraging address to the students of the Sheffield School of Pharmacy, the Vice-President is expected shortly to inaugurate the session at Nottingham, and Mr. T. Morley Taylor has set the ball rolling at the Chemists' Assistants' Association with a brief account of pharmaceutical legislation in this country. Plymouth, Halifax, and Brighton have also commenced operations, and the annual meeting of the Western Chemists' Association of London is announced for next week, on the same evening as the fourth annual dinner of that vigorous body known as the Plymouth, Devonport, Stonehouse and District Chemists' Association. The Midland Pharmaceutical Association holds its opening meeting at the Grand Hotel, Birmingham, on Thursday, November 4, when there will be a reception by the President, followed by dancing. Last, but not least, the Midland Chemists' Assistants' Association has been treated to a display of miniature pseudo-thunder by its new President (see p. 354).

Mr. Harry Jessop, the young gentleman in question, has, we believe, not long passed the tender age of one year as a registered chemist and druggist, but the first flush of his success in securing registration has apparently not yet worn off and, nothing daunted by difficulties that have proved too much for older and wiser heads than his own, he seems quite prepared to rush into the fray on behalf of chemists' assistants generally, so long as they are not converted errand boys. In view of the fact that he is already registered—has been so, indeed, for eighteen long months—it reveals remarkably disinterested feeling on his part to throw himself with so much enthusiasm into the ranks of those who object to the raising of the fee for registration. A possible clue to the situation may be afforded by the supposition that he does not intend to remain a mere pharmacist, but aspires to higher flights. This addition to the opposition may not necessarily prove fatal to the proposal of the Pharmaceutical Council, but at least it increases the number of known objectors to seven at least, six having recorded their desire to impede progress at the last annual meeting of the Pharmaceutical Society. Not that numbers mean everything; minorities have sometimes included all the brilliant intellects concerned in a dispute about some particular question. But is it not too late to flog a dead horse by attempting to revive interest in a matter that aroused so little enthusiasm outside the square mile known as the City of London, and especially when the opposition from that important centre was avowedly prejudiced?

The Apprenticeship Difficulty referred to by Mr. Jessop is much more worthy of consideration. On more than one occasion, the opportunity has been taken in these pages to condemn the practice of taking apprentices from an unsuitable class. It is nothing short of a scandal that the public should be exposed to risk by the elevation of the pharmaceutically unfit to positions they could never have attained but for the greed of gain displayed by employers of cheap labour in pharmacy. But why the Pharmaceutical Society should be burdened with the care of apprentices is not clear. The difficulty, such as it is, has been created entirely by chemists and druggists themselves, and why they—and especially those of them who do not belong to the representative body—should expect the Society to pose as a *Deus ex machina*, relieving them of their responsibilities, quite passes comprehension. All who recognise the evil caused by taking apprentices from an inferior class, and allowing additions to the ranks of pharmacy by what may be termed "short cuts," should continually show by their attitude towards those concerned in the practice how much they deprecate it. Moral suasion may not be capable of accomplishing everything that may be desired, but it goes a long way, especially if it be persistently and generally resorted to by all who desire to see some grievance redressed.

The Local Government Board has published its twenty-sixth annual report, according to which there were 1380 samples of drugs analysed by public authorities in 1896, and 156 of those, or 11·3 per cent., were found to be adulterated. The percentage for the past four years has been about 11·0 per cent., so that last year was not much above the average. Of nitre (? spirit of nitrous ether) 51 out of 196 samples were condemned; of rhubarb (? tincture) 22 out of 128; and of ipecacuanha wine, 10 out of 29. The purity of beeswax was well looked after during the year, 10 out of 46 samples being condemned. One was a mixture of about 30 parts of resin to 70 of ceresine, whilst another contained 75 per cent. of paraffin and only 25 per cent. of genuine beeswax. Of medicines dispensed from prescriptions, 8 out of 31 were reported against. Proceedings were instituted in about half the cases of adulteration, and forty-four penalties imposed, which yielded a total of £36 15*s.* 6*d.* Once again we have to protest against the omission to indicate how many of the adulterated samples were purchased from chemists. Judging from the nature of the articles enumerated, very few of them were, and in that case it is only fair the fact should be stated. Ginger, which by the way is not classified as a drug by the L.G.B., was adulterated in 16 only out of 551 samples; vinegar in 34 out of 431; lard in 22 out of 1847; mustard in 31 out of 774; and pepper in 7 out of 1543. Altogether 45,555 samples taken in accordance with the Sale of Food and Drugs Act were analysed in 1896, 45,020 of those being obtained by officers of local authorities, and 4202, or 9·2 per cent., were found to be adulterated.

The Only Way to Extinguish Adulteration, according to the L.G.B., is to render it unprofitable, and it is observed in the annual report that many local authorities have represented the inadequate fines repeatedly inflicted by magistrates to be an encouragement to adulteration. But although the total proportion of samples reported against in 1895 and 1896—a little over 9 per cent.—is not regarded as being altogether satisfactory, it is pointed out that it compares very favourably with that of the year 1877, especially when it is remembered that the injurious forms of adulteration in vogue forty years ago have almost, if not entirely, disappeared. With regard to milk, it is reported that many samples contained boric acid, added as a preservative, and in a few instances the proportion was very large. In Birmingham eight samples were found to contain fifty grains or more per gallon, and two of them contained at least seventy grains per gallon. One analyst is quoted to the effect that "preservatives are often very ignorantly used, and in quantities largely in excess of what is necessary; add to this that their presence is not declared, and as the milk often passes through several hands, each may add a fresh quantity of the preservative until a distinctly poisonous dose is reached." London milk-sellers are the worst offenders, and they positively revel in the addition of water on Sundays, not in support of the old adage that "the better the day the better the deed," but apparently because inspectors are scarce on the first day of the week. Perhaps, however, we may expect shortly to hear of an extensive raid on milk-sellers some Sunday morning.

Messrs. Macmillan and Co., Limited, the great publishers, have entered upon possession of a new establishment, which includes the site of the ancient Nag's Head, a galleried tavern, near Leicester Square, and is situated in a vicinity fragrant, as a *Times* writer puts it, with literary and artistic memories. Hard by Sir Isaac Newton passed the proofs of the third edition of the "Principia," and in the same house at one time resided Dr. Martin Burney, and "Evelina" was written by Fanny Burney. The names of Sir Joshua Reynolds, Hogarth, and John Hunter are also connected with the neighbourhood. The new building, which extends from St. Martin's Street to Whitcomb Street, is of Portland stone, of classical design, has a frontage of one hundred and six feet in Whitcomb Street, ninety-nine feet in St. Martin's Street, and twenty-four feet in Blue Cross Street. Inside, there is a fine wainscotted hall and a great staircase of oak, with oaken wainscot upon which hangs Professor Herkomer's portrait of the late Alexander Macmillan. Solid wainscotting is also a striking feature in the director's rooms, and of the board-room, hung with portraits of Tennyson and Matthew Arnold and others, who have helped to build up the House of Macmillan, and have been helped to build their own fortunes in return.

A Commercial Reading-room has, we are informed, been arranged at the Imperial Institute, and is open during the day for the free use of the general public. It is supplied with the principal British commercial and technical publications, and a number of similar prominent Indian, colonial, and foreign periodicals. Visitors to the reading-room can also consult a large collection of directories, almanacks, official year-books and handbooks, Government gazettes, diplomatic and foreign consular reports, market reports, prices current and statistics, trade circulars and catalogues, and an extensive collection of colonial and Indian maps. We are also asked to state that inquiries relating to commercial and industrial matters, to emigration, etc., addressed personally, or by letter, to the Commercial Intelligence Department of the Institute, are promptly dealt with.

The Study of Botany is likely to be encouraged to some extent by the London County Council, as that body has adopted the following resolution, on the motion of Mr. Organ :—"That it be referred to the Parks Committee and to the Technical Education Board, to consider and report as to the practicability of laying out plots of ground in certain parks in such manner as will afford assistance to scholars of elementary and secondary schools in the study of practical botany." At the same meeting, on the recommendation of the General Purposes Committee, Dr. Frank Clowes, of Nottingham, was unanimously appointed to the post of chemist at a salary of £700 a year.

Weights and Measures served the Earl of Crawford as a theme in delivering the annual presidential address to the Royal Photographic Society on October 12. He referred to weights and measures more particularly as used in the photographic craft, and considered what modifications would best conduce to accuracy in result, facility of manipulation and computation, and, from the commercial point of view, to increased volume of trade. The general use of the metric system was avowed to be his lordship's aim and desire, and one that he had striven for since 1878, when he was appointed a member of a Committee of the House of Commons on a Bill dealing with the subject. The metric system, he urged, is self-contained and easy of application, and therefore a strong contrast to the English system. English standard measures have the merit of antiquity and are but two in number, the yard and the pound. Neither of them is a physical unit, however, and they cannot be compared directly with anything in nature. The length of the yard was fixed by law in 1824, and the pound is merely the weight of a lump of platinum, at present in charge of the Board of Trade. Lord Crawford went on to point out the many advantages of the metric system, more particularly to photographers and, in conclusion, he remarked that the adoption of a change of system must rest with the individual. Vast numbers yearly begin to learn photography, and most of them purchase a small outfit. Much might, therefore, be done by the makers of popular goods giving metric dimensions with their cameras and plate-holders, and stating that suitable-sized plates would be found in most parts of the civilised world. The Fellows of the Society were reminded that by their action in past years they had established uniformity in the sizes and names of diaphragms for lenses, and the hope was expressed that they would also encourage this other great measure of reform, and do all they could to secure the general use of decimal weights and measures.

Incandescent Oil Lamps are now obtainable, as it has been found that the incandescent system can be applied to petroleum lamps in exactly the same way as to gas burners. The lamps are fitted with a new form of burner, with the familiar Welsbach mantle over the flame, and it has been found that a soft white brilliant light can be obtained with the consumption of only about a third the quantity of oil that would be required with ordinary burners. At least, so it is claimed, also that the incandescent burner can be fixed to any duplex lamp in substitution for the old burner, and that, as perfect combustion is effected, the smoking of the ordinary oil lamp is done away with, while, as there is less heat, the risk of the oil container becoming over-heated is correspondingly reduced.

The Patent Laws of this country make no provision for an official search as regards novelty, and all patents are taken out at the risk of the inventors. It is, therefore, incumbent on any person desiring to obtain a valid patent for an invention either to cause a search to be made, or himself to make a search, as to the novelty of his invention. But a complete and exhaustive search through published specifications of patents is a task of considerable difficulty, for the number of printed specifications of patents is well over a quarter of a million. Fortunately, a series of indexes and abridgments has been published by the Patent Office as a guide to the specifications themselves, and is freely distributed to the principal public libraries in this country. The abridgments give a general description of the nature of every invention patented, and by the study of these abridgments the would-be patentee will generally be able to select certain inventions which have already been patented, and resemble his own invention sufficiently to render it desirable for him to examine their specifications in detail. The abridgments are published in volumes, each volume dealing with one particular class of inventions, and we have just received from the Comptroller-General of Patents, Designs, and Trade Marks, the latest one, which covers all inventions in medicine, surgery, and dentistry, patented during the period 1884-88. This is well illustrated, and is supplied from the Patent Office, Chancery Lane, W.C., at one shilling, including inland postage. It is, we understand, shortly to be followed by similar volumes for the periods 1889-92, and 1893-96.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, October 13, the Librarian presented the following report of donations :—

To the Library (London).

University of Glasgow :—Calendar, 1897.

University of Durham College of Medi ine :—Calendar, 1897.

University College, Bristol :—Calendar, 1897.

Yorkshire College, Leeds :—Calendar, 1897.

Owens College, Manchester :—Calendar, 1897.

King's College Hospital, London :—Reports, vol. 3.

Philosophical Society of Glasgow :—Proceedings, vol. 28.

Royal Society of New South Wales :—Journal and Proceedings, vol. 30.

Smithsonian Institution, Washington :—Annual Report, 1893, part 2 ; 1894 part 2 ; 1895, part 1.

Geolog'cal Survey of Canada :—Annual Report, 1895.

Department of Mines and Agriculture, New South Wales :—Annual Report of the Hawkesbury Agricultural College, 1895.

J. H. Maiden, Esq., F.L.S., Sydney :—Anniversary Address to the Royal Society of N.S.W., 1897 ; Plants Reputed to be Poisonous to Stock in Australia, 1897.

D. McAlpine, Esq. :—The Sooty Mould of Citrus Trees, 1896.

Professor Gay, Montpellier :—Eighteen pamphlets.

C. A. Barber, Esq., M.A., London :—The Diseases of the Sugar Cane, 1897.

Sir D. Brandis, K.C.I.E., Ph.D. :—Indian Forestry, 1897.

Deuts her Apotheker-Verein :—Arzneimittel welche in dem Arzneibuch für das Deutsche Reich nicht enthalten, 2. Ausg., 1897.

Thomas Haubury, Esq., F.L.S La Mortola :—Alphabetical Catalogue of Plants Growing in the Open Air in the Garden of Thomas Hanbury, F.L.S., compiled by K. Dinter, 1897.

Mr C. J. S. Thompson, Liverpool :—The Mystery and Romance of Alchemy and Pharmacy, 1897.

To the Museum (London).

Messrs. Schimmel and Co., Leipsic :—Specimen of Anise Bark from Madagascar ; specimen of *Croton flocculosus*.

Messrs. J. Bell and Co., London :—Specimen of Oil of Amber, distilled from the amber used in tobacco-pipe manufactories.

Dr. J. E. T. Aitchison, F.R.S., Mortlake :—Specimen of Penang Benzoin found in a bog in Ireland.

Mr. J. Parham, London :—Specimen of the Oil of *Eucalyptus dumosa* (Mallee brand) containing 60 per cent. of eucalyptol.

Messrs. Charles Price and Co., London, per Messrs. Hodgkinsons, Clark, and Ward :—Four specimens of Pine Resin and two specimens of Resin Oil.

To the Herbarium.

Dr. T. G. Nicholson, London :—Specimens of *Strophanthus nicholsoni* and of other Central African plants.

Mr. J. Medley Wood, A.L.S., Natal ;—Specimens of *Monsonia attenuata*, *M. biflora*, and of *Podaxon pistillaris*.

EXAMINATIONS IN LONDON.

October, 1897.

MINOR EXAMINATION.

Candidates examined	.....	176
,, failed	.....	130
,, passed	.....	46

Acton, James Rowland.
Barker, Charles.
Blaker, Ernest Jamos.
Cannon, Frederick William.
Colbeck, Norman.
David, Idwal.
Davies, Henry John.
Dixon, Frederick Spalton.
Dodridge, William James.
Eaton, Henry.
Ellis, Bernard.
Ellis, Hugh Edward.
Evans, John Richard.
Field, George Rogers.
Franeis, Henry St. David.
Harrison, Sarah Susannah.
Henderson, Henry John.
Humphrey, Walter Edwin.
Hunter, John Edwin.
Ind, Charles Uncles.
Jones, Henry.
Jones, Henry Lloyd
Jones, John Lee.
Kenway, Ivor.
Kirkman, William Ernest.
Langman, Herbert Ball.
Lister, Frederick Spencer.
Marriott, Arthur Eustace.
Measday, Charles Stafford.
Milligan, William.
Mossom, Arthur Henry.
Neale, Cecil.
Norris, James Reginald.
Page, Harry.
Price, Arthur Henry.
Riches, Richard Percival.
Roberts, Frederick Walter.
Roberts, Hugh Pierce.
Russell, George Henry
Saunders, John.
Shaw, William.
Staton, John.
Sturdy, Thomas Tyerman.
Thwaits, George Rose.
Ullett, Frank.
White, Daniol Hanbury.

FIRST EXAMINATION.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination :—

Atmore, Edward Percy ; Newmarket.
Bollom, Arthur Harry ; London.
Burdon, James R. ; Bury St. Edmunds.
Carr, Charles F. ; Sheffield.
Collings, Ellis A. ; Littlehampton.
Coltart, John A ; Warwick.
Constance, Stephen G. ; Gloucester.
Gresswell, Charles S. ; Landport.
Horman, Charles George ; Bristol.
Hudson, Reginald A. ; Cranbrook.
Jenner, Percy Greenwood ; Liverpool.
Keall, John ; Cricklewood.
McNeil, Thomas M. ; Kennington.
Meredith, Joseph Richard ; Brecon.
Rayner, Alfred ; Camberwell.
Saltmarsh, Alice Isabella ; Hampstead
Smith, Thomas Connell ; Edinburgh
Stovin, John ; Kilburn.
Woods, William B. ; Ormskirk.
Worrall, Harry ; Rusholme.

"FIRST" EXAMINATION QUESTIONS.

October 12, 1897.

ARITHMETIC.

Time allowed—from 12.30 p.m. to 2 p.m.

[The working of these questions, as well as the answers, must be written out in full.]

1. If a man with a salary of 26 guineas per quarter spends at the rate of 5*s*. 3*d*. per day, how much does he save in a year?

2. If 6 dozen table-spoons weigh 11 lbs. 6 oz. 12 dwt, and 3 dozen tea-spoons weigh 1 lb. 9 oz. 17 dwt., by how much does the weight of a table-spoon exceed that of a tea-spoon?

3. Give the difference between

$$\frac{2\frac{4}{5} \text{ of } 5\frac{1}{8}}{27\frac{1}{2}} \text{ of } 22s.\ 6d. \text{ and } \frac{5\frac{1}{17}}{6\frac{1}{4}} \text{ of } 12s.\ 6d.$$

4. Simplify $\dfrac{2\cdot\dot{4}\dot{5} \times 3\cdot\dot{1}\dot{6}}{\cdot 0\dot{1}2\dot{6}}$.

5. By selling an article for 28*s*., I gained $\frac{2}{5}$ of the prime cost ; how much per cent. should I have gained if it had been sold for 2*s*. more than it was?

6. If 12 men, working 8 hours a day, could do $\frac{4}{5}$ of a piece of work in 20 days, in how many days could 15 men, working 10 hours a day, do $\frac{7}{8}$ of it?

The following question must be attempted by every candidate :—

7. If 1 décalitre of wheat makes 6 kilog. 68 décag. of bread, find approximately how many English gallons of wheat will be required to make 56 myriag. 1 kilog. 788 gr. of the same quality.

ENGLISH.

Time allowed—from 3 p.m. to 4.30 p.m.

1. Analyse :—

> "Not all the sights your boasted garden yields
> Are half so lovely as my father's fields,
> Where large increase has bless'd the fruitful plain
> And we with joy behold the swelling grain!"

2. Parse fully the following words taken from the passage given in Question 1 :—*all*, *your*, *so*, *as*, *where*, *behold*, *swelling*.

3. Correct the following sentences, giving your reasons :—

(i.) Whom was that lady putting every one else at their ease.

(ii.) There was a quarrel and shots fired.

4. In the following passage, supply the necessary capital letters, and put in the stops and the inverted commas, where necessary :—she rose and glanced anxiously round the room then she looked at the door which communicated with the adjoining apartment and suddenly sprang towards it dont dont go in there eried helen imploringly mrs dale with a deadly white face stopped short turned

and lookcd at her why not she asked abruptly in a whisper why because because stammered the girl it was in there you fainted dont you remember

The following qucstion must bc attempted by every candidate :—

5. Write a short composition on *one* of the following subjects :—

(i.) The effects of the Norman Conquest.

(ii.) Our Indian Empire.

(iii.) The recent war between Turkey and Greece.

(iv.) The qualifications a young tradesman should possess in order to succeed.

LATIN.

Time allowed—from 11 a m. to 12.30 p m.

I. For all candidates. Translate into Latin :—

1. He promises to come.
2. Who taught Balbus music?
3. The general had been praised by all the people.
4. We must not live for ourselves alone.
5. He shut the gates of the city that no one might enter.

II. Translate into English *either* A (Caesar) *or* B (Virgil) :—

(Candidates must not attempt both authors.)

A.—Caesar.

1. Interim quotidie Caesar Aeduos frumentum, quod essent publice polliciti, flagitare. Nam propter frigora, quod Gallia sub septentrionibus, ut ante dictum est, posita est, non modo frumenta in agris matura non erant, sed ne pabuli quidem satis magna copia suppetebat: eo autem frumento, quod flumine Arare navibus subvexerat, propterea uti minus poterat, quod iter ab Arare Helvetii averterant, a quibus discedere nolebat.

2. Quum ab his saepius quaereret, neque ullam omnino vocem exprimere posset, idem Divitiacus Aeduus respondit: Hoc esse miseriorem et graviorem fortunam Sequanorum quam reliquorum, quod soli ne in occulto quidem queri, neque auxilium implorare auderent; absentisque Ariovisti crudelitatem, velut si coram adesset, horrerent: propterea quod reliquis tamen fugae facultas daretur, Sequanis vero, qui intra fines suos Ariovistum recepissent, quorum oppida omnia in potestate ejus essent, omnes cruciatus essent perferendi.

Grammatical Questions.

(For those only who take Caesar)

1. Give the accusative singular of *agris, navibus, quibus, his, facultas, omnia;* and the ablative singular of *Caesar, iter, vocem, auxilium, fugae, fines.*

2. Write the third person singular of the subjunctive present, and the perfect infinitive, of all the verbs in Passage 2.

3. Give, with examples, rules for the comparison of adjectives and of adverbs in Latin.

4. What prepositions govern two cases, and with what difference of meaning?

B.—Virgil.

1. Inde, lupae fulvo nutricis tegmine laetus,
Romulus excipiet gentem, et Mavortia condet
Moenia, Romanosque suo de nomine dicet.
His ego nec metas rerum, nec tempora, pono;
Imperium sine fine dedi. Quin aspera Juno,
Quae mare nunc terrasque metu coelumque fatigat,
Consilia in melius referet, mecumque fovebit
Romanos, rerum dominos, gentemque togatam.
Sic placitum. Veniet, lustris labentibus, aetas,
Cum domus Assaraci Phthiam clarasque Mycenas
Servitio premet, ac victis dominabitur Argis.

2. Rex erat Aeneas nobis, quo justior alter
Nec pietate fuit, nec bello major, et armis:
Quem si fata virum servant, si vescitur aura
Aetheria, neque adhuc crudelibus occubat umbris;
Non metus, officio nec te certasse priorem
Poeniteat. Sunt et Siculis regionibus urbes,
Arvaque, Trojanoque a sanguine clarus Acestes.
Quassatam ventis liceat subducere classem,
Et silvis aptare trabes, et stringere remos.
Si datur Italiam, sociis, et rege recepto,
Tendere, ut Italiam laeti, Latiumque petamus.

Grammatical Questions.

(For those only who take Virgil.)

1. Give the accusative singular of *tegmine, rerum, aetas, nobis, umbris, regionibus;* and the ablative singular of *lupae, Juno, domus, Rex, trabes, remos.*

2. Write the third person singular of the subjunctive present, and the perfect infinitive, of all the verbs in Passage 1.

3. Give, with examples, rules for the comparison of adjectives and of adverbs in Latin.

4. What prepositions govern two cases, and with what difference of meaning?

THE WORLD OF PHARMACY.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

Re-opening of the School of Pharmacy.

On Thursday, October 14, the thirteenth session of the Sheffield School of Pharmacy was inaugurated at the Masonic Hall, when an address to the students was delivered by Mr. Walter Hills, President of the Pharmaceutical Society of Great Britain. The chair was taken by Mr. George Squire, President of the local Society, who was supported by many prominent pharmacists of the district, and friends of the students. At the outset, Mr. T. S. Rhoden (Secretary of the School) read the report of the twelfth session of the School, which was as follows :—

School Report.

In presenting to you the report of the twelfth session of the Sheffield School of Pharmacy, extending from October 12, 1896, to the end of April, 1897, it is satisfactory to be able to announce that it was a successful one, though it is at the same time regrettable to have to admit a decrease in the number of students presenting themselves for tuition. Considering the advantages to be obtained by a course at this School, surprise must be added to regret to think that so many junior members of our calling in this closely populated district permit such valuable opportunities for their educational and professional progress to pass. It is, however, hoped that the chemists around us will impress upon their juniors the value of an early and continued application to the subjects taught in our School. Classes have been held in botany, materia medica, chemistry, physics, and practical chemistry. The lecturers report that the attendance has been very regular, well maintained, and progress excellent, the results at the examinations being satisfactory to all. The special prize of one guinea, offered annually by Mr. Newsholme, for the best herbarium collected within twenty miles of Sheffield, has failed to draw a single aspirant this session. It will be remembered that last year this prize was keenly contested, the result being two exceptionally fine collections, which reflected painstaking and diligence on the part of the respective competitors, drawing forth a high eulogium from the gentlemen who decided the merits of each collection. The School lecturers hope that this session may produce another hearty competition.

The prize-winners are as follows :—

Botany.—First, Mr. T. B. Fox; second, Mr. E. E. Richards.

Materia Medica.—First, Mr. W. Stuther; second (equal), Mr. C. F. Carr and Mr. G. J. Hawksworth.

Theoretical Chemistry and Physics.—First, Mr. Drabble.

Practical Chemistry.—First, Mr. Crofts; second, Mr. Drabble.

Mr. George Squire (President) said it gave him exceptional pleasure to preside over such a large meeting. Much encouragement was thus received at the commencement of another session of the Sheffield School of Pharmacy. As a former student of the School, he had always taken a keen interest in its work and welfare and progress, the only regret was that they had not a greater number of students, as early training received at such a School was of incalculable benefit in after life. From his own experince Mr. Squire said he could testify to the great advantage gained by an early attachment to a school of pharmacy. A thorough and gradual grounding in all the subjects of examination thus obtained was far more valuable than the abhorrent system of cram, which is now so prevalent. He was sorry they had not as yet gone in for a more extended course of instruction. There were at present no day classes, and the students had to attend the lectures after business hours, but with present successes the Council would be encouraged to grapple with this important question of extended facilities for education. Mr. Squire went on to say that the present inaugural meeting was probably unique in the fact that both the President and Vice-President (Mr. Hills and Mr. Newsholme) of the Pharmaceutical Society of Great Britain were present, both being gentlemen who have largely interested themselves in provincial education. Mr. Squire then handed the prizes to the successful students, congratulating them heartily and giving each a suitable word of encouragement.

Mr. Walter Hills then proceeded to deliver the address to the students, which is printed in full at page 337.

Mr. H. E. Ibbitt, in proposing a vote of thanks to Mr. Hills for the admirable and practical address which he had given, said while it

contained excellent advice to the students and younger members of the meeting, he was quite sure there was no one present who would not be benefited by a careful consideration of it.—Mr. John Austen, who seconded the motion, expressed the gratification of the Sheffield chemists at being privileged by having Mr. Hills amongst them on that occasion. He had listened to the address with pleasurable feelings, and had been struck with many of the expressions, which showed how anxious the President was to elevate not only pharmacy but pharmacists. In this respect he was like former pioneers, such as William Allen, Jacob Bell, Peter Squire, and a host of others who ardently loved the calling they had made their own.

The meeting then terminated, and the company adjourned to the dining-room of the Masonic Hall, where

The Annual Dinner

of the Sheffield Pharmaceutical and Chemical Society was held. The chair was again taken by Mr. George Squire, President of the local Society, who was supported by Mr. Walter Hills, President of the Pharmaceutical Society of Great Britain, Messrs. G. T. W. Newsholme and Mr. Rymer Young, Members of the Council of that Society and most of the leading Pharmacists of Sheffield and neighbouring towns. The toast list was as follows :—

Proposed by		Responded to by
The President.	"The Queen."	
Mr. J. R. Young.	"Sheffield Pharmaceutical and Chemical Society."	Mr. Squire.
Mr. J. F. Eardley.	"Pharmaceutical Society of Great Britain."	Mr Walter Hills. Mr. G. T. W. Newsholme.
Mr. Job Preston.	"Scientific and Learned Societies."	Mr. A. H. Allen, F.I.C.
Mr. W. Ward.	"Medical Profession."	Mr. Alfred Reckless. Dr. Robertson. Dr. Inkster.
Mr. Fox.	"The Visitors."	

CHEMISTS' ASSISTANTS' ASSOCIATION.

A meeting of this Association was held on Thursday, October 7, Mr. T. Morley-Taylor, the newly-elected President, in the chair. On this occasion the Association met for the first time at its new premises, 73, Newman Street, Oxford Street, W. There was a moderate attendance of old members, with a fair sprinkling of new faces amongst them. General satisfaction was expressed with the Association's rooms, which are somewhat larger and much more convenient than the old rooms in Great Russell Street, inasmuch as the cloak and coffee room and that in which the meetings are held adjoin, both being situated on the first floor.—The Secretary, Mr. F. W. Gamble, having read the minutes of the previous meeting, which were declared correct, eight new members were proposed and seconded.—The President then delivered the inaugural address, dealing principally with the

Progress of Pharmaceutical Legislation.

Mr. Taylor said: I propose to make a few remarks upon pharmaceutical legislation in this country, as it affects ourselves and as it affects more particularly the public. It is strange that so many men, members of those professions the practice of which is restricted by law, should, in their anxiety for further privilege, forget that the laws restricting the practice of those professions were made by the public for the public good, and we will first of all consider why pharmacy should be included amongst these professions ; obviously for these reasons :—

First, because the administration of medicines forms an important factor in medical treatment.

Secondly, because it is imperative that these medicines should be reliable preparations from reliable sources.

Thirdly, because many of them are of a dangerous and highly poisonous nature, and should therefore be handled only by competent individuals.

Fourthly, because considerable scientific knowledge is required in recognising the chemical and physical relationships of drugs and determining the best methods of preparing medicinal agents, and last and culminating reason, because the medical profession and the public are, by force of circumstances, entirely at the mercy of the pharmacist in this respect, and must therefore place absolute confidence in him.

An Act of Parliament, then, governing the practice of pharmacy should effectually protect the public from ignorance, from incompetence, and from immoral practice, by which I mean adulteration, substitution, and the indiscriminate sale of poisonous drugs. Inasmuch as our Acts of 1852 and 1868 merely protect titles and regulate the sale of poisons, they are deficient both in their text and their working, but before pointing out merits or defects, it would not be out of place to give their history in as few words as possible.

I think we may take as one considerable reason why pharmacy is in such a deplorably anomalous position in this country, the persistence of that peculiar indigenous hybrid, the apothecary. It is largely owing to him and his physic shop, his limited selection of drugs, and his still more limited knowledge about them, that the chemist is even now often looked on as merely a kind of fifth-rate medical man with a big dash of tradesman thrown in.

About a century ago the apothecaries, who were then the only persons possessing any recognised qualification to dispense medicines, very naturally started the ball by forming an association to obtain a legal prevention of the encroachments on their professional duties by ignorant and incompetent dealers in drugs.

Perhaps the apathetic tendency in pharmaceutical matters was as strong then as it is now, at any rate nothing came of it, and the volcanic area remained dormant until about 1813, during which twenty years and afterwards the apothecaries tended to become more and more medical practitioners, whilst dispensing by druggists was very largely on the increase. In 1813 another eruption took place, and between then and 1841 several bills were brought forward to amend the law in regard to general medical practice, all attempting to bring the chemist and druggist under the examination, jurisdiction, and surveillance of the medical corporations, but owing to the prompt and energetic action of a committee representing the druggists of London, not only were the obnoxious clauses struck out, but in one or two cases special clauses inserted to protect them from interference.

In 1841, however, it became plain that chemists and druggists must form some permanent combination for the protection of their interest, and show that they were not only a united body of competent men perfectly capable of self-government, but that their interests were also the interests of the public. I will read an extract from the report of a committee of druggists presented at a public meeting on April 15, 1841.

"Your Committee are of opinion that chemists and druggists are capable of self-government; they therefore recommend that the chemists and druggists of the empire should immediately form themselves into a permanent Association, to be denominated the 'Pharmaceutical Society of Great Britain,' having for its object the union of the members of the trade into one body and protection of the general interests and the improvement and advancement of scientific knowledge. As the basis of such union your Committee would recommend the adoption of education, examination, registration, and representation as involving beneficial results to the public in general and to the chemists and druggists in particular, and to the existing medical corporations and to the medical profession at large a guarantee that whilst the chemists and druggists are anxious to retain their present privileges they are disposed to afford every public evidence of their fitness to exercise them."

Two years afterwards the Society, having grown considerably in numerical strength, and having settled upon its mode of procedure, felt justified in applying for a charter of incorporation, which it obtained, and by admitting to membership only those men who showed themselves to have had some general and scientific education, soon raised up a body of qualified pharmacists, whom the public were able to distinguish from the ordinary rank and file of the trade.

One more frustrated attempt on the part of the apothecaries to interfere with the chemist and his business decided the Society that it must have an Act of Parliament of its own, and an event shortly occurred which no doubt helped it towards this end. A great public danger was discovered in the indiscriminate sale of arsenic and the work of a joint committee of medical men and pharmacists resulted in an Act restricting the sale of arsenic, under certain regulations, to medical men and druggists.

The Society now brought forward and passed a Bill, which, although it did not carry out the idea of restricting the whole practice of pharmacy to examined men, still gave the members protection and increased powers. This Act of 1852 is the first public acknowledgment of the fact that a pharmacist should be an educated man. It is an expression of confidence and recognition, the result of the untiring efforts of a few energetic and independent spirits. It is a legacy to us which we shall do well to safely guard.

Poisoning cases continued to crop up to such an alarming extent that in 1857 the Government brought in a Bill to regulate the sale

of poisons. This Bill, which was to form a new class of "licensed druggists," examined by a board of outside examiners, was brought forward several times, amended, favourably received, but finally withdrawn owing to the action of the Pharmaceutical Society in canvassing the entire trade and bringing forward an overwhelming opposition.

The majority of chemists and druggists then, as now, took no interest in educational matters, and remained outside the pale of the Society. In 1861 an association was formed amongst them called "The United Society of Chemists and Druggists," and a few years later both Societies simultaneously submitted Bills to Parliament, the first, from the Pharmaceutical Society, restricting the whole practice of dispensing to persons thereafter examined by the Society, but the second, from the United Society, restricting the sale and dispensing of dangerous drugs only to persons showing a knowledge of materia medica and reading prescriptions.

The first Bill was thrown out; it sought to create a monopoly. The second was in part accepted, and a modification of these Bills with additions, subtractions, and alterations, so as to suit all parties more or less, resulted finally in the Act of 1868, with the text of which we are all familiar.

Now how far does the law protect the public from ignorance and incompetence? Unfortunately, by examination only. Still, the public are to be congratulated as much as we are that the examination is placed in the hands of the representative Society. Although the best efforts of the Boards are handicapped by the absence of a curriculum, still, they have considerably improved matters lately by giving the candidate two days, and I hope that when he pays ten guineas that they will give him three days in which to more comfortably confide the result of his three years' experience and one year's scientific study.

Next, how far does the law protect the public from the sale of adulterated or substituted medicines? In Section 15 of the Act of 1868 it says: "Who shall compound any medicines of the British Pharmacopœia, except according to the formularies of that Pharmacopœia," shall for every offence be fined five pounds.

The working of the Act here is, of course, superseded by the Sale of Food and Drugs Act, but still the clause stands unrepealed and seems to offer a chance to some official of an inquiring nature. The penalty is altogether inadequate. We could imagine the modern pushing young man quietly entering in his book, "Advertising, £5," and pursuing the "noiseless tenor of his way." It is a monstrous thing for a physician's best efforts in combating disease to be handicapped by the administration of unreliable medicines.

Considering the free country we live in, I think the Act is fairly effective as regards the sale of poisons. The law absolutely restricts the sale of certain poisonous substances to men who, by their special education, are supposed to possess a better discriminating power than the ordinary trader. It places a check on them by means of penalties, and no doubt there is a still further check in the vision of possible inquests and undesirable notoriety.

The most serious thing for pharmacy in this present day is its practice by irresponsible corporations, large or small. It tends to kill that most desirable personal element. It tends to nullify that moral responsibility to the medical profession and the public which is given to every chemist at the time he receives his diploma.

But the man in the street cannot see any reason why, with a qualified man behind the counter, that it matters who or how many are responsible for the business, nor will he see the advisability of separating medical and pharmaceutical duties as much as possible. I am afraid there is no chance of doing away with the medical man's unqualified dispenser until the public mind has been roused by a case of ignorant fatal carelessness in dispensing covered by a criminally false certificate of death.

In thinking over these matters, then, we can only come to the conclusion that inasmuch as the average Briton bristles up at the word "monopoly," and breaks out into "Rule Britannia" at the bare suggestion of interference with acknowledged rights, so it will always be useless to attempt legislation, except where we can persuade the public that the circumstances are replete with serious public danger. Still there is a power that we can be quietly and continually storing up for our ultimate good. It is the potentiality which lies in education, and more than that, in unity, and more than that, in self-respect. Education! The advancement of all branches of science, particularly chemistry, upon which our business so much depends, makes it imperative that pharmacists as a body be better educated, a fact that the Board has fully recognised in its extended syllabus and in the increased severity of the examinations. We must remember that it was by virtue of their education that pharmacists were granted privileges and entrusted with public duties. Unity! It is a very old proverb which says that the house divided against itself must surely fall. We must again bear in mind that it was due to the repeated and united action of the dispensing chemists during the first half of this century that prevented them from being placed in an ignoble position at the tail-end of, and under the jurisdiction of, the medical profession. Self-respect! I am afraid there are a certain number of our best men who leave the trade every year because they discover that they are a cut above trade or become ashamed of the counter. No rationally minded man need be a cut above trade, but every rationally minded man should be a cut above the low down Dutch auction level to which business seems to be generally tending. Why should a man who has spent time, money, and brain power in acquiring a special qualification be content to keep what looks like a cheap hairdresser's establishment, to hang out graceful intimations to the effect that "our prices knock the stores," or turn his window into a panorama of batrachian eccentricity for the purpose of advertising a quack medicine? The man possessed of extraordinary commercial ability may put it to as good and honourable use, as another man may apply his power, which may be of a more intellectual character. The counter, whether it is situated in the wealthiest neighbourhood or the poorest thoroughfare, will never detract one jot from the personality of the man who stands behind it, confident in a sound education for his work, and armed with a corresponding amount of self-respect. I take it that the prime object of this Association is to promote education, unity, and self-respect amongst us whilst assistants. I take it that no man can attend one session's meetings of this Association without having gone through some process of intellectual and social education. Intellectual, because of the variety of papers we get read here; and social, because of the opportunity it gives him of making friends, of meeting friends and exchanging views with men of different opinions. I appeal to you then let us be loyal to our collective interests which are our individual interests. I appeal to non-members of this Association to become members, and I appeal to members to induce others to join, to attend as often as possible, to take part in the discussions, to give us the benefit of their experience and special studies, and to take their turn in the work of the executive.

The Association this year comes of age. We enter to-day upon our twenty-first session, and I hope a period of still greater usefulness and prosperity. There is no reason, except this imbecile and everlasting apathy, why this Association should not be one of the most powerful organisations for the good of its members that exists. I am not going to expatiate upon our possibilities or map out the comprehensive scheme we might embark on if we only had three times the number of members paying a larger subscription. I will be content to say, let us continue to do our best under existing circumstances, always keeping the improvement of those circumstances in view; our best has always proved itself to be very good, and the existence of the Association for twenty-one years is sufficient justification for its existence for another twenty-one.

This year we have been obliged to change our quarters, and the Committee have secured these rooms, which we hope will meet with your general approval. I hold in my hand a guarantee that we shall spend several very profitable, and I hope pleasant evenings here between now and Christmas, for which we are much indebted to our honorary secretaries. I would particularly call the attention of the members to the evening devoted to short papers. If anyone has any little thing to bring forward of scientific interest I hope he will notify the fact to our honorary literary secretary. In conclusion I must conscientiously say that I feel out of place in this chair. I can only hope that, with your kind sympathy and support, I may be able to carry out the duties attached to it in such a way that, at the end of my term of office, I may have cast no shadow upon the path left open to me by my predecessors.

Mr. C. Morley (ex-President), in proposing a very hearty vote of thanks to Mr. Taylor for his address, remarked that he had departed somewhat from the conventional and stereotype style of address and had gone into something original, giving them a very good idea of what had taken place in regard to pharmaceutical politics. It was highly desirable that the public should recognise the reasons which led to parliamentary legislation with respect to the administration of poisonous drugs and the advantages which accrue to them by that

administration being placed in the hands of a well-educated body of pharmacists. It was the duty of the pharmacist to maintain a very high standard of efficiency, and always to have in view the advancement of the craft at large. The President had dealt with his subject under three heads, namely, education, unity, and self-respect, he (Mr. Morley) thought "education" and "self-respect" were synonymous terms, for if a man had a good education, self-respect accompanied it. With regard to "unity," that was constantly dinned into their ears, and they fully realised its importance. Mr. Taylor had referred to the apothecary. He thought that the old time apothecary is no longer a recognised person in England, and that he is more nearly represented at the present time by the medical man who in addition to his medical practice does his own dispensing, with but a limited supply of drugs, and who, when he cannot give what he would, gives what he can.—Mr. C. E. Robinson seconded the vote of thanks and expressed the opinion that the President need have no fear of filling the chair in such a manner as to bring both credit to himself and to the Association. He thought the Association was to be congratulated on its choice of a president. The motion was carried with acclamation.—The President, in reply, said Mr. Morley had slightly misunderstood him with regard to the apothecary. He looked upon all medical men who keep open surgeries as apothecaries. He then announced that the Council had decided that the annual conversazione, down on the programme for December 2, should this time take the nature of a ball. They would remember that at the last meeting of the Association Mr. G. Roe moved that for the word "conversazione" in the rules should be substituted the word "ball." The discussion on that point was adjourned until an early date in the following session, meanwhile the Council had decided to make the experiment. It was for the Association now to say what it should be called in future, and in order to arrive at a decision a date must be fixed when the adjourned discussion could be resumed.—After considerable time had been spent in viewing the matter from various standpoints, it was resolved that the discussion be postponed until after the conversazione on December 2. An important point arose, however, as to whether in announcing the forthcoming "conversazione" it should not be distinctly stated that it would not really be a conversazione but a ball. Several members thought the difficulty would be removed by stating on the tickets and notices that "dancing will commence at 8.30 p m."; and so it is to be.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

The opening meeting of the session 1897-98, in connection with this Association, was held on October 6 at the Exchange Restaurant, Birmingham, Mr. H. Jessop (President) in the chair. After an alteration in the rules respecting the subscriptions had been agreed to, the President delivered his address, in the course of which he remarked that he should be pleased to do all he could for the advancement of the craft and for the assistants. They were entering upon their third year, and it was gratifying to report that the Association was in a healthy and satisfactory condition. He advocated a combination of assistants, which might join with other similar associations and make a united appeal against such an affair as the proposed increase of the Minor examination fee. He thought the increase would keep very few men out of the trade, because a man who had patiently studied for years, would only have to delay going in for a year or so. If the Society gave its Minor men any protection after paying the extra fee one would not mind so much, but when a man passed the Minor, he found he had to compete with an unqualified trader, who sold anything and everything the qualified man sold, bar a few paltry poisons which did not pay for the average man's salt. The Society said that it was not supported in a proper manner by the trade generally, but as was proved by the support given to the P.A.T.A. if the Society would put itself into fighting attitude and show that it was actually going to do something the trade would only be too glad to join. In conclusion, the speaker condemned the practice by which errand boys were helped into the trade. Usually, such individuals ended by starting in some back street without becoming qualified, and become serious competitors to the legitimate chemist. The sooner such a system was stopped the better, and he suggested some such methods as the following:—(1) Give the Pharmaceutical Society the monopoly of the apprenticeship system, that was to say, apprentice the youth to the Society, and not to individual chemists. (2) Before allowing the youth to be apprenticed to the Society make it necessary that he should have passed the Preliminary examination, as it will be after 1900. (3) Increase the period required to be spent in dispensing before qualification to four years. (4) Do not recognise any time spent in dispensing before passing the Preliminary examination as counting towards the four years. (5) Give the Society power to charge a small fee for registration of apprentices, who shall be granted certificates setting forth that they are registered apprentices to the Society, and that they will be allowed to present themselves for the Minor examination when they are twenty-one years of age, and shall have served four years with a registered chemist and druggist or pharmaceutical chemist. He admitted there would always be a certain percentage of failures in every trade or profession, but let there be a means of eliminating as many of those failures as possible from the craft before the men were enabled to disgrace pharmacy. Let the Society strike at the root of the matter, and not when a man had spent the best years of his life in the trade, and when it was too late for him to retrace his footsteps demonstrate to him by an examination, the scope of which was ever increasing, that he was unfitted to hold the responsible position of a chemist and druggist. Let them at the very beginning insist upon an examination of proportionate stiffness to the Minor being passed before the man actually entered the trade. He was convinced that if some such measures were adopted there would be no need to introduce the curriculum which had often been brought forward as a means of increasing the professional standing of the craft, for they would have men in the craft who had been early taught to observe and study by a liberal education.—Mr. F. Casson doubted whether the Society had the power to apprentice to themselves instead of to individuals, or whether they would obtain that power. With regard to the Society protecting qualified men, they had no power to prosecute except in the case of poisons being sold by unqualified men. What was wanted was a new law, but he thought it was hopeless to look for that at present. He was no earnest supporter of the Society, but he thought it was doing all the good possible under the present circumstances. They must try and bring some of the improvements about themselves.—Mr. H. S. Lawton thought the Society could not undertake the apprenticeship system as indicated by the President, but had not the Society the power now to insist upon a compulsory Preliminary examination before an apprenticeship was entered upon? If not, it was time the Society sought and obtained that power, because it would effectually raise the standard of the men coming into the trade. He thought that during the session the question should be discussed, and a resolution passed on it.—Mr. F. J. Walton, in proposing a vote of thanks to the President, said he thought there were many who were brought into the profession who had but a very hazy notion what was required of them.—Mr. E. Osborne seconded the motion, which was carried, and the President briefly replied, the remainder of the evening being devoted to a smoking concert.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

The annual general meeting was held on Wednesday, October 6, at 7, Whimple Street, Mr. G. Breeze in the chair. The annual report was passed. It showed that the social events of the year had all proved distinct successes, and substantial balances had been handed over to the Association funds from the ball and smoking concert committees. Lectures had been delivered by Mr. E. M. Holmes, Mr. J. Burns Brown, and Dr. Cheyne Wilson. Gifts of books had been received from Mr. E. N. Butt and Mr. James Maurice. The treasurer reported a balance in hand of £6 15*s.* 5*d.* The educational programme for the winter session consists of classes in pharmacy, materia medica, and prescription Latin, the fee for the whole course being seven shillings and sixpence.—The Secretary also read the report of the trade defence section, which was formed in November, 1894. An agreement had been signed by thirty-six chemists, who promised to subscribe ten shillings each, to be used in defending any member who was unreasonably prosecuted. It was resolved that a new agreement be drawn up and fresh signatures obtained to the same. A lengthy discussion then took place on the coming election of local secretaries of the Pharmaceutical Society.—Mr. U'Ren proposed—

> "That in the opinion of this Association, the office of local secretary for the Pharmaceutical Society should not be held for more than three years by one individual."

As an amendment, Mr. O. A. Reade proposed—

"That the matter be left to every individual member of the Society to use his own discretion."

The amendment having been carried, Mr. Cocks next read a motion by Mr. Park, who was absent in London, proposing to raise the fees of apprentices to the same as that of assistants. It was unanimously thought by those present that, as the apprentices contributed by paying for their classes, the fees should remain as at present.—Mr. C. T. Weary brought forward the question of affixing labels to P.A.T.A. articles, and it was decided to defer the consideration of the same to a future meeting. The following Committee was appointed for educational purposes:—Messrs. J. D. Turney, J. A. Buckley, R. F. Roper, O. A. Reade, J. R. Johnson, and the President and Secretary (*ex officio*). The following officers were elected for the Session 1897-8:—*President*, Mr. Jas. Cocks; *Vice-Presidents* (Plymouth), Mr. W. H. Woods; (Devonport) Mr. J. W. B. Swainson; (Stonehouse and District) Mr. O. A. Reade; *Committee* (Plymouth) Messrs. J. H. Bailey, A. D. Breeze, and J. Barge; (Devonport) Messrs. Martin Johnson and H. Davey; (Stonehouse and District) Mr. F. Maitland; *Hon.-Treasurer*, Mr. Condy U'Ren; *Hon.-Secretary*, Mr. C. T. Weary; *Auditors*, Messrs. H. P. Hearder, and W. H. Austin.—Messrs. H. C. Cantle and W. H. Austin were respectively elected President and Secretary of the Junior Section.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday the 6th inst. the first meeting of the Council after the recent election was held at 67, Lower Mount Street, at three o'clock. There were present Messrs. Wells (who took the chair as President), Downes (V.-P.), Beggs, Kelly, Ryan, Montgomery, McKnight, Conyngham, Bernard, Porter, Simpson, Grindley, Dr. Walsh and Professor Tichborne. The first business on the agenda paper was the election of officers for the ensuing year.—Mr. Beggs moved and Mr. Conyngham seconded that Mr. Downes be elected President for the ensuing year.—Professor Tichborne asked why were they departing from the usual custom in not asking Mr. Wells to serve another year?—Mr. Beggs said he knew Mr. Wells would not serve.—Mr. Wells said that since he was elected President he had done his level best for the Society; but unpleasantness had occurred, and his rulings had been questioned and sometimes disregarded. He recognised that he had been supported not only by the pharmaceutical chemists but by a large proportion of the registered druggists, the latter doing so because they believed he was trying to do what he could for them. Under the circumstances, however, he would not remain in the chair.—The motion for the election of Mr. Downes as President was then put and passed unanimously, and that gentleman took the chair.—On the motion of Mr. Bernard, seconded by Mr. Montgomery, a vote of thanks was passed to Mr. Wells for the energy and ability with which he had acted as President during his years (two) of office.—On the motion of Mr. Conyngham, seconded by Professor Tichborne, Mr. Beggs was elected Vice-President, and on the motion of Mr. Conyngham, seconded by Mr. Wells, Mr. Grindley was elected Treasurer.—A letter was read from Mr. E. M. Hodgson, who had for many years acted as Treasurer of the Society, resigning his seat on the Council. Mr. Hodgson, in his letter, complained of his name having been connected with limited companies at a former meeting of the Council, and said the company in which he was interested had always been carried on in strict conformity with the law. The directory was composed exclusively of qualified men, and the managers of the compounding departments were all pharmacists. Many circumstances might occur under which the adoption of the Limited Liability Act might be desirable. And why should pharmaceutical chemists alone be debarred from taking advantage of a wise Act of Parliament? But where it was adopted the Council should see that the directory and all assistants in the compounding department were fully qualified. Mr. Hodgson's resignation was accepted with regret.—Mr. Bernard hoped that the registered druggists would take the opportunity of now putting forward a candidate for membership of the Council.—Dr. Walsh: Would you think of applying to the Druggists' Association in Belfast?—The President: Certainly not. We do not recognise them.—A letter was read from Mr. Samuel Gibson, in which he alleged that, instead of aiding the druggists of Ireland, the Council had endeavoured to deprive them of their rights, and that but for the money of the druggists the Society would now be in a bankrupt condition. The letter was marked "read."—Mr. Kelly moved a resolution to the effect that candidates holding the deplomas of other licensing bodies be excluded from receiving the Society's medals, even though they should obtain the required marks; that re-examined candidates should also be excluded from competing, and that the medals be restricted to candidates from the Society's own schools. Mr. Kelly emphasised the fact that the Society's Preliminary examination was not accepted by the Pharmaceutical Society at the other side of the water.—Several members objected to the competition for the medals being restricted, urging that their value would thereby be greatly reduced, and Mr. Kelly withdrew his motion.—Other business having been disposed of, the Council adjourned.

HALIFAX AND DISTRICT CHEMISTS' ASSOCIATION.

This body held its quarterly meeting at the Old Cock Hotel last week under the presidency of Mr. J. B. Brierley. After the confirmation of the minutes, the President said that it was with sincere regret he had to announce that Mr. H. W. Seely had felt compelled to tender his resignation as Hon. Sec. of the Association. Mr. Seely had now for several weeks past been laid up with rheumatic fever and subsequent complications, and under the advice of his medical attendants he felt impelled to relinquish his office. After several gentlemen had spoken, it was decided that a letter of sympathy should be addressed to Mr. Seely by the President, and the question of the secretaryship was deferred until the annual meeting, by which time it was hoped that Mr. Seely would be restored to health. It was also decided to postpone the conversazione which it had been agreed to have during the month of October. It was further agreed that the annual meeting should be held on the same date as the annual dinner, either at the end of November or early in December, in order to suit the convenience of the country members. A very pleasant conversational evening was afterwards spent.

SHEFFIELD MICROSCOPICAL SOCIETY.

The annual general meeting of this Society was held on Friday, October 8, in the Rutland Institute, Fargate.—Mr. Charles Hoole, F.R.M.S., was in the chair. Mr. A. H. Allen, F.I.C., F.C.S., (President) was unable to be present. Mr. G. T. W. Newsholme (Hon. Secretary) then read the Annual Report as follows:—The members of your Council, in again submitting their Annual Report, have much pleasure in stating that during the past session increased interest has been taken in the work of the Society. There have been fortnightly meetings during the session, and the attendance has been good at most of them. Your Council were exceedingly fortunate in being able to get gentlemen to read papers, some of them of more than usual interest, and in greater numbers than in any other previous session. At the end of last session there were 102 members of the Society. During the year the additions have been three, while from removals and other causes the losses have been eighteen, thus leaving the Society with a membership of eighty-seven. The Society was fortunate in again securing the services of Mr. A. H. Allen, F.I.C., F.C.S., as its President. Mr. Allen has greatly helped on the work by the deep interest he has taken in it, and by the manner in which he has attended to the duties of the position. Death has robbed the Society of one of its most valued members in the person of the Rev. T. S. King, F.G.S., F.R.M.S., who, only at the last annual meeting, was elected, for his distinguished services to the Society, an honorary member. For many years he was an active member and for two years its President. The valuable work he did will be long remembered by those who had the privilege of being associated with him. Mention should also be made of the loss the Society has sustained by the removal from Sheffield of Mr. Frank Harrison, M.R.C.S., a former President of the Society. Financially the position of the Society is satisfactory. The report having been adopted, the election of officers for the ensuing session then took place, and resulted as follows:—

President: Dr. George Wilkinson, B.A.
Vice-Presidents: Dr. Arthur J. Hall, B.A., Mr. G. T. W. Newsholme, F.C.S.
Treasurer: Mr. W. B. Tolputt, L.D.S.
Hon. Secretary: Mr. John Austen.

The above officers and Mr. J. Newton Coombe, Mr. Charles Hoole, F.R.M.S., and Mr. F. W. Walker form the Council.

Votes of thanks were passed to the officers for their services during the past year, special mention being made to the ten years' services of the retiring Hon. Secretary, Mr. G. T. W. Newsholme. A programme for the ensuing session is in course of preparation.

LETTERS TO THE EDITOR.

The Benevolent Fund.

Sir,—Mr. Atkins, at the last Council Meeting, made mention of the importance of even small contributions to the Benevolent Fund. May I call the attention of officers of local associations to the method we have used during the last three or four sessions which has been the means of raising over £20 to the Fund, which without it I am sure would never have been given. At every meeting a box is handed round amongst the members, who contribute or not as they like, and whatever amount; some making a practice to never miss, whilst others contribute now and then. At the close the box is opened and amount counted and taken charge of by the Hon. Treasurer, who at the end of the session remits the amount to the Society. What has been done by the Brighton Junior Association of Pharmacy might be easily surpassed by the larger and richer local associations throughout the kingdom. That some may try to do so is the wish of one who takes an interest in our Benevolent Fund.

Brighton, October 11, 1897. Charles G. Yates.
Hon. Treasurer, Brighton Junior Association of Pharmacy.

A Disclaimer.

Sir,—We note in the last issue of the *Pharmaceutical Journal* there appears a letter from Mr. E. T. Wood, Stonehouse, headed "Local Organisation in Pharmacy," and that his address is wrongly given as of Plymouth. We are the only Woods, chemists, on the Register in Plymouth, and as the letter does not in any way represent our views, we wish it to be understood that it does not emanate from either of the firm of W. Woods and Son, chemists, Plymouth.

Plymouth, October 11, 1897. W. Woods and Son.

*** This disclaimer seems altogether unnecessary, as there ought to be no confusion between the names "Wood" and "Woods." Further, the address on Mr. E. T. Wood's letter was Stonehouse, Plymouth, and in marking the manuscript for press "Stonehouse" was inadvertently deleted.—[Ed., *P. J.*

The Anti-Cutting Movement.

Sir,—I presume I shall be expected by your readers to at least say something in reply to Mr. Glyn-Jones. To commence with, I beg to refer that gentleman to my advertisement which has appeared many times in some of the trade papers, that I do pay carriage on all orders accompanied by cash. I must express my opinion that very few members of the P.A.T.A. will approve of what Mr. Glyn-Jones has written, more especially when they see him suggesting a "lovely" form of retaliation which would only lead to more extreme cutting—the very thing his Association is anxious to stop. Because firms show themselves amenable to reason it should not be construed into a sign of weakness on their part. In my letter I expressed a hope that by mutual agreements a better feeling might develop among rivals in the trade, and I must express my surprise at Mr. Glyn-Jones preaching a doctrine of discord at the outset. A good old firm of chemists in Dundee writes to-day: "We hope you will not see your way to put your goods on the P.A.T.A. When you advanced the price of your pills last January, a popular grocer here suggested a similar arrangement to the one you have made, and it was carried out without difficulty, and although there is no written agreement, the prices 8½*d.*, 10½*d.*, and 2*s.* 3*d.* are adhered to by all." I trust that what is possible at one place may not be found unworkable at others, and that my bringing mutual agreements to the fore may be beneficial to all who sell my pills without estranging the few millions who buy and take them.

St. Helens, October 11, 1897. Thomas Beecham.

Pharmakos (Camberwell) writes on this subject, but has omitted to enclose his name. This is not required for publication, but as a guarantee of authenticity. Our fixed rule is to ignore anonymous communications.—(112/15).

OBITUARY.

Drackley.—On September 25, Thomas Drackley, Chemist and Druggist, Market Bosworth, Leicestershire. Aged 71.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

'Nursing Record.'—This paper is published at 11, Adam Street, London, W.C. Price 1*d.* weekly. [*Reply to* Belfast.—111/44.]

Books for the Major.—You will find this matter fully dealt with in an article on "The Student's Library," published in the Journal for September 11 last. [*Reply to* Major.—111/42.]

Government Report.—Probably the bookseller could procure a copy of the report for you from the Department at Washington. [*Reply to* Sigma.—111/37.]

Cardboard Boxes.—Robinson and Sons, Limited, Wheat Bridge Mills, Chesterfield, and Ayrton and Saunders, Liverpool. [*Reply to* S. H. H.—112/7.]

Botanical.—(1) *Achillea millefolium*; (2) *Ranunculus sceleratus*; (3) *Polygonum aviculare*. Please see that the stem leaves are represented in specimens sent in future. [*Reply to* H. J.—112/11.]

Unqualified Assistants.—It is understood that scheduled poisons may be handed over by unqualified assistants or apprentices, if the transaction be conducted under the direct supervision of a registered chemist, so that the sale may be practically a sale by the registered person. [*Reply to* Wright.—112/4.]

Formaldehyde.—Refer to the articles by F. C. J. Bird, in the *Pharmaceutical Journal* for August 1 and September 26, 1896. There are several other articles on the subject in the same volume. [*Reply to* E. V.—111/27.]

Camphorated Oil.—There is no recognised formula for this, and a conviction is not likely to follow the sale of a preparation differing in strength from the official liniment, unless sold under the name of the latter, or supplied when that is asked for. At the same time chemists should do all they can to secure uniformity in such matters. [*Reply to* Aestas.—111/29.]

Ess. Nectar.—The basis of this is soluble essence of orange with a little oil of sweet orange and oil of pimento, added also a trace of butyric ether. Something like this will probably suit you:—Oil of sweet orange, 10 minims; oil of pimento, 15 minims; butyric ether, 10 minims; soluble essence of orange, to 4 fluid ounces. [*Reply to* W. F. C. B.—110/36.]

Perfume for Eau de Cologne Dentifrice.—Probably the following mixture of essential oils will give you what you require. Ol. bergamot, 72 ♏; ol. limonis, 36 ♏; ol. aurant. amar., 36 ♏; ol. neroli, 18 ♏; ol. rosmarini, 18 ♏; ol. aurant. dulc., 9 ♏. Use sufficient of this mixture to give the requisite odour. [*Reply to* Ignoramus.—111/11.]

Books on Eyesight.—"What book dealing sufficiently with the principles of eyesight would you recommend a chemist who contemplates making it an adjunct to his business?" The best books are Hartridge's 'Refraction of the Eye,' 'The Practical Optician's Guide,' by H. L. Taylor, price 2*s.* 9*d.*, published at 54, Tenby Street, Birmingham, and 'The Optician's Handbook,' published at 123, Fleet Street, price 3*s.* 6*d.* The last two are the most practical. [*Reply to* M. J.—111/12.]

CORRECTION.

The Analysis of Salts.—Add the word "chloride" at the end of the article on page 318.

[Several Answers to Queries are held over.]

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Andrews, Arthur, Barlow, Barnitt, Borland, Brierley, Burton, Cracknell, Downing, Elliot, Ferguson, Ferriday, Gordon, Hadfield, Hick, Hogg, Holding, Hood, Hunter, Jackson, McFadzean, Meadows, Merson, Moenich, Myers, Pickard, Rankin, Roberts, Shorthouse, Wamsley, Ward, Woods, Yates.

ROYAL COLLEGE OF SURGEONS OF ENGLAND
22 OCT 97
LIBRARY

THE BEHRING LABORATORIES AT MARBURG.

BY W. HARRISON MARTINDALE.

When one considers that not many years ago, within a few hundred yards of the present Hygienisches Institut at Marburg, Robert Bunsen rendered so much to physics and physical chemistry, and Friedrich Wöhler and his friend Hermann Kolbe founded that endless science, organic chemistry, it is interesting to contemplate that Herr Geheimrath Professor Dr. E. Behring has made this ancient town the seat of his bacteriological researches and has helped to evolve a science in its infancy.*

Before giving a short account of the Hygienic Institute, the serum department of the same, Professor Behring's private laboratory, and the apparatus and methods employed, a few personal notes may be cited.

As to Professor Behring himself, the name of this well-known professor—formerly staff-surgeon—is a household word throughout the civilised world, and further comment will, at this stage, be unnecessary to the readers of the *Pharmaceutical Journal*. During next Semester, commencing October 15, the Professor will deliver a series of lectures on "Experimental Therapy" twice a week, and will conduct a course of practical work for advanced students in the Serum Department already mentioned.

Professor Wernicke, whose name is known as Behring's joint-worker in the first researches on diphtheria antitoxin, is a rising man in hygiene and allied sciences, and is a recent arrival in Marburg, having come from Berlin as Professor Behring's substitute during the latter's temporary absence owing to illness. He is now Ausserordentlicher Professor, and will read during the coming term "Hygiene, First Part," three days weekly; "Food Hygiene," once a week; will conduct a "Bacteriological Course for Medical Students," four hours; and finally a special "Bacteriological Course for Pharmaceutical Students." The professors are assisted by private assistants and demonstrators; of the former may be mentioned Dr. v. Lingesheim, Dr. Fr. Ransom, and Dr. Ruppel.

Dr. Ransom, formerly in practice at Cambridge, was kind enough to devote a few hours of his time to conducting me over the various departments, which I endeavour to describe. It should be understood that these Institutes are solely for teaching and research purposes, and in no way do they represent the serum industry of Germany, which has assumed such gigantic proportions.

E. BEHRING.

The Hygienic Institute—Serum Department.

This portion of the Hygienic Institute is endowed with a special grant from the Government. A building apart from the principal one contains the stables and the room in which injections of toxin and removals of blood are made. The neat appointments of this room were remarkable for their simplicity, the furniture consisting of a large weighing machine (for the animals under treatment are weighed regularly), a sink, a bench, and an arrangement in the centre of the floor resembling parallel bars in form and height, the difference being that the sides are filled in with woodwork. The horses, led from the stables, are placed between these partitions, which guard the operators against injury from the animals. We passed into the stables, my guide remarking: "Yes, the horses require care; any accidental wound is treated with strict antiseptic precautions. The head attendant was trained at the Veterinary College in Berlin."

A general stir among the horses showed that the Doctor's voice had been recognised. (A pair when "off treatment" may be seen harnessed to a phaeton—or sledge in the winter—and are indeed the finest pair in the town—that, however, *en passant*.)

Horses young and old are operated upon for the purpose of ascertaining the most suitable age for serum production, and in this matter, as in others, *semper tenere auream mediam* has been found a good maxim, but even this, however, is not all-powerful, as the idiosyncrasies of the patient have to be taken into consideration.

Here were horses under treatment for tuberculosis serum, for tetanus serum, for plague serum, and an ox for tuberculosis. There is frequently a stock of goats and sheep in the stables, but this was not the case on the occasion of my visit. The animals were all in a flourishing condition with the exception of one small horse, who appeared languid and displayed a swelling on his side. The inoculation—cholera toxin—in this case, had been recently made, but the swelling produced, the Doctor assured me, would have subsided by the following day, and the animal would be "well" again. The inoculations, either intravenous or subcutaneous, are continued with increasing amounts of the toxin until either the limit is reached, or a sample of the blood taken from the animal shows upon examination that the "worth" of the serum is sufficient to allow of a larger quantity of blood being removed from the animal.

With regard to the limit of inoculation, this depends on two factors; firstly, the solubility of the toxin, and secondly, the fact that not more than a limited quantity of liquid can be injected under the skin at one inoculation. At Marburg more than 500 C.c. is not inserted. The horses show no great discomfort from the loss of blood, and after a rest of three or four weeks may be treated for the serum of another poison.

* Professor Leech in his address to the British Medical Association at Montreal said: "Professor Behring, of Marburg, thinks that in the light of serum treatment all our older views must vanish. Cellular pathology, he says, has become unfruitful for therapeutics. It is vain to treat the organs which are affected. Serum treatment, if we may judge from the summary of his paper which was read at the recent "Congress für innere Medicin," is alone efficient. If Behring's view as to its nature is correct, its study is almost outside the boundaries of pharmacology, for he holds that antitoxin is not a definite chemical compound, but a quality inherent in certain albuminous substances as magnetism is in the magnetic oxide of iron."

Furthermore, a loss of weight during treatment does not occur, on the contrary a gain in flesh is often observed.

From the stables we passed to the paddock—not an unnatural sequence—and here, again, were horses of all sizes and ages, resembling, as far as outward appearances went, ordinary horses, except that owing to their higher calling as "Serum Pferde," shoeing is not essential to their existence.

We now ascended to the laboratories. The first room we entered was the one in which the advanced students work, under direction of Herrn Geheimrath. Glass apparatus was in evidence in great variety. On one side of the room stood a row of incubators. These Brutschränke—incubating cupboards—are made by Lautenschläger, in Berlin, and reflect great credit upon the manufacturer. They are lined throughout with a shining copper-coloured alloy.

The next room which we entered is known as "die Küche" or the kitchen, and in some respects it bore great resemblance to the domestic essential. The cook himself was clad in the orthodox white canvas overall from head to foot—orthodox for the reason that every member of the "Serumleute" dresses in this fashion from professors downwards to the stoker in the basement, whom we found burning the cotton-wool employed for closing flasks and test-tubes *secundum artem*. (The stone pots in which this refuse is brought down from the laboratories are then cleansed with a mixture of crude phenol and sulphuric acid.)

But to return to the cook—he was filling the Henneberger oven with flasks to be sterilised—these were dirty—had been used for tuberculosis cultures, etc., but before being washed it is necessary to kill the adherent bacilli, and this is effected by filling the flasks with water and subjecting them to superheated steam, passing from above downwards through the oven. By this means, all apparatus being treated strictly in this manner, it is impossible for any infection to be carried to the drains.

Cultivations in bouillon are made in short-necked 1000 C.c. flasks. The flasks containing the peptonised beef liquor are sterilised by heating in the Henneberger on three successive days before being inoculated.

From the kitchen, passing through double doors, we entered the Brutzimmer or incubation room. This is an incubating cupboard on a large scale, and is heated by hot-water pipes. The heat is retained and light excluded by means of special covering of the walls, ceiling and floor.

Bacillus tuberculosis was being cultivated, emitting its curious odour, and the shelves ranged round the room contained about 3000 flasks. A mercury regulator kept the temperature constant.

Dr. Ransom's room was the next we visited. He seemed to know the life-history of every white mouse on the table.

"That big one," he said, pointing to a fat, lively little chap in a bowl with half a dozen others, "I infected yesterday with sufficient tetanus toxin to kill 20,000 mice—not forgetting, of course, to mix with the poison a certain quantity of serum."

This seemed to speak well for the potency of the serum. On the window-sill stood some cylinders containing rabbit intestine undergoing sterilisation by lengthy exposure to the sun's rays, "for some experiments of my own," as the Doctor confidentially told me in answer to my question.

A row of 150 C.c. cylinders contained samples of blood drawn the previous day from horses under treatment for tuberculosis serum.

"The serum," my guide remarked, "has separated beautifully, as you see; after pouring it off and filtering, if necessary, the 'worth' will be ascertained. If this 'worth' is above a certain standard the serum would be ready for sale, but this, of course, is not for trade purposes. All serum sold in Germany must have at least a fixed minimum antitoxin 'worth,' and this is controlled by Professor Ehrlich in the Government Control Station at Steglitz, near Berlin. The bottles emanating from this Institution are sealed, and no serum may be sold except with this seal."

I was then shown a bottle of dried diphtheritic serum in the form of clear crisp gelatin-like pieces. One gramme of this contains 5000 I.E. (Immunisations Einheiten—units of immunisation).

But time pressing, we made for the professor's private room, consulting room would be no misnomer. His "patients" are the animals in the stalls below.

On his writing-table were temperature charts headed "Pferd I.," "Pferd II.," etc. Rise of temperature was to be noticed following on each injection of toxin, but besides the temperatures, other details were registered, such as blood removal, reaction, swelling upon injection, etc. A duplicate chart-book is also kept.

In a room opposite, cages containing hens, rabbits, hares, guinea-pigs, etc., were to be found. Inoculated corpses are burnt in a fire for the purpose, a box of coal-scuttle shape with tongs being used for transport. In the basement is another large stock of small animals.

The Hygienic Institute.

This is laid out for teaching purposes for younger students, as well as for more advanced workers, whereas the Serum Abteilung is open only to advanced students, and for the purposes of original research.

The old hospital operating room with its expansive window, forms an excellent demonstration room. Here Professor Wernicke holds his practical classes (the building comprising the Hygienisches Institut, Serum Abteilung and Pharmakologisches Institut, was formerly the Chirurgische Klinik).

After a hasty glance through the well-arranged departments, and a peep into the photographic dark-room, fitted up with Röntgen ray apparatus, we left for

Professor Behring's Private Laboratory.

This delightful villa—the "Villa Sera," as the students call it—stands on the brow of the hill not far from the Schloss. A more ideal situation could not have been conceived, and on the other hand the white house, viewed from the valley, is far from being an eyesore. The same can be said of only a very few modern houses in Marburg.

Entering, we found Dr. Ruppel in his overall at work. Dr. Ruppel is a chemist and bacteriologist. He commenced "shop" immediately, conversing in a scrum language of "m's" and "worths." In the meanwhile I took a look round and discovered a large dialyser and a copper vacuum still, with a specially constructed cylindrical head to prevent frothing.

Dr. Ruppel finished his precipitation, and with a final satisfied whisk of the glass-rod came forward to demonstrate the first wonder of the villa. To evacuate an exsiccator it was merely necessary to connect the same by means of an indiarubber tube with a jet in the bench, which one would have imagined was a gas-jet, and to turn the tap. A rush of air was heard, and the exsiccator was emptied, as if by magic. This evacuation was effected in a few seconds, and is of course many times more handy and complete than that produced by a stream of water.

Electrical power is utilised to its utmost throughout the laboratory. At the side of the door were three buttons labelled respectively "Vacuum," "Exhaustor," and "Centrifuge." The power of the first had been shown without needing to communicate with the machine-room, as the vacuum happened to be "going." The Doctor pressed the button for the second, and immediately the atmosphere in the room became fresher, and the entire building was ventilated by a rapid current of fresh air. This is of particular

advantage when working with bacillus tuberculosis, as the odour produced by this individual gives one violent headache.

After glancing at a number of other ingenious devices, we went down to the basement. Here stood a hydraulic press capable of exerting 500 atmospheres pressure. Here also was a Brutzimmer, similar to the one at the Hygienic Institute, and capable of holding flasks to the number of 2400. A thermostat regulated immediately the slight change in temperature produced by the doors being opened.

In another room were noticed a mill for powdering, by means of revolving marbles in a drum-shaped porcelain vessel, a shaker for extraction purposes, both driven by electricity, and a glass-sided box with indiarubber gloves inserted in the ends for working with fine powders of a poisonous nature: filling bottles for example, or transferring from one vessel to another.

In yet another was an apparatus fitted with electroplated trays for drying serum *in vacuo*. After a few hours at 40° C. the serum originally poured into the trays is removed from the same in the form of a dry powder. This oven, which is provided with windows, was manufactured in Paris.

We were then conducted to the machine room, and arriving there could with difficulty hear ourselves speak. Here was the motor responsible for driving the large centrifugal machine, the exhaustor, and the vacuum. Here also was ice for sterilising purposes, in course of preparation by the ammonia process.

Having thus seen some of the mechanism of this model laboratory, Dr. Ruppel invited us up to his rooms above, stopping as he went to point out an assistant inoculating fresh bouillon flasks from a parent culture.

"Yes," he said, "it is tedious work, but doing 250 a day one becomes expert—*nicht wahr, Herr Scholl?*"

The rooms into which we were ushered were originally Professor Behring's chambers during his bachelor days, and a more tastefully, one might almost say, artistically arranged little suite could not be imagined.

He now resides in a delightfully-equipped house in the Renthofstrasse. In his study at home I was pleased to find an engraving of Luke Fildes' "The Doctor," hung above his writing table.

Professor Behring hopes to make known some results shortly, in connection with bacillus tuberculosis—the all-absorbing study just now in the Villa Sera. The investigators have proofs at hand which are self-satisfying, but no secrets will be laid bare until results are obtained sufficient to convince the world.

Ichthyol in Phthisis.—Phthisis is now included among the many diseases in which ichthyol has a beneficial action. Frenkel has treated thirty tuberculous cases in various stages of the disease. In those cases where the mischief was confined to the apices, the cough disappeared in a very short time, but where the lesions were very extensive the same marked effect on the cough was not noticed. In most cases the expectoration was rendered more easy, night sweats disappeared or diminished, and a surprising effect was noted on the general health. It is given in doses of 2 grammes in the twenty-four hours, in four parts of 50 centigrammes each in 50 per cent. solution, 20 to 40 drops being a dose. To disguise the taste a few drops of peppermint oil may be employed, or the ichthyol may be taken in gelatin capsules, each containing 25 centigrammes. It should be given immediately before meals. In general beneficial action the author has found ichthyol to surpass guaiacol or creosote.—*Rev. Méd. Pharm.*, iv., 234, after *Thérap. Woch.*

A NEW MEDICINE BOOK.

Formulary of Preparations not Contained in the Third Edition of the German Pharmacopœia. Second edition. Published by the Deutscher Apotheker-Verein. Berlin: 1897.*

This (the second) edition of the Supplement to the German Pharmacopœia has been prepared for publication by the Pharmacopœia Committee of the Apotheker-Verein at the request of the Verein itself. From the preface it appears that, although the first edition was a large one, the work had been out of print for some time, and that, as there was no immediate prospect of a fourth edition of the Pharmacopœia being published, it was considered desirable to issue at once a second edition of the Supplement. No fewer than 1071 preparations were proposed for introduction, but of this large number only those voted for by at least one-fourth of the Committee were actually admitted. They number about 110, and as only some 27 have been omitted, the work has been somewhat increased in size.

Of these omissions seven have passed into the Additions to the Pharmacopœia published in 1894; the remainder consists principally of lozenges in the form of cakes (Zeltchen) and herbs. Amongst the additions and alterations that have been made there is much of interest to the English pharmacist, especially in view of the rapidly approaching issue of a new British Pharmacopœia. The following notes include the most important alterations, as well as such formulæ as appear worthy of being recorded.

Aconitine has rightly had its melting point raised from 184° to 188°.

Adeps lanæ is now understood to be anhydrous wool-fat. It will be readily conceded that the anhydrous is much more suitable as a basis for ointments than the hydrous. It should be free from alcohol, acetone, ether, and benzol.

Adonidin, the active glucoside of *Adonis vernalis*, is described as a yellowish-brown amorphous substance yielding certain reactions, but in this case as in others the plant from which it is to be obtained is not specified, so that doubtless many substances other than adonidin would be included in the description in the Supplement. On the other hand, aconitine which is definite, crystalline and easily definable, must be obtained from the root of *Aconitum napellus*.

Antipyrin amygdalate should be in colourless bitter crystals, melting at 52°-53° C., giving the green reaction for antipyrin with fuming nitric acid and the red with ferric chloride, and yielding at least 52 per cent. of antipyrin when decomposed with caustic potash and shaken with chloroform.

Bismuthic oxyiodo-subgallate (airol) is described as a greyish-green, tasteless, and odourless voluminous powder, insoluble in water and alcohol. It should yield the reactions for bismuth, iodine, and gallic acid, but no quantitative tests for it are prescribed.

Calcaria saccharata forms colourless laminæ or a white powder slowly soluble in water, the solution throwing down a flocculent deposit when heated. It should, under the requisite conditions, give no precipitate with sulphuretted hydrogen, barium, or silver, and contain not less than 11 per cent. of calcium hydrate.

Ceratum cetacei and *Ceratum cetacei rubrum* are to be made with almond oil, wax, and spermaceti in the place of solid and liquid paraffin, a change which most English pharmacists will regard as an improvement.

Cereoli is the term by which bougies are now designated. Tannin bougies are made by beating equal parts of tannin and boric acid into a mass with mucilage, glycerin, and water, and forming into bougies. An elastic bougie is made by combining tannin with the gelatin-glycerin mass. Iodoform bougies consist of 10 parts of

* Arzneimittel die im deutschen Arzneibuch nicht enthalten sind. 2. Ausgabe. Herausgegeben vom deutschen Apotheker-Verein. Berlin: 1897.

iodoform, 9 of cocoa butter, and 1 of almond oil. They contain, therefore, 50 per cent. of iodoform. Should they be required stronger, 92 parts of iodoform may be made into a mass with 5 parts of powdered gum and equal quantities of glycerin and water. Elastic iodoform bougies are made with gelatin and glycerin, and contain 10 per cent. of iodoform.

Cortex viburni prunifolii is described as occurring in "flat or quilled pieces, to the inner surface of which yellowish-white fragments of wood remain attached, with greyish-brown fissured cork and thick inner layer; odour peculiar, taste bitter." The descriptions of new drugs are in general, as indicated by this example, insufficient, whilst those of the old ones have been scarcely improved by the alterations that have been made. This part of the work appears capable of improvement.

Digitoxin in small, colourless crystals replaces crystalline digitalin. Keller's colour reaction with ferruginous acetic acid and sulphuric acid has been introduced as test of identity.

Dragon's Blood should be used only in the reed form.

Essence of tamarinds has been introduced with the object of supplying a demand for proprietary preparations of that name. The formula in full as follows may be found useful: 500 parts of tamarinds are digested with 2500 parts of hot water for some hours, and strained without pressure. The liquor is evaporated to 1000, and neutralised with magnesium carbonate. An infusion is also prepared from 50 parts of Alexandrian senna, 2 parts of calcined magnesia, and 500 of water, added to the tamarind-liquor, the whole heated to the boiling point, strained through flannel, and evaporated to 800 parts. To the liquid 50 parts each of simple syrup, syrup of orange, syrup of cinnamon, and dilute spirit are added, and the mixture set aside to deposit.

Extract of myrrh, a new and rather remarkable preparation, is made by exhausting myrrh with cold water and evaporating; when nearly finished a little spirit is added and the evaporation continued to dryness. It should be a "brownish yellow-powder of peculiar odour and taste, forming a cloudy solution with water."

Folia bucco are the leaves of either *Barosma crenulata* or *B. betulina*.

Folia coca are referred to *Erythroxylon coca*; the description is so general that any variety may be used. Here by a curious error the odour is described as *tar*-like ("*teerartig*"), whereas probably *tea*-like ("*theeartig*") is meant.

Glycerin suppositories are made with sodium bicarbonate and stearic acid. Owing to their deliquescent nature they must be wrapped in tin foil and kept in closed bottles.

Gossypium carbolisatum is now made by distributing 60 of liquid carbolic acid mixed with 1300 of alcohol through 1000 of absorbent wool and drying. It is assayed to contain about 5 per cent. of carbolic acid.

Gossypium hydrargyri bichlorati (sublimated wool) is similarly prepared from mercuric chloride, 3; potassium chloride, 3; water 1500; absorbent wool, 1000, and acid fuchsin to colour red. 1 should contain about 0·3 per cent. of mercuric chloride.

Gossypium salicylatum is made from salicylic acid, 55; alcohol, 700; water, 700; glycerin, 100; absorbent wool, 1000. It should contain 5 per cent. of salicylic acid.

Iodised opodeldoc is a 10 per cent. solution of ammonium iodide in opodeldoc.

Lanolimentum boroglycerini and *Lanolimentum leniens* are two ointments made with a wool-fat basis that seem to be in such demand as to require a formula in the Supplement. The former is made by dissolving boric acid, 20, in glycerin, 100, and water, 50, and incorporating the solution with wool-fat, 350, and olive oil, 130. Lanolimentum leniens (wool-fat cream) consists of spermaceti, 20, and vaseline, 60, melted together, half cooled and mixed with wool-fat, 80, and water, 100, to form a cream, which is then perfumed by the addition of 1 drop of otto to every 50 grammes.

Linimentum picis Lassar, is made by mixing beech tar, 40, with birch tar, 40; olive oil, 10; and dilute spirit, 10.

Liq. ferri peptonati, *Liq. ferri peptonati cum mangano*, and *Liq. ferri saccharati cum mangano* are preparations that are in some demand in this country, and the following semi-official formulæ should be of service:—

Liq. ferri peptonati.—Dissolve 8 grammes of dry peptone in 100 of hot water, cool, and add 174 grammes of liq. ferri oxychlorati,* neutralise exactly with a 10 per cent. solution of caustic soda, collect and wash the precipitate, mix it with 200 grammes of simple syrup, warm and add sufficient solution of caustic soda to dissolve it. Cool and add 100 grammes of alcohol, 3 grammes of tincture of orange, 1½ of aromatic tincture, 1½ of tincture of vanilla, 5 drops of acetic ether, and water to make 1000 grammes.

Liq. ferri peptonati cum mangano is made in a similar way, but before the addition of the alcohol to solution of iron peptonate, 50 grammes of liq. mangani glycosati are mixed with it. The latter is made by dissolving 87 parts of potassium permanganate in 5000 of hot water, cooling to 60° C., adding 50 parts of glucose, collecting the precipitate after an hour, washing, pressing and dissolving with gentle heat in a mixture of 600 parts of glucose, 225 of solution of soda, and sufficient water containing 5 per cent. of alcohol to produce 1500 parts.

Liq. ferri saccharati cum mangano is made by dissolving 200 grammes of saccharated iron in 644 grammes of water, and adding 50 grammes of liq. mangani glycosati (see above), 100 grammes of alcohol, 3 grammes of tincture of orange, 1½ gramme of aromatic tincture, 1½ gramme of tincture of vanilla, and 5 drops of acetic ether.

Lithium bromide, *heavy carbonate of magnesia*, *sodium nitrite*, *beech-tar*, *oil of dwarf pine* (*oleum pinti pumilionis*), are amongst the additions. The following five formulæ for Lassar's pastes have also been included:—

Mace is required to yield not over 2·5 of ash; a test to exclude Bombay mace would have been a useful addition.

Pasta naphtholi Lassar.—Beta-naphthol, 10; milk of sulphur, 50; vaseline, 20; potash soap, 20.

Pasta oleosa Lassar.—Crude zinc oxide, 60; olive oil, 40.

Pasta resorcina fortior Lassar.—Resorcin, 20; crude zinc oxide, 20; wheat starch, 20; fluid paraffin, 40.

Pasta resorcini mitis Lassar.—Resorcin, 10; crude zinc oxide, 25 wheat starch, 25; fluid paraffin, 40.

Pasta salicylica Lassar.—Salicylic acid, 2; crude zinc oxide, 24; wheat starch, 24; yellow vaseline, 50.

Several lozenges have also been introduced, but the formulæ for these are scarcely of sufficient interest to warrant their reproduction; morphine lozenges contain 5 Mm. (about 1/12th of a grain) of morphine hydrochloride in each.

Phenocoll hydrochloride is new. It is described as a "white crystalline, odourless body, with a transient, bitter taste." It should yield the isonitrile reaction with solution of potash and chloroform; acidified with nitric acid the aqueous solution should assume a yellowish-red colour when heated. Sodium carbonate should not liberate ammonia from it, nor sulphuric acid produce with it a coloured solution.

Pilulæ asiaticæ contain 1 Mg. of arsenic and 20 of powdered pepper, massed with liquorice powder and mucilage, in each pill.

Piperazine should melt at 104°-107°, boil at 145°, and yield no reaction for sulphates or chlorides.

* Or liq. ferri dialysat., containing about 3·5 per cent. of iron.

Plasters still remain apparently in vogue in Germany; the number contained in the Supplement (twenty) remains unchanged.

Resin of guaiacum and *scammony* should not yield more than 1 per cent. of ash.

Sal bromatum effervescens contains 8 grains each of potassium and sodium bromide and 4 of ammonium bromide in each drachm.

Scopolamine hydriodide is, following Schmidt, the new name for hyoscine hydriodide. The *hydrochloride* has also been introduced.

Sozoiodol-mercury, *creosote carbonate*, and *cresol* are new.

Syr. ferri hypophosph. is new; it is made by precipitating a solution of ferrous sulphate with calcium hypophosphite in the presence of free phosphoric acid, filtering and mixing with simple syrup. The use of the phosphoric acid is neither necessary nor desirable.

Tela carbolisata, *Hydrargyri bichlorati*, *iodoformiata*, *salicylata*.—The formulæ for the medicated gauzes, like those for the medicated wools, have been simplified. They are now made as follows:—

Tela carbolisata.—Liquid carbolic acid, 120; alcohol, 1000; gauze, 1000. Distribute equally over the gauze and dry at the ordinary temperature.

Tela hydrargyri bichlorati.—Mercuric chloride, 3; potassium chloride, 3; water, 1300; gauze, 1000. Proceed as before.

Tela iodoformiata.—Iodoform, 110; liquid paraffin, 5; ether, 800; alcohol, 200; gauze, 1000. Dry in a dark room.

Tela salicylata.—Salicylic acid, 58; alcohol, 550; water, 550; glycerin, 100; gauze, 1000.

Trional and *tetronal* are both new.

Thyreoidin is to consist of the defatted dried powdered gland.

Urea and *urotropine* both find places in the Supplement. The *wines* have been increased by four, but present nothing of sufficient ortance to note.

JAPANESE WOOD OIL.

Jenkins states (*Journ. Soc. Chem. Ind.*, xvi., 195) that this interesting oil is expressed in China and Japan in very large quantities from the seeds of the *Aleurites cordata*, and is used there chiefly as a varnish, and also for lighting. The oil was examined over twenty years ago by Cloez, and more recently by Davies and Holmes.

The present sample of the oil was clear, and had a golden colour. It gave—

Specific gravity at 60° F.	0·9385
Solidifying point	below −17° C.
Iodine value (Hübl)	165·7
Saponification value Mgrms. KHO	194
Hehner value insoluble fatty acids	96·4 per cent.
Unsaponifiable matter	0·44
Specific temperature reaction	372°
Free fatty acids calculated as oleic	3·84 per cent.
Melting point of mixed fatty acids	37° C.
Solidifying point ,, ,,	34° C.
Iodine value (Hübl) ,, ,,	150·1

Viscosity.—The viscosity of the oil at 60° F. was determined with Redwood's viscometer. It required 1433 seconds for 50 C.c. to flow through. Water requires 28 seconds, and rape oil 470 seconds to flow through this particular instrument at 60° F.

Valenta's Test.—The temperature of turbidity with glacial acetic acid was 47 C.

Drying Properties.—Four grammes of the oil were exposed in the boiling water oven in a shallow porcelain dish 7 Cm. diam. After a quarter of an hour's exposure there were evidences of a skin commencing to form round the edges. In two hours the oil would not flow, and was entirely covered by a crinkled skin. The average gain of weight during four hours' exposure was 0·36 per cent. per hour. For comparison, raw linseed oil was exposed in another dish; after four hours there was no evidence of a tendency to skin, neither was there any sensible increase of weight.

Other Tests.—Strong sulphuric acid produces a black clot with the oil. Nitric acid, 1·4 sp. gr., after a couple of minutes converts the oil into a tough mass, which on standing becomes darker and more brittle. When 1 gramme of oil is dissolved in 5 C.c. of chloroform, and 5 C.c. of saturated chloroformic solution of iodine are added and the solution stirred, after two minutes the whole is converted into a stiff jelly. If the amount of oil in this test be increased to 2 grammes, the jelly formed is so stiff that it can be granulated. Some of the oil was heated strictly out of contact with air, first with one hour at 150° C., then for two hours at 200° C., and lastly for a couple of hours at 250° C. At temperatures above 180° C. a very small quantity of gas was given off, but no change in the liquid condition of the oil was noticed until after the last heating to 250° C., when it became converted into a clear solid elastic substance. This peculiar product was insoluble in the ordinary oil solvents, and showed no tendency to melt on being heated again up to the temperature of its formation—about 250° C.

A DEMONSTRATION OF GLASS-BLOWING AT THE LAMP.*

BY T. BOLAS.

Every variety of glass is notable for two opposite properties; at the ordinary temperature, it is elastic, almost perfectly elastic, as you will see if you examine this coiled spring of glass tubing; but if heated to a low red heat—higher or lower according to the nature of the glass—it becomes just the reverse, plastic and viscous. The perfection with which glass possesses these two rather contrary qualities is very interesting.

One has to heat glass rather cautiously, because it conducts heat somewhat slowly and is brittle under an unequal strain; if heated too quickly the outer part becomes larger than the inner, the highly brittle and elastic substance will not allow for the difference in size, and the glass ruptures; as soon, however, as it has reached the plastic and viscous stage it is safe against changes of temperature so long as such changes do not bring it back to the elastic state.

Here are two pieces of glass, one black and one white, which I have selected because their contrasting colours will assist in illustrating this peculiar viscous property. The first thing you notice, when the glass is subjected to the action of heat, and has become soft and plastic and viscous, is that it tends towards a spherical form; that is to say, the semi-fluid glass tends to draw itself together into the least space, and the least space is a sphere. I want to get the two pieces of glass soft, and to show you how the viscous glass can be drawn out and twisted.

The ends of the two pieces of glass having now been reduced to two soft lumps of irregular shape, they are placed together and drawn out and twisted, and you see the two shapeless masses have formed a fairly true spiral of black and white glass.

In working glass the great art is to use no art, but to let Nature and natural forces assert themselves; the best art in glass working is Nature's free work—you give the natural forces scope to act, and allow the thing to take form.

Next I take a rod of glass, soften it in the middle. There are two widely differing ways of drawing out a piece of soft glass. If drawn out quite suddenly and the heat is maintained it is drawn to a thin thread, and it separates with a fine point; if, on the other hand, you draw it out slightly and then stop a little, the thinnest part will begin to chill; then, if you continue to draw, the thicker

* Lecture before the Royal Photographic Society. [Reprinted from the *Photographic Journal*.

parts which have not chilled will be drawn out, and in that manner you will get an approximately parallel rod. The same principle is involved in making a round bulb; you do not blow it round, but allow it to become round.

In the first place I heat the rod and draw it out while it is hot in the blow-pipe flame; it will draw out to a rather sharp point, and the drawn-out rod will possess no approximation to equal thickness.

There are two kinds of glass which are most generally useful for working at the lamp, although any kind can be worked; it is mos convenient to get the glass in the form of tubes and rods. The two most suitable kinds can be readily obtained in these forms. The first of these two varieties is the soft German glass, which contains little or nothing but sand with soda; and the second i the so-called "flint" glass—known in England as English glass, and in France and Germany as French glass or "crystal." This glass ordinarily contains about half its weight of silica, a third of its weight, or a little more, of protoxide of lead and potash—or say K_2O—as its other constituent. The latter glass undergoes blackening when exposed to a reducing flame, and as a rule the German glass-blowers will have nothing to do with it, as they often fail to work it without blackening it.

I now proceed to show the method of drawing out under diminishing heat, and you see that by this means an irregular mass of glass becomes a nearly round rod with approximately parallel sides. In glass working everything tends of itself to roundness.

As I have said, for working at the lamp it is generally convenient, although not essential, to obtain the glass in the form of tubes or rods. Tubes of soda glass are obtainable from most dealers in chemical apparatus, and tubes of flint glass—which are made on a large scale near Paris—may be purchased from an agency in Falcon Street, Aldersgate (Guilbert Martin). Several kinds of glass, known as "platinum" glass, are now sold specially for the making of incandescent lamps (the co-efficient of expansion being assumed to very exactly correspond with that of platinum); a very good glass of this kind being one corresponding to flint glass, but with soda instead of potash, and somewhat less lead.

Other glasses may be mentioned in connection with work at the lamp, such as the hard Bohemian glass ("combustion" glass), containing lime and potash in combination with silica, and the silicate of baryta glass of Baudrimont and Pelonze, recently made for optical use by Mr. Alfred Dawson, and since manufactured with such excellent results at the Jena works.

The laboratory blow-pipe as ordinarily sold is totally unfit for glass working. I have brought for your inspection a few specimens of blow-pipes which possess some points of special interest. One of them is the pattern made by Mr. Woodbury for his pyro-hydrogen light, and was given to me by him. Two others are by Mr. Fletcher, and have concentric jets, the outer for gas and the inner for air, and a means is provided for changing and adjusting the jets to different sizes. The blow-pipe which I am using for the purposes of this demonstration was made by myself, and has a by-pass lighting jet, which serves to kindle the three several blow-pipes as they are brought within its range, and the gas jets can be adjusted within wide limits by the same movement which changes the blow-pipe.

For flint glass working, the gas must be turned down until the flame becomes for the greater part solid, the outer part having a peculiar purplish appearance; in this condition the flame will very quickly melt a moderately thick platinum wire. I do not think a commercial blow-pipe can be bought which is good in all respects for glass working. It is necessary to have two—or better, three—jets; my blow-pipe has three jets of different sizes, any one of which may be instantaneously brought into position by one movement of the disc at the back; the smallest is a jet with a very fine point, with which a hole one-thirty-second of a inch in diameter can be made in a glass tube. The medium sized jet is useful for a great many purposes, such as joining small tubes together; the condition of the flame must be the same in all the jets, and everything must be very carefully adjusted, and this is not often the case in commercial blow-pipes, which therefore leave much in the way of final adjustment to be done by the user.

To illustrate the tendency of glass to draw itself together into a spherical shape, I propose to commence by making a lens. In the early days of microscopic work, before the achromatic lens was made, it was a very common thing to use a small bead of glass as the object glass of a compound microscope; but one can do better than that with a melted lens. By melting a piece of glass in a ring of platinum wire, we can obtain a lens with very good defining power when used as a magnifier for small objects. The interesting point about this, however, is that if you make such a lens of a glass which is more or less similar to crown glass—say German soda glass—the lens will define fairly well, if you are fortunate in getting a good curve; but if ordinary flint glass be used, it will not define at all, because flint glass runs into striæ and layers of unequal density, and though it has a very brilliant appearance, you can see practically nothing through it. I will now make a lens of German soda glass, and that will illustrate very well the natural tendency of the glass to form a sphere; the sphere is, of course, deformed by the action of gravity, and it takes a paraboloid form, which, I believe, defies opticians. Sir Christopher Wren, who was one of the greatest mechanics of his time, succeeded in making paraboloid lenses, though with very great labour. He was, I believe, the first to satisfactorily grind any lenses in this country—lenses being ground mainly in Italy before his time.

I have here a micro-photograph of the Lord's Prayer, covering an area of about one-sixteenth of an inch square, and here is the small knob melted from a piece of German soda glass; the knob will define well enough to enable you, if you get each word in succession in the small field, to read the whole of the slide quite readily. I also pass round a flint glass lens, which you will find gives practically no definition.

There are a great many articles of use to the photographer which can be made of glass by means of a blow-pipe, and among them may be mentioned various kinds of syphons and syringes. The ordinary syringe packed with cotton is not very good for chemical purposes, because the liquids get into the cotton. It is better to suppress the cotton, and only to use one glass sliding into another; here are some syringes of this kind, which are very useful for decanting or drawing off acids, and in which the tightness depends upon an annulus of water held by capillarity between the piston and the cylinder; as long as the annulus of water is complete, the tightness is absolute, but if the piston is drawn suddenly, the annulus will be broken, because the liquid forming it is spread over a larger area.

You all know the simple form of syphon, which is rather inconvenient, because it is necessary to fill it, stop both ends, and to immerse your finger in the liquid; that inconvenience can be obviated in several ways, and I will show you three forms of syphon in which the objections to the simple form are obviated. The first is one which is furnished with a bulb on the long limb, and all that is necessary is to fill the bulb and the long limb with water and immerse the short limb in the liquid.

The second syphon is primed, not by sucking—which may be very unpleasant and dangerous—but by blowing, which is a more

satisfactory way of priming; this form is very useful for dealing with corrosive fluids, for which purpose the ordinary syphon with a suction tube is not available. It contains a glass bead which acts as a valve, and is one of the best and safest forms of syphon for acids.

The third is in the shape of an inverted V, with a rounded apex, and short lengths of tube curved upwards from the end of each arm; it is filled with water which does not flow out, and as soon as it is dipped into the fluid it starts into action.

The Buckle's brush is a little tool which is not utilised by photographers to the extent that it deserves; it is made by slightly expanding one end of a short piece of glass tubing, and pulling a piece of cotton wool into the tube by means of a piece of string or silver wire, a bunch of the wool being left outside to form a sort of mop.

The usual way of dividing glass tube is to make a file scratch on it, and then strain it with the thumb nails meeting at a point opposite to the scratch. A new file very soon gets out of condition for this work, but it may be restored over and over again by grinding one face; in fact, an old worn out file will grind up to a better cutting edge than a new one, as the teeth are less acute.

In turning out a tube to make a Buckle's brush it is desirable to close the other end of the tube, or you may get a hot blast right through and your hand will be burned; one should never, except under special circumstances, attempt to soften a piece of glass for spreading out unless the other end is closed.

Before showing a few of the characteristic operations with the blow-pipe, I should like to refer briefly to some few points bearing on the colouring of glass.

I do not know how it is, but the general public have got an idea that a painting on glass must of necessity be very permanent, that anything vitrified on glass must be unalterable, but this is often not the case. Quite apart from such decay as may arise from the use of a soft flux and lead glazes, the vitrified colours themselves are liable to a great many changes. As an example I may mention glass coloured with manganese. Here is a glass globe coloured with manganese; in daylight it would appear to have a colour which most people would call violet, by a Bunsen flame it appears blueish, and by incandescent electric light it is reddish. When the manganese is fully oxidised it seems to colour glass like this, but under certain conditions the manganese becomes less oxidised, and you get a glass containing an appreciable amount of manganese and yet not showing the manganese colour, such glass will become gradually violet by exposure to light and air. In the case of change where manganese has been used for colouring, the change may perhaps be traced to definite oxidation; in other cases, however—and I think almost every coloured glass changes considerably by exposure to light, and many colourless glasses acquire colour—in other cases we do not know what the chemical change is, indeed, there may be none, it may be merely a physical change. Here are some yellow coloured bulbs, the yellow being made by melting chrome red with white enamel, which under certain conditions produces a very delicate yellow colour; at a temperature far below the boiling point of water the colour of the bulbs begins to change towards orange, and at about the melting point of lead it becomes red, the original colour returning when the glass has cooled. I show you this to emphasise the fact that colours in glass are not necessarily permanent, and that the tintometer measurement of a particular sample may perhaps vary according to the temperature at which the measurement is made.

Now, a few words about red glass. There are two kinds of red glass in the market; one contains as colouring matter copper, which copper is generally supposed to be in the condition of cuprous oxide, or, possibly, metallic copper; and the other red glass contain golds in a certain condition, and a little tin is generally desirable, or perhaps essential for this red colour. Here is a tumbler of "gold pink," as it is called, and the colour is not a pure red, but contains a great deal of blue; if you make a dark room window of gold pink glass, you will fail altogether, because so much blue comes through. There is also the "copper ruby," which is generally a flashed glass. But there is another way of making red glass which is scarcely known, but which is of great interest, the copper forming the colouring matter being brought into the glass by the process of cementation.

The copper ruby colour appears and disappears in a very remarkable way under the action of heat. Here is a tube drawn out of copper ruby, flashed on the inside; if it is drawn out at a high temperature and cooled very suddenly it will be reduced to a colourless condition as you see here; but when I subject the colourless tube to a very gentle heat, far below the softening point of glass, you will find the ruby colour will be re-developed. As far as I know the appearance and disappearance of the ruby colour in this instance is not accompanied by any chemical change, although the oxidation or reduction of the copper will change the tint of the glass between greenish and ruby.

Some of you may remember that in this room, some six months ago, the Earl of Crawford remarked that he had often observed a green reflection from commercial ruby glass. At that time I mentioned that it was very easy to get copper glass which would show complementary colours by transmission and reflection, and I now show you a commercial vase which I assume to be coloured with copper, which shows green by transmission, and red by reflection. I propose to demonstrate some of the fundamental operations in glass working, and will continue until the chairman stops me on account of the lateness of the hour.

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 345.)

Schneider (Alkaloids).—On mixing a few miligrammes of the substance with 6 to 8 parts of sugar upon a porcelain plate and adding 1 drop of concentrated sulphuric acid, morphine or codeine causes a fine purple-red colour, which gradually changes to dingy yellow. The addition of water causes rapid decoloration. Aconitine is the only other alkaloid that may be mistaken for morphine or codeine by this test.

Schneider (Arsenic).—Separate the arsenic as arsenous chloride, by distillation with hydrochloric acid and ferrio chloride, then identify by Marsh's test.

Schneider (Benzoic Acid).—The same as Schacht's test, which see.

Schneider (Bismuth).—A blackish-brown precipitate is produced on heating with a solution of 3 parts of tartaric acid and 1 part of stannous chloride in a sufficient quantity of caustic potash solution.

Schneider (Olive Oil).—Olive oil mixed with oil from cruciferous seeds which contains sulphur causes darkening on adding 5 C.c. of saturated alcoholic silver nitrate solution to a solution of the oil in 2 parts of ether, and allowing the mixture to stand for 12 hours in a dark place.

Schneider (Potassium Cyanate).—A concentrated solution of potassium cyanide is treated with carbon dioxide to remove hydrocyanic acid, the potassium carbonate removed by adding alcohol, and cobalt acetate solution added to the filtrate. If potassium cyanate be present sky-blue cobalt cyanate is formed.

Schönbein (Blood).—Tincture of guaiacum and oil of turpentine give a blue colour. See Almén's reagent.

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* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

Schönbein (Copper).—A solution of a copper salt yields a blue coloration on adding potassium cyanide and tincture of guaiacum.

Schönbein (Hydrocyanic Acid).—(1). Filter paper dipped in 10 per cent. tincture of guaiacum and dried, then moistened with 0·1 per cent. copper sulphate solution, turns blue in the presence of hydrocyanic acid. Compare Payer's test; (2). Mix the suspected liquid with 5 parts of fresh, defibrinated blood and 45 parts of water, then add a little hydrogen peroxide. In the presence of hydrocyanic acid, the red colour is changed to brown.

Schönbein (Hydrogen Peroxide).—(1). A blue colour appears on adding a little cadmium iodide starch-paste and a little ferrous sulphate. See Böttger's reaction; (2). Freshly prepared tincture of guaiacum and a few drops of a cold prepared infusion of malt give a blue colour; (3). A mixture of ferric chloride and potassium ferricyanide solutions also produces a blue colour.

Schönbein (Nitrous Acid).— (1). On adding to potable water containing nitrous acid, a solution of pyrozallic acid and a little dilute sulphuric acid, a brown colour is produced; (2). Add to water sufficient indigo solution to colour it deep blue and a little hydrochloric acid, then whilst stirring add sufficient potassium pentasulphide to cause the blue colour to disappear, and filter. On adding the suspected water or solution of nitrites, the blue colour reappears.

Schönbein (Ozone).—Filter paper saturated with potassium iodide starch-paste (10 parts of starch, 200 parts of water, and 1 part of potassium iodide) turns blue in an atmosphere containing ozone.

Schönbein-Pagenstecher (Hydrocyanic Acid).—See Schonein's first reaction.

Schönn (Cobalt).—Neutral sodium sulphocyanide solution gives a blue colour.

Schönn (Hydrogen Peroxide).—A yellow to deep red colour is produced on adding titanic acid solution.

Schönn (Molybdic Acid).—A blue colour appears on heating with sulphuric acid and cooling.

Schönn (Phosphorus).—Phosphoretted hydrogen is evolved on heating the dry substance with magnesium and adding water.

Schönn (Sulphur).—A red colour appears on heating with sodium, dissolving in water and adding a solution of sodium nitroprusside.

Schönvogel (Fats).—Melted butter, beef or mutton tallow, and Provence oil do not emulsify if 5 drops be shaken with 6 C.c. of saturated borax solution, at the room temperature; other fats do emulsify when so treated.

Schönvogel (Oils).—Vegetable oils, except olive oil, form emulsions upon shaking with concentrated borax solution; animal oils separate out sharply on standing.

Schott (White-Lead Paper).—Sized paper is coated with white-lead and used as an external indicator in titrating solutions of metallic salts with sodium sulphide; also known as "polka paper."

Schotten-Baumann (Alcohols and Amines). — Benzoyl chloride is used as a reagent. See Baumann's reagent.

Schramm (Oils).—When fixed oils are mixed with essential oils, a characteristic odour is given off on burning with a wick and blowing out the flame.

Schreiter (Glucose).—A red precipitate is thrown down on adding a mixture of 2 parts of sodium salicylate, 2 of copper sulphate, 10 of soda (? caustic), and 40 of water.

Schröder (Acetanilide in Phenacetine).—A red colour appears if acetanilide be present, on boiling 0·5 Gm. of phenacetine with 6 or 8 C.c. of water, cooling, filtering out the crystallised phenacetine, boiling the filtrate after adding potassium nitrite and dilute nitric acid, then adding a few drops of dilute nitric acid and boiling again.

Schuchardt (Hydrochloric Acid).—Concentrated tropæolin solution is used as a reagent for this acid in the gastric juice.

Schultze (Albumins).—A fine bluish-red coloration appears on adding a trace of sugar to a solution of albumin in moderately concentrated sulphuric acid and warming to 60° C. This is known as Schultze's furfurol reaction. See Raspail's reaction.

Schultze (Alkaloids).—White precipitates are thrown down by phospho-antimonic acid, prepared by dropping antimonic chloride into aqueous phosphoric acid or by mixing 4 parts of saturated sodium phosphate solution with 1 part of antimonic chloride. Similar to the tests of Jungmann, Scheibler, Sonnenschein, and De Vrij, in which phosphomolybdic and phosphotungstic acids are employed.

Schultze (Iodised Serum).—To the fresh amniotic liquid of mammals add flakes of iodine and agitate frequently during some days. Or, mix serum with a large proportion of tincture of iodine and filter. Add a little of this every 2 or 3 days to the serum that is intended for use.

Schultze (Mounting Medium).—A nearly saturated solution of potassium acetate in water.

Schulz (Salicylic Acid).—A green coloration is produced in neutral salicylate solutions on adding copper sulphate solution.

Schulze (Ammonia).—Chlorinated lime solution and carbolic acid produce a green colour.

Schulze (Cellulose).—Dissolve 25 parts of anhydrous zinc chloride and 8 parts of potassium iodide in 8·5 parts of water, then add as much iodine as will dissolve on slightly warming. A more definite formula for this reagent is that published by Squire: Evaporate 100 C.c. of liquor zinci chloridi, B.P., to 70 C.c., and dissolve in it 10 Gm. of potassium iodide; then add 0·2 Gm. of iodine and shake at intervals till saturated. Pure cellulose is coloured blue with this reagent.

Schulze (Macerating Mixture).—Place sections in nitric acid (sp. gr. 1·2) and add 2 or 3 per cent. of potassium chlorate. Leave for several hours in the cold, or the desired result—solution of the middle lamella—may be attained in a few seconds by warming gently until gas is given off freely. Afterwards wash the tissue in water, transfer to a slide, and complete the disintegration with needles.

Schumpelitz (Veratrine).—A solution of fused zinc chloride in dilute hydrochloric acid causes a red colour upon evaporating a few drops to dryness with veratrine.

Schuster (Colouring Matter in Beer).—Pure beer is said to be decolorised by tannin solutions, while the colour produced by caramel remains unaltered.

Schutz (Staining Bacilli).—Stain sections and cover-glass preparations for some hours in aqueous methylene blue solution, differentiate in 0·5 per cent. acetic acid, dehydrate in alcohol, clear in cedar oil, and mount in balsam.

Schützenberger (Anthraquinone).—A red colour is produced on adding an alkaline solution of sodium hyposulphite.

Schwabe (Quinine).—Potassium cyanide solution produces a crimson colour.

Schwartz (Sugar in Urine).—Heat to boiling 10 C.c. of urine and add 5 C.c. of 10 per cent. neutral lead acetate solution; again boil and filter while hot. Solution of caustic soda is then added in sufficient excess to dissolve the precipitate at first formed, followed by a few grains of phenyhdrazine. The liquid is boiled for some minutes, strongly acidulated with acetic acid, and allowed to cool. If much sugar be present an immediate precipitate is formed; if only traces, a turbidity appears on standing.

Schwarz (Sulphonal).—The odour of mercaptan is developed upon heating sulphonal with charcoal.

Schwarzenbach-Delf (Reagent).—Potassium platinic chloride.

Schwarzenbach-Delf (Alkaloids). — Characteristic colour reactions result on treating alkaloids with nitric acid and subsequently with ammonia.

Schwarzenberg (Alkaloids).—See Schwarzenbach-Delf.

Schweissinger (Alkalies).—A solution of equal parts of iodine and tannin in absolute alcohol produces a red coloration, even in very dilute aqueous solutions of alkalies or alkaline carbonates.

Schweitzer (Cellulose).—This reagent for dissolving cellulose is prepared by leaving copper turnings partially immersed in ammonia exposed to air, or by dissolving cupric hydrate to saturation in ammonia.

Schweitzer (Soaps in Lubricating Oils).—A saturated solution of metaphosphoric acid in absolute alcohol produces a white precipitate in an ethereal solution of a lubricating oil containing soap.

Schweitzer or **Schweizer** (Textile Fibres and Cellulose).—Dissolve 10 parts of copper sulphate in 100 of water, and add a solution of 5 parts of potassium hydroxide in 50 of water; then wash the precipitate and dissolve in 20 per cent. ammonia water until saturated. This solution dissolves cotton, linen, and silk, but not wool. It also dissolves cellulose rapidly, but has no action on liguin. Böttcher prepares the reagent by allowing stronger ammonia water to run repeatedly in a thin stream over copper foil. Wiesner allows copper trimmings to remain in contact with 13 to 16 per cent. ammonia water in an open bottle.

Schwicker (Acetone in Urine).—The first fraction of the distillate from the sample is mixed with a few drops of strong ammonia, and a few drops of decinormal iodine solution are added. A black precipitate of nitrogen iodide at first appears, but disappears on warming, and if acetone be present iodoform is then formed.

Sclavo (Staining Flagella).—Leave the preparations for 1 minute in a solution of 1 Gm. of tannin in 100 C.c. of 50 per cent. alcohol; wash in distilled water; transfer for 1 minute to 50 per cent. phospho-molybdic acid; again wash, and stain for 3 to 5 minutes in a hot saturated solution of fuchsine in aniline water. Then wash in water, dry on filter paper, and mount in balsam.

Seaman (Glycerin Jelly).—Dissolve isinglass in water so as to make a jelly that remains stiff at the ordinary temperature of the room, and add one-tenth part of glycerin, together with a little solution of borax, carbolic acid, or camphor water. Filter through muslin whilst warm and add a little alcohol.

Sedgwick (Alkaloids).—Best isolated as iodosulphates.

Seegen (Grape Sugar).—See Trommer's test.

Seidel (Inosite).—Evaporate the solution to dryness with nitric acid and treat the residue with strontium acetate solution. A violet coloration is produced with inosite.

Seiler (Alcohol Balsam).—Heat Canada balsam until it becomes brittle when cold, then dissolve in warm absolute alcohol and filter through absorbent cotton. This is chiefly useful as a mounting medium for objects stained with carmine.

Seiler (Cleaning Glass Slides).—New slides or covers for microscopic objects are placed for a few hours in a mixture of 3 ounces of potassium bichromate, 3 fluid ounces of sulphuric acid, and 25 fluid ounces of water. Subsequently wash with water and wipe dry with a linen rag, after draining off the excess of moisture. Covers that have been used should be previously immersed for a few days in a mixture of equal parts of alcohol and hydrochloric acid. Old slides must be scraped free of the mounting medium before immersing them in the bichromate solution.

Seiler (Double Stain).—Stain objects with borax-carmine, wash out in acidulated alcohol, then in alcohol only, and after-stain with extremely dilute solution of indigo-carmine, prepared by adding 2 drops of saturated aqueous solution of the stain to 1 ounce of alcohol, and filtering.

Selle (Ammonia).—Filter paper dipped in a tincture of blue hyacinth flowers and dried is coloured green when exposed to ammonia vapour.

Selmi (Alkaloids).—Two reagents are employed: (1). A saturated solution of iodic acid in concentrated sulphuric acid is diluted with 6 times its volume of the same acid; (2). Lead peroxide is dissolved in concentrated hydrochloric acid or glacial acetic acid, and the solution filtered.

Selmi (Blood).—The object stained with blood is extracted with ammonia and the liquid filtered, after which the filtrate is precipitated with sodium tungstate and acetic acid. Next wash the precipitate, treat with a mixture of 1 volume of ammonia and 8 volumes of absolute alcohol, and filter. On evaporating off the alcohol and treating the residue with sodium chloride and acetic acid, hæmin crystals will appear upon microscopical examination.

Selmi (Morphine).—Dissolve lead peroxide in concentrated hydrochloric acid or glacial acetic acid and filter. To 1 drop of this solution add 2 drops of morphine solution and evaporate very gently. The mixture changes from slightly yellow to bright yellow, dark yellow, and violet. Morphine dissolved in sulphuric acid produces a violet colour, which changes to green on saturating with sodium bicarbonate and adding tincture of iodine.

Selmi (Phosphoric Acid).—A green flame coloration is caused on applying a drop of the liquid, or the dry substance moistened with sulphuric acid, on a platinum loop, close to the lower part of a hydrogen flame.

Selmi (Strychnine).—Dilute a saturated solution of iodic acid in concentrated sulphuric acid with 6 volumes of the same acid. Strychnine moistened with this reagent is coloured yellow, brick-red, and violet-red.

Senier (Glycerin).—A borax bead is coloured green on dipping into a slightly alkaline liquid containing glycerin, and exposing to the Bunsen flame.

Serullas (Morphine). Iodic acid causes a red colour.

Shimer (Gum and Glycerin Jelly).—Mix equal parts of glycerin jelly (Fol's second formula), Farrant's medium, and glycerin.

Siebold (Albumin).—On adding to urine containing albumin a slight excess of ammonia, and then a slight excess of acetic acid, the solution becomes cloudy on heating to boiling.

Siebold (Alcohol in Chloroform).—The purple colour of a solution of iodine in pure chloroform is changed to reddish brown by alcohol.

Siebold (Arsenic in Glycerin).—To 20 minims of glycerin in a test tube, add 5 C.c. of hydrochloric acid (1 to 7), 1 Gm. of pure zinc, and a few drops of solution of iodine to give a very slight yellow coloration. Plug the tube with cottonwool and cover with filter paper, on which a drop of mercuric chloride solution has been dried. This should not show a yellow stain in 15 minutes.

Siebold (Morphine).—A brown colour appears on heating with sulphuric acid and adding potassium perchlorate free from chlorate.

Siebold-Bradbury (Salicylic Acid in Urine).—Add potassium carbonate to slight alkalinity, then excess of lead nitrate solution; shake, filter, and add a very dilute solution of ferric chloride, when a violet colour will be produced.

Siewert (Molybdic Acid).—To a solution of molybdic acid in nitric acid, add an aqueous solution of potassium ethylsulpho-carbonate. A yellow to flesh-coloured precipitate is thrown down, which soon changes to violet.

Silbermann (Albumin).—If freed from fats, albumin gives a a violet coloration upon heating with fuming hydrochloric acid.

Simon (Cinnamic Acid).—Nitrobruyol is formed on adding potassium bichromate and sulphuric acid.

Skey (Cobalt).—A dark-red colour is produced on adding citric or tartaric acid, ammonia in excess, and potassium ferricyanide.

Skraup (Thallin).—An emerald-green colour is produced when thallin is treated with chromic acid, bromine, iodine, mercuric nitrate, ferric chloride, or other oxidising agents.

Smith, Hopewell (Decalcification of Teeth).—Place the teeth in 24 parts of 10 per cent. hydrochloric acid, after 15 hours add 3 parts of nitric acid, and after 48 hours add 3 parts more of the latter. After 75 to 80 hours remove the teeth and wash for half an hour in a solution of 5 Gm. of lithium carbonate in 1 ounce of water.

Sollas (Gelatin Imbedding).—Transfer the tissue from water to melted gelatin jelly, prepared by melting gelatin after it has absorbed as much water as it can take up, and allow it to remain until well permeated. Then let the mass set, and cut section, which should be transferred to a slide as soon as cut, and covered with a drop of glycerin. A cover is then put on and the mouth closed with some suitable cement. The glycerin gradually permeates the gelatin mass and converts it into glycerin jelly, the change being hastened by placing the slide in an oven kept at 20° to 30° C.

Soulier (Macerating Mixtures).—Solutions of ammonium or potassium sulphocyanide containing 10, 5, 2·5, or 1·25 per cent. are mixed with Ripart-Petit preservative fluid, in the proportions of 20 C.c. to 20 C.c., 30 C.c. to 10 C.c., 35 C.c. to 5 C.c., 36 C.c. to 4 C.c., 37 C.c. to 3 C.c., 38 C.c. to 2 C.c., 39 C.c. to 1 C.c., or 39·5 C.c. to 0·5 C.c., the best results being obtained with the 2·5 per cent. sulphocyanide solution. Or the Ripart-Petit fluid is mixed with Kroneker's artificial serum, or with pepsin, eau de javelle, 10 per cent. sodium sulphate solution, or 1·5 per cent. caustic soda solution. Solutions of sodium chloride, caustic potash, or caustic soda may also be mixed with any of the usual fixing agents.

(To be continued.)

NOTES AND FORMULÆ.

(Specially abstracted for the Pharmaceutical Journal.)

Chocolate Emulsion of Cod-Liver Oil.

Chondrus mucilage, N.F., 5 ozs.; cod-liver oil, 8 ozs.; glycerin, 2 ozs.; cocoa, powdered, 1 drachm; vanilla tincture, 3 drachms. Rub the cocoa with the mucilage, and heat until a uniform mixture is obtained. When cold, add the cod-liver oil and glycerin, and beat up with an egg-beater.—*Pediatrics*, iii., 366, after *Practical Druggist*.

Boroglycerin Lanolin.

Boric acid, 8; glycerin, 50; dissolve and add paraffin ointment, 120; anhydrous lanoline, 60.—*Pharm. Zeit.*, xlii., 235.

To Kill Dodder.

The following directions for destroying this troublesome parasite from colonial sources may prove useful to the English agriculturist. Cut away the affected plant, such as lucerne, on and about the dodder, being careful to remove and destroy it. Then spread manure over the cleared area to a depth of six inches, after being trodden down, care being taken to completely cover the area. Farmyard manure is used, and though the dodder will be killed, the lucerne will grow up through the manure, leaving no bare place in the field. Dodder spreads so quickly that no time should be lost in getting rid of any specimens of the parasite as soon as it is seen. A solution of sulphate of iron (green copperas), one pound to the gallon, will kill the dodder without injuring lucerne.—*Cape Agricultural Journal*, x., 619.

American Lard.

The following are the various lard products obtained in the United States:—(1) "Neutral" lard or "kettle" lard, almost exclusively used for the manufacture of margarine. (2) "Leaf" lard, originally obtained by melting the whole flare with steam, followed by pressure. The flare is now chiefly used for the preparation of neutral lard, which commands a better price. (3) "Choice kettle-rendered" lard obtained from the flare not used up for neutra lard, and from fat from the back of the animal. (4) "Prime steam" lard of all the fatty parts of the hog. (5) "Butcher's" lard melted on an open fire. (6) "Off grade" lard, a lard of lesser value prepared from salt fat. (7) "Dead hog grease" prepared from diseased hogs; "brown grease" prepared from the intestines. "White grease" prepared from the other parts. (8) "Yellow grease" prepared from the waste of the packing ware house. (9) "Pig's foot grease" obtained from the glue factories. "Prime steam" lard is raw lard of soft, almost oily consistence which hardens at low temperatures. It is melted and crystallised at 10° to 15° C. In winter it is pressed out at 7° to 13° C., in summer at 13° to 18° C. The lard oil thus obtained is used for lighting purposes, and the remaining fat (lard stearine) mixed with ordinary steam lard to give the mixture sufficient firmness, the whole is then put on the market as "refined" lard. The "refining" process sometimes includes the use of a mixture of pressed tallow and vegetable oil.—*Pharm. Woch.*, xiv., 428, after *Deutsche Fleischerzeit*.

Spurious Iodoform Gauze.

Morpurgo reports having met with iodoform gauze which contained only a trace of iodoform, and was coloured yellow with dermatol. The gauze was offered at a very low price, and as cheap bismuth subgallate is to be had in the market, the substitution is no doubt profitable.—*Pharm. Woch.*, xiv., 429.

Action of Sulphuric Acid on Lævorotatory Turpentine.

By treating French turpentine oil with one-tenth its weight of sulphuric acid, and heating the product with an excess of alcoholic potash under pressure to 150° C., two definite salts of potassium have been obtained by Bouchardat and Lafont. On diluting the alkaline liquor with a large volume of water, the various uncombined oily bodies were separated and the alkaline salts remained in the aqueous solution. These were recrystallised first from water, and then from alcohol. They were found to have the same composition $C_{10}H_{16}S_2KHO_8$, although differing markedly in physical properties. They were separated by repeated crystallisation first from 99·1 per cent. alcohol and finally from 50 per cent., in which one of them was more readily soluble. The less soluble salt, potassium isoborneol sulphate, separates in crystalline scales resembling boric acid in appearance. It is stable in feebly alkaline solution, but is decomposed by water. Acids liberate sulphuric acid and levogyre borneol. Its optical rotation in 50 per cent. alcoholic solution is $[\alpha]_D = -25$. Nitric acid oxidises the salt, and forms a camphor similar to that obtained from Matricaria oil. The second crystallises in long silky needles. Its rotation in 50 per cent. alcoholic solution is $[\alpha]_D = +10$. It is stable in feebly alkaline solutions, but in neutral or acid ones it liberates a dextrorotatory alcohol which has been found to be identical with dextrorotatory fenchol. The mother liquors from which these salts were isolated contain two other salts, optically inactive, which are under examination.—*Journal de Pharmacie et Chemie*, [6], vi., 193.

Anticryptogamic Solution for Plants.

Crouzel recommends the following mixture which he states is practically a specific for blackrot and oidium:—140 parts of lime are slaked with water; 350 parts of sulphur, and 1500 parts of water are added; the mixture is well stirred, and boiled for about an hour, adding more water to replace that lost by evaporation. On cooling the liquid is decanted or filtered. One part of powdered naphthalin and 20 parts of sodium hyposulphite are then added, and the mixture thus obtained is made up to 10,000 parts with water. It is applied with the ordinary spray and adheres well to the leaves, forming a kind of pellicle which is very persistent. It is not caustic.—*Bulletin Commercial*, xxv., 380.

Determination of Potassium.

The following method for the gravimetric determination of potassium is recommended by Warren:—The solution, free from all but the alkaline metals in the state of chlorides, is heated with an excess of perchloride of platinum and evaporated to a low bulk. The residue thus obtained is exhausted by washing with a mixture of equal parts of amyl alcohol and ether. The precipitate thus obtained is heated to boiling with 5 C.c. of formic acid, when the liquid assumes a brown tint, a slight excess of ammonia is added and boiling continued; the platinum is then precipitated in the form of black flocks, easy to wash and calcine.—*Chemical News*, lxxv., 256.

Ossin (Extractum Ossium Liquidum).

This fluid extract is a dark brown, somewhat bitter, fluid. It is prepared by Stroschein, according to whom it contains in 100 parts water, 8·82; salts, 9·40; ether extract, 0·06; nitrogen, 12·10; bodies soluble in alcohol of 80°, 61·25. The percentage of salts is phosphoric acid, 32·79; sulphuric acid, 1·85; chlorine, 9·54; oxyde of iron, 0·34; sodium, 12·21; kali, 38·47; calcium and magnesia, 4·77; silica, 0·03.—*Pharm. Zeit.*, xlii., 354.

PHARMACEUTICAL JOURNAL.

LONDON: SATURDAY, OCTOBER 23, 1897.

THE GOVERNMENT ADULTERATION BILL.

In a long letter which appeared in the *Times* of last Monday, Dr. Bernard Dyer, writing as the President of the Society of Public Analysts, expresses surprise and disappointment that some of the conclusions and deliberate recommendations of the Select Committee of the House of Commons have not been embodied in the Bill presented to Parliament at the end of last session by the President and Parliamentary Secretary of the Local Government Board. The chief point mentioned by Dr. Dyer is the omission of any provision for establishing a court of reference, not only for the settlement of scientific and other questions arising in the administration of the Acts, but also for prescribing standards of quality and purity, as well as the admissible limits of deviation from those standards. Few will probably be disposed to question the opinion expressed by Dr. Dyer, that the establishment of an authority, competent in every respect to decide the numerous questions which have been a source of serious perplexity to judges and magistrates would be of advantage and that, from an abstract point of view, it constitutes the "very heart and kernel" of such recommendations as the Select Committee has made.

But however desirable such a means of escape from difficulties may appear at first sight, closer consideration of the subject leads to the disclosure of many impediments to its practical adoption. No better evidence of this can be adduced than the report of the Select Committee on Food Products Adulteration, for there the subject of a court of reference and that of food standards, which is closely related to it, are dealt with in the most cautious manner. Having regard to the difficulties which have arisen in the administration of the Acts by reason of the absence of legal standards or definitions of articles of food and to the possible disadvantageous consequences of that deficiency, the Committee does not go beyond acknowledging that if standards or definitions of foods were promulgated by competent authority the working of the laws as to the adulteration of food would be greatly facilitated and the interests of traders would be served. That admission, however, is very considerably qualified in the following passages pointing out that the fixing of standards would involve a departure from the principle of the Food and Drugs Acts, which are not intended to prevent the sale of articles of poor quality, and that it would practically imply the prohibition of the sale of articles below the standard. Hence the Committee declined to pronounce a positive opinion on these subjects, and suggested that they should be considered, as to practicability and expediency, by a specially constituted scientific body familiar with questions of analysis and the chemistry of food.

In reporting upon the constitution and functions of a court of reference, the Committee was equally guarded in the opinion expressed. While recognising the useful assistance such a body could render in deciding questions as to the wholesomeness of ingredients used in the preparation of food, the use of colouring agents and preservatives, as well as its fitness for pronouncing upon methods of analysis and extending information as to forms of adulteration, the objections raised by some witnesses as to the competency of such a body to give due consideration to trade interests were thought sufficiently pertinent to have special mention in the report. The recommendation that representatives of the trading and manufacturing community should be included in the constitution of the court of reference is a further indication of the view that, in the establishment of standards or the settlement of similar questions, commercial as well as scientific considerations must be taken into account, and it calls to mind the remark of John Bright, that from the legislative point of view, adulteration has to be regarded as a form of competition. Dr. Dyer appears to have overlooked these important qualifications, and to be impressed with the idea that a specific recommendation was made to appoint a scientific board of reference in order that public analysts might no longer find difficulty in discharging their duties owing to absence of agreement concerning definitions of genuineness and adulteration or variation of quality. It is, however, difficult to understand how the duties of a public analyst can be rendered more difficult by diversity of opinion on those points. Questions as to the use of salicylic acid or boric acid as food preservatives do not properly come within his province, otherwise than by establishing their presence in articles submitted to him for examination, and the statement that, "under the present administrative difficulties, the public analyst is all but powerless to deal with such additions, even when he believes them to be injurious," seems to reveal a strange misconception of the public analyst's proper function. It is indeed evidence of the need of some competent authority to supplement the useful work of ths public analyst by deciding, in the public interest, whether the facts he has ascertained afford ground for prosecution under the Acts. Hitherto and in the absence of such an authority, the decision of that question has been a matter of haphazard; it has sometimes been undertaken by public analysts on one-sided theoretical grounds and, as the Committee points out in its Report, not unfrequently with the result of causing great hardship to defendants, while in other instances real offenders have escaped punishment because analysts have been reluctant to express an opinion in view of the possibility of their certificates being set aside.

The favourable view generally taken of the establishment of a court of reference has never gone beyond recognising, as a matter of principle, the desirability of such an arrangement, and there is abundant reason for anticipating that its practical realisation would be attended with no slight difficulty, on account of conflicting interests, the existence of which is sufficiently indicated by the fact that the Committee, after hearing evidence, has in its Report repeatedly expressed inability to make definite recommendations on certain points. While, for instance, the British farmer desires to sweep away everything that competes with genuine farm produce, as the only way of enforcing fair dealing to his satisfaction, the competing traders may be expected to have some influence in the opposite direction. In view of these and other conflicting interests the constitution of an authoritative court of reference is likely to be a work of such considerable difficulty that its execution must either remain for some time in abeyance or be carried out by other means than legislative enactment.

ANNOTATIONS.

Provincial Pharmaceutical Education is somewhat prominently before us at this time of the year, when the work of a new session is just commencing, and it would be interesting to inquire which of the numerous experiments in that direction have proved most successful in the past. Nearly every centre of pharmaceutical activity has set about attacking the education problem in a somewhat different manner to other centres, doubtless owing to the fact that in most, if not all, cases the scheme that has been adopted has been based on facilities for education that already existed in the town or district. Nottingham may be singled out as a remarkable instance of the success that may attend a scheme in which the resources of a properly constituted university college are fully utilised. Sheffield, on the other hand, invites criticism as an exponent of a more independent principle, the whole of the classes in its school of pharmacy having, during the past twelve years, been conducted by registered chemists or friends of the School, who were fully competent to teach though not engaged on the staff of any college. Manchester, Liverpool, Plymouth, Newcastle-on-Tyne, and other centres have adopted schemes resembling more or less one or other of the types selected, but all differing in matters of detail.

A Perfect System remains yet to be devised, and there seems no valid reason why the various centres should not agree upon a joint line of action. A conference at which each centre should be represented by one or more delegates would perhaps be a desirable thing, or it might not be difficult to arrange matters by correspondence. The weakness of the Sheffield plan appears to have been the uncertainty which has existed as to the length of time the lecturers would continue to act as such, and whether they could attend regularly. Their services have been, if not gratuitous, at least only remunerated at nominal rates, and under such circumstances it is not surprising that there has been a lack of permanency about the appointments. Continuity in courses of study may thus be broken to a degree that is not consistent with the attainment of the best possible results, and that would be all the more disastrous in its effects if the students were possessed with the idea that whilst attending the classes they were preparing directly for the qualifying examination, instead of simply acquiring a sound basis of knowledge. Now, though preparation for examination is an undoubted necessity, however complete a course of instruction the student may have gone through previously, such preparation fails in its object if spread over a period of years. Some men prepare for examination during a few short months, without any previous course of study, but if they are successful in satisfying the examiners it is to the disadvantage of the public, the craft, and themselves. Others, again, study carefully for several years, but unless they concentrate their knowledge during the last few months they risk failure when they present themselves before a Board of Examiners.

Study during Apprenticeship should be regarded as a necessity, but at the same time, not sufficient in itself. In fact, attendance at classes during the period of pupilage should be considered as being, in great measure, a means of compensating for the acknowledged insufficiency of the instruction given by employers. Few, if any, chemists who take pupils can now spare the time to give instruction in chemistry, physics, botany, materia medica, etc., to those under their care, and the remedy for this must be found in local classes. But employers should allow the necessary time for attending such classes, and convenience would appear to indicate the beginning of the day as the best time for that purpose. Medical students attend most of their classes in the early morning, and a similar arrangement would probably be found to interfere least with the arrangements of the pharmacy. The medical example may also be quoted for a plan under which pharmaceutical students should register as such at the beginning of apprenticeship and at once begin to work systematically at their scientific and technical studies. The now generally recognised period of three years in the state of pupilage is, of course, a minimum, as it is obviously impossible for anyone to gain more than a mere surface knowledge of pharmacy in so brief a time. As matters stand, however, it seems almost necessary to base any scheme of elementary pharmaceutical education upon the supposition of a three years' course.

The Best Lines to adopt would probably be to take the syllabus of the Jacob Bell Scholarships examination and train pharmaceutical pupils in accordance with that. It may be assumed that, prior to apprenticeship, it will be the rule in the immediate future for students to show proof of a satisfactory acquaintance with the English, Latin, and French (or German) languages, as well as with arithmetic, algebra, and Euclidean geometry, before entering upon their chosen career. They should then be encouraged to take up the study of German (or French), prescription Latin, and chemistry. This would suffice for the first year; botany and physics might with advantage be added during the second year, and a systematic course in materia medica and the pharmacy of the British Pharmacopœia would complete the three years' course. At the expiration of the third year the pupil might be expected to have a fairly satisfactory acquaintance with the rudiments of all the subjects mentioned, and he would certainly be better prepared to enter upon an advanced course such as would fit him to enter for the qualifying examination, than is usually the case at the present time. He would have a decent knowledge of four languages, all of the greatest importance to him in his future career; his mathematical training would suffice to lighten his future task in acquiring a practical acquaintance with physical science; and the groundwork of his general pharmaceutical training would approach perfection as nearly as can be expected.

The Science Classes attended by the student should preferably be those conducted by recognised teachers of ability at university colleges and science schools, and there ought to be no question as to the desirability of attending those classes in the morning say, before ten o'clock. Employers should not object to this concession, which would probably not apply on more than three days a week. Prescription Latin, scientific French and German, materia medica, and pharmacy might well be taught at special classes conducted by pharmacists, and no great objection need be taken if those classes were held in the evening, on the days when no morning classes had been attended. The results of such a scheme would benefit everyone in the craft, to say nothing of the public outside, and it would be well if bodies interested in elementary pharmaceutical education could agree upon a common programme, similar to that briefly outlined here. We shall be pleased to receive opinions on the subject from anyone interested, as well as to act as the medium of communication between the various educating bodies. Doubtless suggestions will be forthcoming from some of the numerous centres where special

educational facilities are now provided, but special attention should be directed to the desirability of joining forces all over Great Britain, to the end that a uniform programme of instruction may be followed.

The Prescribing of Secret Remedies is a cause of annoyance to many chemists who have occasion at times to dispense the parodies of prescriptions in which such preparations are ordered, and a correspondent who sends a copy of a prescription in which no less than three out of the six ingredients specified are secret preparations has good reason to suggest that it does not speak well for the prescribing abilities of the medical man who wrote the prescription. Another correspondent draws attention to a pamphlet issued by the makers of an emulsion that is largely advertised, in which it is somewhat impudently alleged that a first-class emulsion of cod-liver oil cannot be made in a chemist's shop. The absurdity of the assertion is almost too apparent to render the matter worthy of attention, and our correspondent need not vex his soul about the matter. Doubtless many copies of this pamphlet are circulated, but it is probable that such statements as that referred to do not influence the intelligent public to any extent, if at all.

A Case of Carbolic Acid Poisoning which occurred recently at University College shows that even the chosen abodes of science are not safe from fatal misadventure which a slight exercise of common sense might prevent. More than that, it serves as a typical instance of the risks that might be avoided were carbolic acid only supplied in properly labelled bottles. Two carpenters engaged at the College decided to drink some claret from a bottle which had been presented to one of them. This bottle stood by the side of another similar one, which contained the acid but was not labelled. One man took a couple of mouthfuls, but as soon as he perceived that it was not wine he was drinking, he hastened to University College Hospital, where, by the prompt use of a stomach pump, he was relieved, and able in a short time to go back to work. His companion, however, a man of about sixty years of age, was not so fortunate. He drank something like half a pint of the fluid, and died while being taken to the hospital.

The South Kensington Museum has long been a standing discredit to the nation, and it is satisfactory to find that the Science and Art Committee's Report upon the administration and cost of the national museums calls attention to the danger of destruction by fire to which the priceless collections at the South Kensington Museum are exposed. The Committee regards it as an immediate duty to lay before the House of Commons a very strong opinion that permanent buildings for the adequate accommodation of the collections at the South Kensington Museum should be proceeded with without delay, and the members are of opinion that it will be a source of grave discredit to the country if the settlement of this matter, which has been the subject of consideration by Governments for many years, and of endless correspondence between the departments concerned, should be any longer delayed.

Insects and Yeasts appear to be closely connected, inasmuch as ants, flies, etc., contribute in a marked degree to the diffusion, preservation and multiplication of alcoholic ferments. According to *Nature*, Dr. Amedeo Berlese has investigated this subject, with remarkable results. The apparatus employed consisted of a large glass jar, well closed and carefully sterilised, inside which a bunch of grapes was hung, after due sterilisation by successive washing and immersion in carbon disulphide and boiling water. The jar containing the grapes communicated by means of two long glass tubes (about 1·30 m. each) with a glass bottle on each side. These long tubes and the bottles were also carefully sterilised, and connected by means of corks, so as to form, together with the central jar a closed system, into which, however, air could penetrate after filtering through sterilised cotton wool. Fourteen of these combinations were prepared, into each of which, in one of the side bottles, non-sterilised substances were introduced, probably containing yeast cells, such as soil, bark of vines, bark of vine-poles and of oak-trees. In the second side bottle the same substances were introduced, but after careful sterilisation. Inside the long tubes were put slender vine branches connecting the substances in the side bottles with the grapes in the central jar. These vine branches, previously sterilised, were the paths along which the ants were to travel on their way from the infected material to the grapes, and thence onwards to the sterilised material. Before introducing the insects it was verified that each apparatus was internally sterile. Some apparatus were left without insects during all the time of the experiments for more than two months, in order to show that where no insects had been introduced the grapes remained sterile, bearing on their surface neither moulds, nor yeasts, nor bacteria.

The Results Obtained were remarkable. In ten experiments in which ants were introduced, the infection of the grapes and sterilised material with yeasts and moulds was evident but varied chiefly according to the various nature of the places from which the ants originally came, and also with the nature of the non-sterilised material in the apparatus. When the ants came from a vineyard, and the non-sterilised material was ordinary soil or bark of vines or of vine-poles, the germs conveyed to the grapes and to the sterilised material were chiefly moulds together with various species of *Saccharomyces*. In those cases where the grapes had been left in the apparatus some days after the ants were dead, moulds developed rapidly on the grapes, and probably destroyed all the yeasts; for in the test-tube cultures moulds were abundant, and no yeasts were observed. Many experiments were also carried out by Dr. Amedeo Berlese to prove that yeasts are abundantly distributed through various kinds of flies. Small pieces of meat, carefully sterilised by washing in sublimate solution and then in water, were exposed on a terrace, some inside a close wire net which prevented contact with insects, and others so as to favour the visits of flying insects only. After two hours' exposure to the flies, and thirteen hours' exposure to the air, the pieces of meat were dropped into test-tubes containing sterilised must, and the sediments obtained after fermentation examined for yeasts. It was found that whenever the meat had been exposed to flies, yeasts were far more abundant than when the flies had been excluded, and it was calculated that the quantity of yeasts carried to a piece of meat by flies in a given time is about twenty-six times the quantity that would be carried by air alone. In other experiments flies were made to visit grapes that had been previously carefully sterilised, and these were subsequently found to be abundantly infected with a variety of yeasts and moulds. For further details of the experiments, the article in last week's *Nature* must be referred to. It may be stated, however, that it appears to be definitely proved that insects, far more than atmospheric air, contribute to the dissemination of yeasts, which they convey internally rather than externally. There is, moreover, very good reason for believing that during the cold season some yeasts are chiefly preserved and, perhaps, increased within the organism of insects.

THE WORLD OF PHARMACY.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

Annual Dinner.

The annual dinner of this Society was held at the Sheffield Masonic Hall, on Thursday, the 14th inst., when the principal guest was Mr. Walter Hills (President of the Pharmaceutical Society of Great Britain). The chair was occupied by Mr. George Squire, (President of the Sheffield Society,) and amongst others present were Mr. G. T. W. Newsholme (Vice-President of the Pharmaceutical Society of Great Britain), Mr. S. T. Rhoden (Hon. Sec. of the Sheffield School of Pharmacy), Dr. Inkster, Dr. J. Robertson (Medical Officer of Health), Mr. A. H. Allen, F.I.C. (City Analyst), Mr. J. Rymer Young (Warrington), Mr. W. Ward, Mr. J. Preston, Mr. H. E. Ibbitt, Mr. J. Austen, Mr. C. O. Morrison, Mr. G. Owen, Mr. J. F. Eardley, Mr. J. H. Bradwall, Mr. A. R. Fox, and Mr. J. B. Pater (Hon. Sec. of the Sheffield Society). Letters regretting their inability to attend were read from the Ven. Archdeacon Eyre, Dr. Dyson, Dr. Porter, Mr. Simeon Snell, Mr. A. Reckless, and the Presidents of the pharmaceutical Associations of Nottingham, Manchester, Leeds, and North Staffs.—The toast of "The Queen" having been honoured with special cordiality, the toast of

"The Sheffield Pharmaceutical and Chemical Society"

was given by Mr. J. Rymer Young, of Warrington, a member of the Pharmaceutical Council. He said he had had every reason in the course of his numerous visits to Sheffield to form most favourable opinions of the city and of its Pharmaceutical Society, having noted especially the energetic and enthusiastic manner in which the members threw themselves into its work. Its School of Pharmacy compared most favourably, he assured them, with the schools of other associations, notwithstanding their own consciousnesss of its shortcomings. The secret of its success he considered to be the enthusiasm of the chief men of the Society.—Responding to the toast, the President said the Society dated back from 1869. It had had its prosperous and unprosperous times, but at present it was in very rosy circumstances. The membership, it was true, this year showed a decrease, but on the other hand its debt had also decreased, almost to the point of extinction. This was encouraging for the coming session, which the Council was endeavouring to make as interesting as possible. Mr. Young had said that the members of the Society threw themselves heart and soul in its work, but he begged to differ from Mr. Young upon that point. The Council seemed able to draw the members to the annual dinner, but not to the general meetings. Referring to the subject of the sale of carbolic acid, the President said he believed that public opinion called for carbolic acid being placed in the Poison Schedule. The safety of the community made it imperative that this should be done, for at the present time there were more suicides from carbolic acid than from any other poison, simply because it was so easily obtainable.—Mr. J. F. Eardley proposed the toast of—

"The Pharmaceutical Society of Great Britain,"

coupling therewith the name of Mr. Walter Hills, its President. Speaking on the subject of professional education, he said the local Society was at a disadvantage, insomuch that at times it had to appeal to the parent Society for funds, and he suggested that as a means of obviating the unpleasant process of begging, the parent Society should institute a system of capitation grants in aid of local education, paid on the results of an annual examination of students.—Mr. Eardley also advocated an intermediate examination for pharmaceutical students, mentioning as one reason for it the large proportion of failures at the Minor examination. Students got too far out of touch with their preliminary studies when they had to wait four or five years before their statutory examination. This was clearly shown by the results of the Edinburgh Minor examination only last week, when out of 111 candidates only 30 passed.—Before calling upon Mr. Hills to respond, the President announced that Mr. A. H. Allen, the Sheffield City Analyst, had kindly offered the Sheffield Society a cheque to wipe off the amount of its debt.

Mr. Walter Hills, in responding, returned thanks for his kindly reception in Sheffield as President of the Pharmaceutical Society of Great Britain. He was President, he said, not for any special merit of his own, but probably because he had been for so many years associated with the Council of the Society, and had taken such a deep interest in its work. The three objects for which the Pharmaceutical Society was founded were the advancement of the sciences of chemistry and botany, the provision of material help to its distressed members, and, the protection of those who carried on business as chemists and druggists. With regard to the first two objects, the Pharmaceutical Society had to a very large extent been successful, and he had the less reason to touch upon them, as he had spoken on each quite recently. That evening he had had the privilege of giving the Sheffield pharmaceutical students an address on the educational work the Society had so much at heart, and he thought he had substantiated the Society's claim to have done very much to advance the study of chemistry and pharmacy throughout the country. As to the Benevolent Fund connected with the Society, he had occasion recently to preside at a grand gathering, at which he was thankful to say a very large and record addition was made to the Fund. If there was one object on which all members of the Society were agreed, it was the value of maintaining the Benevolent Fund. There were differences of opinion, however, as to how far the Pharmaceutical Society had succeeded in carrying out that other object, the protection of the trade. He desired particularly to say—and this would be the gist of his remarks—that as regarded that object the amount of good work which the Pharmaceutical Society was able to do was very largely dependent on the loyal support of its members, and of pharmaceutical chemists and chemists and druggists generally throughout the United Kingdom. Only so far as the Council of the Society obtained that support could they carry weight with the country, and without the support of the trade all their schemes must fall to the ground. The Pharmacy Act of 1868 had not been altogether successful, it had been riddled through and through by a judgment of the House of Lords and by other decisions. He had no intention of speaking that evening about company trading which unfortunately was so rife in the trade, but he would say this, that the judgment given in the House of Lords with respect to company trading, and also the judgment of Mr. Justice Hawkins in the celebrated Wheeldon case, were in the direction of recognising the qualification of the individuals who dispensed or sold poison; and, so far, he thought, those judgments were right and and in accordance with public opinion. The work of the Council was very much hampered because of the apathy throughout the country with regard to questions affecting their calling. Take for instance the question of an intermediate examination to which a speaker that evening had referred. This was no new subject The Pharmaceutical Council once drafted a Bill dealing with the question, but it could not be proceeded with on account of the lack of support. Personally he thoroughly believed in an intermediate examination on certain lines. He could not speak absolutely for the Council, but he thought it was very likely that it would go to Parliament next session with a simple Bill in which it would be proposed to make those who held the Minor qualification eligible as members of the Society. That had been done before, but with no result, for there was no quorum in the House of Commons for the second reading. The fact of the matter was that these questions dealing especially with the internal arrangements of the Pharmaceutical Society had no great interest for the ordinary Member of Parliament, and nothing would be done until members of the Society, both in London and in the country, made these subjects of sufficient interest to their own Members of Parliament, to make it worth their while to be in their places in the House when Pharmaceutical Bills came on. If the Bill he spoke of were really introduced next session it would be the duty of all the local associations to join in its promotion by every means in their power. Since he spoke on this subject at the annual meeting of the Society, he had seen no marked indication that the chemists of the country were particularly anxious to have the Bill introduced. He hoped, therefore, that in the course of the next two or three months the local associations would arouse themselves, for it was upon the action of those associations, much more than upon expressions of individual opinion, that the Council would have to rely in framing the Bill. The general result of certain judgments of the House of Lords and of Mr. Justice Hawkins had been to recognise the importance of the qualification of the person who

vended or dispensed the scheduled poisons. He thought it was very important that chemists should try to uphold the statutory qualification in every possible way. Lately, in the public departments, there had been a tendency to lower it. In the Poor Law Unions, for instance, there had been in the last few years a General Order of the Local Government Board making it possible for those not holding statutory qualifications to dispense medicines for the poor. This was a retrograde step. A Member of Parliament has been recently induced to ask a question on this subject in the House, but only the usual kind of official answer was given, that the decision of the Department could not be altered. Chemists, however, ought not to allow their qualifications to be watered down in this fashion. He maintained that the poor ought to be looked after as well as the rich, and ought to have qualified men, holding the statutory qualifications of the Society, to dispense medicines for them. In his opinion they ought, in the next session of Parliament, to get some Member to move the reduction of a certain person's salary, so as to get the question thoroughly discussed. Then there were certain grievances on the part of those who were dispensers in the prisons. Of those he did not wish to say further, because he had every reason to hope that the grievances in question were being considered in the right quarter, and that before long considerable modifications would be made advantageous and acceptable to prison dispensers. Mr. Hills said he had also a word to speak on the subject of local associations and local secretaries. Local secretaries were just now being appointed, and what did the Council find? They found that in England and Wales there were fifty-three centres, and in Scotland sixteen, where no nomination was made last year. Did that show any interest in pharmaceutical affairs? In his opinion it showed a very grievous apathy, which tied the hands of the Council. As samples of the replies received to inquiries for nominations of secretaries, Mr. Hills quoted the following :—"What good are they in country districts, where the law is broken by every village shop?" "No use nominating; it is a foregone conclusion. I should like to see a change." "None required." "Nominate a limited company, grocers, bacon factors, and dispensing chemists." "It's a complete farce to have a secretary, for the Society does nothing for its members or the trade." "The suggestions on your circular are never carried out here. As an adjunct to the Society, the post here is detrimental rather than otherwise, and is an impediment to any effort to lessened friction." "Time there was a change. Trade carried on in a very loose manner. Huckster shops here sell poison." "Any member you think best." Remarks of this kind, Mr. Hills continued, were very discouraging to the Council. It was one of the duties of local secretaries to report cases of infraction of the law; and he could assure them that no case so reported failed to secure the earnest and anxious attention of the Council. Often such cases were carried into court, but in many others fines were paid without public proceedings, and consequently it was impossible to give publicity to those cases. He earnestly appealed to local associations and secretaries to help the Council. It was only by union they could do anything. For the President of the Society or anyone else to go to the House of Commons and speak to one or two individual Members on subjects in which the Society was interested was of little use, as promises of individual support did not go far enough. The better way would be for every local society to influence its Member of Parliament by a decided expression of opinion; then there would be some chance of making and keeping a House when the Society's Bill came on. Turning, in conclusion, to the subject of carbolic acid, Mr. Hills said he had reason to believe that carbolic acid would not be added to the poison schedule unless more pressure was brought to bear than that which the Council of the Pharmaceutical Society could exercise on a public department. On several occasions the Council had done its duty in the matter, but had never received a satisfactory reply. Some years ago a Bill was introduced into the House of Lords, in which it was proposed by the Government of the day that there should be another class of dealers in poisons besides those qualified under the Pharmacy Act. That, he thought, was a rather dangerous principle and one which would not meet with approval at the hands of chemists generally. There was now an idea that carbolic acid might possibly be included in some Bill which would deal also with such things as the mineral acids, which were really of a highly poisonous character. Here again chemists had an object-lesson showing the necessity for constant watchfulness. The Council had done all it could, and it was for the trade generally to bring outside pressure to bear on the Government departments which had the care of these matters. It would be very necessary to watch any Bill which would in any way give qualification to sell poisons to others than those who were on the Register. —Mr. G. T. W. Newsholme, Vice-President of the Pharmaceutical Society of Great Britain, also responded to the toast. Referring to Mr. Eardley's proposal that the Society should make a capitation grant to provincial schools in aid of pharmaceutical education, he said he agreed with the idea to a great extent. The Society had always been willing to aid, as far as it could, the schools maintained by local societies, but unfortunately the means of the Society were limited. It spent every year nearly all that it received. What was needed was that every registered chemist in the country should realise it was his duty to join the Society and make it the great bond of union it was capable of being made. There would then be no lack of funds to aid education. He did not go all the way with Mr. Eardley, for he thought the local societies ought to keep up their interest in the matter. The Sheffield Society had always had as their principle, "Educate, educate," and he hoped they would never lay that principle aside, but would keep their independence as far as possible. He was in accord with Mr. Eardley on the subject of an intermediate examination, for he thought it would give the apprentices an increased interest in their work. As to carbolic acid, there was, he thought, little probability of its being put on the schedule of poisons. This did not, however, relieve the chemist of his responsibility of selling it in a proper way. At present there was great laxity even among chemists, while other people sent it out in beer bottles, cups, mugs, jugs, or any other receptacle. Chemists must show the way in taking care, and then they might some day be able to make good their claim that the educated hand was the best hand to deal with this dangerous substance.—Mr. W. Ward, F.C.S., gave the toast of

"The Medical Profession."

He spoke in an amusing way on the relations between chemists and the doctors, and suggested that it would be a good thing—though he feared there was little probability of its being brought about—if doctors would give up dispensing on the one hand, in return for the chemists giving up what prescribing they did on the other. —Dr. J. Robertson, responding, said Mr. Ward's suggestion would suit his views, but he was afraid that among both professions it would cause universal grumbling.—Dr. Andrew Walker, who also responded, said he could not understand why doctors should continue to dispense when they knew that those of their profession who only prescribed naturally moved to the top of the tree. The speaking included two other toasts, "The Scientific and Learned Societies," given by Mr. J. Preston and responded to in a very amusing little speech by Mr. A. H. Allen; and "The Visitors," proposed by Mr. A. R. Fox and responded to by Mr. J. Humphrey.

EAST ABERDEENSHIRE CHEMISTS' ASSOCIATION.

The annual meeting and dinner of this Association were held at Maud, on Thursday, the 14th inst. Mr. James Walker, Ellon, President of the Association, occupied the chair, while Mr. J. Johnston, Aberdeen, acted as Croupier. There were also present the following members, viz., Mr. W. Cruickshank, Fraserburgh; Mr. A. M. Lee, Strichen; Mr. J. Milne, Fetterangus; Mr. A. Hardie, Old Deer; Mr. G. M. McGregor, Ellon; Mr. J. F. Tocher, Peterhead (Secretary), etc. Apologies for absence were received from Messrs. R. Burnett, A. Gall, and J. A. Robertson, Fraserburgh; Mr. Angus, Strichen; Mr. Bremner, Port Errol, etc., etc.—The President, in his retiring address, spoke in favour of the new Bye-laws, and said they were likely to exercise a greater effect on the future of pharmacy than any legislation on the Society's behalf since 1868. The extension of the scope of the First examination was very necessary, in view of the fact that the Minor had been considerably extended in recent years, and because the present Preliminary examination permitted many young men to enter the ranks with an insufficient education. The addition of Euclid and algebra was necessary in order that the student might study physics and chemistry intelligently. Mr. Walker considered, however, that there would be even more difficulty in the future than in the past in getting apprentices, and he hoped that the apprentice of the future would come from a better class than formerly. Referring to the increase of fee in the Minor examination, he said that although it had met

with a good deal of adverse criticism, the increase was quite warranted, seeing that so few became subscribers to the Society. Non-subscribers, up to the present, got all the protection of subscribers, and the ten guinea fee would equalise matters a good deal. After dealing with other topics, he said the question now to consider was whether the business of a chemist and druggist was sufficiently remunerative and otherwise attractive to be worth all this trouble and expense. As things stood at present, it certainly did not seem so. A young man with the necessary education for the chemist's business might, he thought, find an occupation offering more variety, more time for relaxation, and more time for self-improvement than the craft of pharmacy offered. He was convinced, however, that increased education could have only one tendency, and that was for the better, and that the new Bye-laws would improve the status of the chemist considerably. Mr. Walker concluded by moving that the Association approve of the proposed Bye-laws.—Mr. J. F. Tocher, Peterhead, congratulated Mr. Walker on his address, which he was sure they would all agree was an excellent one, moderate in tone and marked by a degree of modesty which Mr. Walker both looked and was possessed of. Referring to the proposed extension of the scope of the First examination and the prophesied dearth of apprentices in future, he was not inclined to take such a pessimistic view of the matter as Mr. Walker. The same arguments with equal reason could be applied to medicine, law, or any other profession or calling adopting a higher standard of proficiency. They were all pretty well agreed that a great deal depended upon what class of people apprentices were drafted from, and it was most desirable that young men with a taste for the chemist's work and possessed of some breeding should aspire to become pharmacists. The race, however, was prolific, and there was always plenty to spare after every class had been supplied. It was always a grievance, not only of chemists but of every class that the laudable habits and upright practices of the past had been departed from, but when all was said and done, pharmacy would move on after the same lines, slowly and progressively. He was sure that none of the members of the Association thought that by meeting as they did they were to accomplish anything much in the way of reform. It was not by meeting alone that that could be done. It was by continual devotion to what they considered the best interests of pharmacy. It had been suggested that pharmaceutical ethics should form a subject for consideration by provincial associations, and he was sure that nothing but good could result from that. The main difficulty was to get pharmacists as a body to consider anything, and nobody could wonder at the complaints about the general want of interest. No doubt they had met members of the craft, as he had done, who had somehow got supercharged with an egotism and a selfishness which led them into the notion that they had a sort of divine right to all the custom in the place, and used very shady methods indeed to grab what meantime was another's. The short and the long of this ethical question, then, as he viewed it, was that they should first insist on common honesty among pharmacists, and do their best to obtain power to strike off the Register persons guilty of dishonest and disgraceful practices. Mr. Tocher concluded by expressing his approval of the extension of the scope of the First examination and of the increase of fee for the qualifying examination. He hoped that chemists and druggists would soon have the rights of membership of the Society, and trusted that the day was not far distant when every chemist would be a member of the Society in virtue of his registration. He seconded Mr. Walker's resolution.—Mr. Johnston also spoke upon the proposed Bye-laws, and explained his position regarding their adoption. He then gave an interesting account of the proceedings of the Council, and of the great amount of useful and valuable work accomplished in London without ostentation and reward. He urged his hearers to support the Society, and said a word on behalf of the Benevolent Fund. He trusted the new Bye-laws would have the effect Mr. Walker predicted, and concluded by congratulating him on his pointed and sensible address.—A discussion ensued, Messrs. McGregor, Lee, Hardie, and Milne taking part, after which Mr. Walker's motion was unanimously agreed to. Mr. W. Cruickshank, Fraserburgh, was elected President for the ensuing year.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday evening, October 14, Mr. A. L. Savory, supported by Mr. E. W. Lucas, in the vice-chair, presided over an assembly of nearly 200 chemists' assistants, master chemists, and other gentlemen interested in matters pharmaceutical. The place was the Council Chamber of the Holborn Restaurant, and the occasion the annual Smoking Concert of the Association. Many individuals holding prominent positions in the world of pharmacy were to be seen at the numerous tables distributed about the room, fraternising with their younger and less distinguished *confrères*, and entering with evident pleasure into the convivial spirit of the hour. During an interval at the end of the first part of the excellent programme, Mr. T. Morley-Taylor, the President, proposed a cordial vote of thanks to Mr. Savory in the chair, and Mr. Lucas in the vice-chair, which he tendered on behalf of the Association and others present in so pleasant and witty a manner as to call forth the regret of the Chairman that he was not possessed of the distinctly oratorical powers of Mr. Taylor. Continuing, Mr. Savory said he had attended many smoking concerts in past years, but he had certainly never enjoyed one more fully than he had that night, having met there many with whom he was frequently associated in business. Mr. Taylor in his remarks had said that the success of an affair of that character depended largely upon the chairman, he (Mr. Savory), differed from him on that point, he thought the undoubted success of the concert that evening was entirely due to the committee who had the management of it, and in a great measure to the indefatigable efforts of its Secretary, Mr. E. W. Hill. On behalf of Mr. Lucas and himself, he thanked Mr. Taylor and those present for the hearty manner in which they had accorded the vote of thanks.

NEWCASTLE-UPON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

The annual meeting (first) of this Association was held in the Métropole Hotel, West Clayton Street, Newcastle, on Wednesday, October 13. Mr. T. Maltby Clague, President, in the chair. There were a good number of members present. The Secretary's report was of a very encouraging nature, and showed amongst other items an average attendance at the meetings for last session of fifty-six. The Treasurer's report intimated that the Association had a credit balance at date of £8 8*s.* 10½*d.* The Association's headquarters for the current session will be the Metropole Hotel, and meetings will be held as far as practicable on the second Wednesday of every month at 8 p.m., October to April inclusive. The first meeting of the session, which will be held in November, will have the bill of fare provided by Mr. W. Lamont Howie, F.C.S., who will deliver one of his illustrated lantern lectures. Several papers, etc., were intimated for other meetings. The following were elected to serve on the executive for current year:—President, Mr. T. Maltby Clague, Newcastle; Vice-Presidents, Messrs. A. Ernest Owen, Newcastle; C. Ridley, Newcastle; and J. D. Rose, Jarrow-on-Tyne. Treasurer, Mr. W. Kerse, Newcastle. Council: Messrs. G. Duncan, F. R. Dudderidge, W. Pescod, L. Williamson, R. Wright, and Graham, Newcastle; R. Brand, Wallsend; and Jno. Gibson, jun., Hexham. At the next meeting (on November 17) Mr. W. Lamont Howie gives a lantern lecture, and there will be a smoking concert on 27th inst.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

The annual general meeting was held at University College on Thursday evening, the 14th inst., the Vice-President, Mr. H. B. Morgan in the chair.—Satisfactory reports were presented by the Secretary and Treasurer, showing that the Society was in a flourishing condition, both as regards the number of members on the rolls and from a financial point of view. After the customary votes of thanks had been accorded to the retiring officers the election of a new council was proceeded with, the result of the ballot being as follows:— Messrs. J. Harris Burns, Cockshott, Jones, Last, Marsden, McLoughlin, Mitchell, Morgan, Park, Peirson, Sharp, Wardleworth, Wokes, and Wyatt. The President was then elected, Mr. H. S. Peirson being the honoured individual, and the Vice-Presidents Messrs. P. H. Marsden and J. Jones. Mr. J. Harris Burns takes the onerous duties of Secretary, and Mr. McLoughlin those of Treasurer. The new members of the Society elected were Miss E. M. Wood and Messrs. H. B. Postlethwaite, W. Davis, A. G. Smith, B. Schofield, T. H. Owen Jones, D. Gorden, and W. Osborne-Davies. A full syllabus of the prospective lectures of the Society will shortly be published, and from the promises of papers already received a good and useful session may be confidently looked for.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

The annual dinner was held at the Freemasons' Hall on Wednesday, October 20. The chair was taken at 7 p.m. by the PRESIDENT (Mr. J. Cocks). The vice-chairs were ably filled by Messrs. O. A. Reade (Stonehouse), W. H. Woods (Plymouth), J. W. B. Swainson (Devonport); and others present, to the number of about seventy, included Messrs. C. T. Weary (Hon. Sec.), Condy U'Ren (Hon. Treas.), J. Harvey Bailey, J. Barge, A. D. Breeze, Martin Johnson, H. D. Davey, F. Maitland, George Breeze, J.P., J. G. Netting, C.C., J. D. Turney, C. J. Park (Member of the Pharmaceutical Council), F. W. Hunt, J. Tavener, Jas. Maurice, H. C. Cantle, J. Danse, H. P. Hearder, F. Ralph, J. A. Buckley, J. R. Johnson, R.N., S. A. Perkins, Lamble, sen. and jun., P. A. Kelly, W. H. Austin, W. Mathew (Saltash), R. D. Doble (Tavistock), Percy Reade, and H. Vibert. The visitors included Messrs. W. H. Lake (President Exeter Association), J. Humphrey (*Pharmaceutical Journal*), E. M. Holmes (Pharmaceutical Society), —. Pode (Silverlock and Co.), W. Luxon (Townsend and Co.), Messrs. Masters (Hodgkinson, Clarke, and Ward), Collis (Evans, Lescher, and Webb), Surgeon W. Axford, R.N., J. Kinton Bond, B.A., B.Sc., J. Alonzo Rider, F.C.S., T. W. Ginn (Hon. Solicitor), and Major Rendle.

Toast List.

Proposed by		Responded to by
The President.	"The Queen."	
Mr. F. Maitland.	"Pharmaceutical Society."	Mr. C. J. Park.
Mr. J. D. Turney.	"Plymouth, Devonport Stonehouse, and District Chemists' Association."	The President.
Mr. J. G. Netting.	Exeter Association of Chemists and Druggists.	Mr. W. H. Lake.
Mr. R. D. Doble.	"Officers of the Association."	Mr. C. T. Weary. Mr. Condy U'Ren.
Mr. O. A. Reade.	"Junior Section."	Mr. H. C. Cantle.
Mr. G. Breeze., J.P.	"Honorary Members and Honorary Officers."	Mr. E. M. Holmes. Dr. Wilson. Mr. T. W. Ginn.
Mr. W. H. Woods.	"The Ladies."	Mr. J. R. Johnson.
Mr. J. H. Bailey.	"The Visitors."	Mr. J. Humphrey.

Mr. F. MAITLAND, in proposing "The Pharmaceutical Society," remarked that its present policy was progressive. Educationally it had always been so. In regard to the *Pharmaceutical Journal*, which was the official organ, it had made grand progress, and now appealed to all sections of the trade without losing any of its reputation as a scientific source. With regard to the Pharmacy Act it could not be said that the Council had been indifferent, for nearly four hundred breaches had been reported and investigated. This certainly showed that the Council was alive to the interests of the trade. With regard to Parliamentary results during the past year, not much had been done. There was certainly one desirable thing, viz., the admittance of all registered chemists to membership of the Society would stop a gross anomaly and inequality, and result in increased membership to the Society. Regret was often expressed that chemists did not rally to the Society. He (Mr. Maitland) was surprised that chemists did not seem to recognise the power which they possess in combining together.—Mr. C. J. PARK, in responding, said that the Pharmaceutical Society had been looked on as a close corporation by a large number of chemists outside the Society, and that it was impossible to introduce any Bill of a contentious nature into Parliament owing to the tremendous pressure of work which Government had to get through. The Council hopes shortly to introduce a Bill making all registered chemists eligible as members of the Society. A Bill on that subject was introduced some time ago, but owing to lack of interest in the House it failed to pass. Mr. Park suggested that any member or association having any influence with Parliamentary candidates should endeavour to interest them. Almost one half of the chemists in business took little interest in pharmaceutical affairs. They had a splendid President in Mr. Hills, who was well supported by all the London Councillors, who expended a great amount of time over the chemists' best interests.—Mr. TURNEY, in proposing the toast of the local Association, said its work was many-sided. It had a brief history, which, however, was very satisfactory. It celebrated its four-years-old birthday that evening, and its success was due to the broad and liberal policy which guided its government. It engendered among chemists a feeling to wish to encourage the studies of the junior members, and also a feeling of greater interest in pharmaceutical politics. In the present day men of all callings bind together to help each other, therefore each member of that Association should do all he possibly could to help forward its progress.—The PRESIDENT (Mr. Cocks) said, on behalf of the Association, he thanked Mr. Turney for the toast he had so ably proposed. Reviewing the past year briefly, it had been one of unqualified success, in fact a record one in every respect. The numerical strength of the Association had reached the undreamt of total of 130, and in each of the three objects of its existence—trade interest, educational, and social—had been most successful and progressive, of which the new rooms were visible specimens. The chief events immediately facing them, he remarked, as far as could be foreseen, were in helping the Society in carrying out the formation of local associations where none at present exist with the hope thereby of assisting the Government in framing the New Poisons Act, which is rumoured it contemplates introducing—a reform urgently needed in the interests of the public since carbolic acid has become the favourite poison, which can be obtained at the present time without any restriction whatever. The speaker also remarked that he thought the P.A.T.A. deserved their active sympathy; that its greatest enemies must admit that, independent of articles on its list, it had been the means of drawing manufacturers' attention to the fact that chemists take a financial interest in vending proprietary articles, and as is truly said of the Pharmaceutical Society, the best way is to join it first and then criticise as becomes your privilege. In conclusion he wished to welcome in the name of the Association, Mr. Lake, of Exeter, Mr. Humphrey, of the *Pharmaceutical Journal*, and their old friend, Mr. E. M. Holmes, at the same time heartily congratulating him on the distinguished honour recently conferred on him by being awarded the Flückiger Medal. —Mr. NETTING proposed the "Exeter Association," coupled with the name of the President, Mr. Lake.—Mr. LAKE, responding, hoped that Plymouth would shortly obtain a school of pharmacy in its midst, like Exeter, and expressed regret at the absence of Mr. Gadd.—Mr. DOBLE proposed "The Officers of the Association," coupled with the names of Messrs. Weary and U'Ren.—Mr. WEARY, in responding, tendered the heartiest thanks of the officers to their retiring Secretary, Mr. Cocks, for his great industry on behalf of the Association.—Mr. CONDY U'REN, Treasurer, also responded, remarking upon the increased balance in hand, and hoped that next year there would be a still larger one. —Mr. O. A. READE, in proposing "The Junior Section," said that it was a very pleasant task, for in speaking of the Junior Section it must not be forgotten that the junior of to-day will be the senior of the future, and that it was among the junior members that they must look for the Jacob Bells and the Hanburys of the future, and that to them must be entrusted the task of carrying forward the flag of pharmacy when the seniors would have retired from the field. Bearing these facts in mind, the speaker urged, it was surely unnecessary to point out the importance of employers interesting themselves in the studies and in moulding the characters of the juniors entrusted to their training. He (Mr. Reade) congratulated the chemists of the three towns that they recognised their responsibility in this respect, and often at great inconvenience to themselves gave their apprentices opportunities for attending classes and otherwise improving themselves; the President of the Pharmaceutical Society in a recent speech dwelt upon the difference in this respect between pharmacy of thirty years ago, and he (the speaker) emphasized that fact. Whilst paying a tribute to the many opportunities of study which the three towns possessed in their excellent technical schools, he would venture to hope that before long in one of the several parks on which so much money is being spent, a few beds might be set apart illustrative of the classification of plants for the benefit of pharmaceutical and medical students and botanists generally. Whilst complimenting the students upon their progress during the year, he urged upon them regular attendance and close attention to their studies. In speaking of the Junior Section as a whole, however, there was one advantage that they had all gained. They had been brought together into a union, into a bond of brotherhood which would doubtless bear fruit in the future in the maintenance of this and kindred associations, which, he was sure, do much to allay the jealousies and smooth the friction which must arise between chemists in this age of keen competition.—Mr. CANTLE, in responding on behalf of the Junior Section, thanked Messrs. O. A. Reade and J. R. Johnson for their kindness in conducting classes in connection with the Association, and, thanking Mr. Holmes for his address that afternoon, hoped that

one day the Junior Section would turn out one who would be as great an ornament to the profession as Mr. Holmes was.—Mr. G. Breeze, in proposing "The Hon. Members and Officers," alluded to Mr. Holmes; they felt it a great privilege to number him among the hon. members, also Mr. J. K. Bond, who had so kindly presented the prizes.—Mr. Holmes, responding for the honorary members, said there were other honorary members, like Mr. J. Kinton Bond and Mr. Alonzo Rider, who could far better fulfil the duty. Personally he felt that he expressed the views of the other honorary members, in saying they considered it an honour to be associated with the most progressive, most successful, and, he believed, one of the largest chemists' associations in the country, and one whose example, if followed, would do much for the future welfare of the craft. He said progressive emphatically, because even the younger members showed by the herbaria they had sent in that they were quite in the forefront in the subject of botany. He wished the Association uninterrupted success in the future, and felt sure it would attain that if each member continued as hitherto—to work for its success, in the direction of his own special aptitude. He thanked them most cordially for the reception they had given to this toast proposed in such a flattering manner by Mr. Breeze. —Dr. Wilson, also responding, said he did not think that chemists had made that material advance which they ought to have done, owing to the great increase in quack nostrums. They should be very careful in pushing such things. He thought that every chemist should join the Pharmaceutical Society, so as to be able to give support to its proceedings, and suggested that steps should be taken to draw a closer bond between the medical and pharmaceutical professions. He would propose that a committee be formed which could interview some of the medical profession, the outcome of which might be of benefit both to themselves and the medical profession.—Mr. Ginn also responded.—Mr. J. H. Bailey in proposing the visitors, welcomed Mr. Humphrey in their midst.—Mr. Humphrey, in responding, remarked that local organisation in pharmacy was a very desirable thing, and hoped that other associations would emulate this Association in that respect.—Songs and recitations were ably rendered by the Western Glee Quartette, Major Rendle, Messrs. J. Jackson, J. D. Turney, J. E. Bone, C. A. Kelly.

WESTERN CHEMISTS ASSOCIATION (OF LONDON).

On Wednesday, October 20, the first meeting of the session 1897-98, was held at the Westbourne Restaurant, 1 Craven Road, Paddington, W., Mr. J. W. Taplin, the retiring President, in the chair. The preliminary business having been dispatched, Mr. Taplin welcomed the members, and remarked that he understood many of them had been scouring the face of Europe since they last met, but he was glad to see there was still a spot of Greece left. Notice had been given of a motion to alter Rule IV., which was to the effect that the Committee of Management consist of all past presidents of the Association and fifteen elected members. The past presidents were accumulating to such an extent that there was rather a difficulty in finding fifteen elected members who had not previously been in the chair, therefore it was thought advisable to strike out the clause referring to those gentlemen, so that the rule would read:

> "The affairs of the Association shall be managed by a Committee consisting of fifteen members elected at the Annual Meeting held in October, and notice of nomination of members for election on the Committee must be sent to one of the Hon. Secretaries at least ten days previous to the meeting.

This was seconded by Mr. Hyne and agreed to. The following committee was then elected for the ensuing year:—Messrs. Martindale, Andrews, Parker, Taplin, Hyslop, Cracknell, Gulliver, Dyson, Harrington, Mathews, Phillips, Smith, Tennant, Warren, and Worsley.—Mr. Mathews (Treasurer), presented the year's account, which was declared correct, showing a balance in hand of £3 16*s.* 9*d.*—The Chairman then announced that the Annual Dinner would be held at the Café Royal some time in November next.—Mr. Marsh raised the question as to whether ladies should not be allowed to attend the function, and after a lengthy discussion, it was put to the vote, when only one hand was held up in favour of Mr. Marsh's suggestion. —Mr. Taplin, after giving a short summary of the work of the Association during the past year, proceeded with his valedictory address. He referred to the recent addresses wherein the ideal harmacist had been portrayed. As an ideal they must admire him, but there is the practical aspect from which they must also view him. Britons had been dubbed "a nation of shopkeepers," and under that category pharmacists were included, and no ideals would change them unless they wished to starve. From the commercial aspect, which he thought in no way derogatory to the professional, chemists expect too much from the public for supplying such articles of commerce, as, for instance, cod-liver oil and chemical food, things which are in constant demand, and in consequence of the charges made by chemists for them, are sold in much greater proportion by the cutters and the stores than by chemists. As business men they should watch their rivals. Although they might look upon them as illegitimate, the public regard them as legitimate, or are entirely indifferent so long as money can be saved by patronising the stores. He believed it to be a duty to themselves, while not emulating these traders, for the chemists to reduce their charges in very many instances, so as to prevent the ways of the cutter even approaching success. Another matter worthy of attention and consideration was the question, Would it be advantageous that dispensing charges be lowered somewhat, except in the dispensing of pills. If it pays the chemist to dispense for medical men upon a much lower scale than is charged to the public, could they not find a *via media* and charge the public some 20 to 25 per cent. increase above the charges to a doctor? He thought that would tend towards getting for the chemist the bulk of the dispensing he did not now get. Mr. Taplin concluded by remarking that he thought it worth while to ponder over these things and to see if any practical outcome could be brought about for the general good. He hoped those present would excuse him for bringing the subject to their notice.—The meeting then terminated.

MEDICAL JOTTINGS.

The Result of the Election of a direct representative on the General Medical Council of registered medical practitioners domiciled in England and Wales was officially declared last Saturday. Mr. Victor Horsley, who polled 6946 votes, was the successful candidate. His majority over Sir B. W. Foster was 834. The other two candidates polled less than 300 votes between them.

The Annual Harveian Oration before the Royal College of Physicians was delivered by Sir William Roberts last Monday. Harvey, during his lifetime—the date of the indenture was 1656—made over to the College his estate of Burmarsh, near Maidstone, then valued at £56 yearly, with the object that an annual discourse should be delivered, and this has been carried out ever since. During recent years the oration has been delivered by such celebrated physicians as Acland, Gull, Wilks, Parkes, George Johnson, Lauder Brunton, and Quain. The estate at Burmarsh is still in the possession of the College. The Lumleian Lecture in Surgery was founded almost a century before, during the reign of Queen Elizabeth, by Dr. Richard Caldwell, a former president of the College, in conjunction with Lord Lumley. Harvey once gave this lecture.

The Goulstonian Lectures were instituted in 1632, and particulars will be found in the *Pharmaceutical Journal* (page 316) of October 2. Another old foundation at the same College is the Croonian Lectureship, the plan for which was formed by Dr. W. Croone in 1684. He died without leaving any funds for the purpose, but his widow carried out his intention by devising the King's Head tavern in Lambeth Hill to the College. The property has increased in value, and the honorarium attached to the lectureship is 100 guineas. The Milroy, Bradshaw, and other lectureships have been founded in recent years, but naturally have not the historic interest of the older foundations, which instance somewhat remarkably the continuity and stability of our institutions.

The Linnean Society of New South Wales again invites applications for the position of Macleay Bacteriologist, at a yearly salary of £400. Messrs. Dulau, of Soho Square, will furnish particulars if applied to.

Dr. Alexander Hill, who since 1884 has been Master of Downing College, Cambridge, has just been appointed Vice-Chancellor of the University, the highest executive office at Cambridge.

Dr. Hill, who is the first member of the medical profession to hold this important position, was only thirty-two years old when appointed Master of Downing, and was the youngest man ever elected to a headship. He has been chairman, since its foundation, of the National Home Reading Union, and some time since, when it was found impossible to let one of the College farms, he took it himself, and finds much recreation in managing it.

The late Dr. Jabez Spence Ramskill, of St. Helen's Place, E.C., one of the consulting physicians to the London Hospital, and medical adviser to the Union Assurance Company, has left personal estate to the value of £1,178 10*s*.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE SALE OF FOOD AND DRUGS ACT.

Sweet Spirit of Nitre.

At the Grantham County Police Court, on October 16, three local chemists were summoned for selling sweet spirit of nitre which contained varying proportions of nitrous ether, showing 50 to 80 per cent. deficiency, taking the spirit of nitrous ether of the British Pharmacopœia as the standard. The case of Richard Steel, of Colsterworth, was taken first. Mr. W. F. Robinson, solicitor, of Grantham, defended. The prosecution proved the purchase of the sweet spirit of nitre, and put into the box Mr. W. D. Cox, pharmaceutical chemist, of Grantham, who stated that it was his custom to supply the B.P. sp. æther nitrosi when sweet spirit of nitre was demanded, but on cross-examination acknowledged that another sweet spirit of nitre was made according to a London pharmacopœia and was more largely sold.

Mr. W. F. Robinson, in defence, stated that the purchaser applied for sweet spirit of nitre, and he was supplied with that article. The analyst in his report had confused it with the British Pharmacopœia preparation, consequently no offence had been committed.

The defendant then acknowledged the sale, stated that he sold it as received from Mr. S. Robinson, of Stamford, who also stated that he sold it to the defendant as received by him from Messrs. Hodgkinsons, Clarke and Ward, of 101, Whitecross Street, London.

Mr. J. Slinger Ward of that firm produced a copy of the London Pharmacopœia, 1746, described to the magistrates how the preparation was made and the preference the public gave it. He stated that in his experience the analysis tabulated on the certificate coincided with a good sample of sp. æthr nitr. of a specific gravity ·850. On cross examination, by the prosecution, he stated how sp. æthr nitr., B.P., was prepared, and what the finished product should be.

Mr. E. W. Bell, chemist, of Spalding, gave evidence of the difference between the two.

The Magistrates dismissed the case.

Mr. W. L. Robinson then applied for costs, urging that the analyst in his ignorance had confused the two preparations, which had been frequently the subject of cases in police courts, always with the same result as the present, and also urged that it was unjust causing so much expense to the defendant. After retiring for some time, the Magistrates decided not to grant costs.

The two other cases were dismissed.

Gregory Powder.

At Guildford, on Saturday last, James H. Littleboy, a chemist of Woking, was summoned by the Surrey County Council for selling "Gregory powder" which was not of the nature and substance asked for by the purchaser. A label on defendant's package stated that it was prepared according to the original recipe of Dr. Gregory. According to the British Pharmacopœia Gregory powder should be composed of rhubarb powder, 22·2 per cent.; magnesium oxide, 66·7 per cent.; and ginger in powder, 11·1 per cent. In the preparation sold by the defendant carbonate of magnesia was substituted for the oxide, the former being half the price of the latter. For the defence it was stated that the carbonate had the same effect therapeutically as the oxide, and that therefore the substitution of it was not to the prejudice of the consumer. Medical evidence was called to prove this. The Bench held that the article sold was not to the detriment of the purchaser, and dismissed the case.

LETTERS TO THE EDITOR.

Local Organisation in Pharmacy.

Sir,—I read with great interest your article on the above subject which appeared in your issue of August 28, and the subsequent letters by various correspondents in connection therewith. All are in the same strain, and I can only follow suit—that if we could have complete unity, everything would be very easy. It goes without saying that "union is strength," but it is a well-known fact that no profession or calling has exhibited such signs of weakness and disunion as those engaged in the practice of pharmacy. Past experiences go for nothing, and no amount of rhetoric seems of any good. Why is this? We are supposed to be a body of educated men, taught to reason intricate questions to a successful issue, and yet on the popular question of trade unity we hear a dozen different opinions from as many individuals, each thinking his own view the best, and, if not adopted, keeping aloof from those who are willing to discuss all sides of the question in order to get at the best solution of the difficulty. It may be quite true, as many have said, that the Pharmaceutical Society has not done as much as it might have done, but has the Society received that measure of support to enable it to do so? The question of local organisation appeals to everyone having the good of their calling at heart, and if it is to be successfully accomplished local associations can have everything to do with such a result. In every town there should be a local association, but in towns or villages where there are not sufficient numbers to form one advantage should be taken of becoming attached to the nearest centre, and the officials managing the local association should see that opportunity is given for this being done. When this is accomplished the future success depends not so much on the number of meetings held as upon the nature of the subjects discussed. In districts where a large area is embraced questions of trade interest should predominate, and meetings need not be held unless something important is to be brought forward. I venture to say, if this idea (though it is no new one) were carried out, a great majority of chemists and druggists in business would be glad to have the opportunity afforded of taking part in it. You mention in your article, Sir, the "Federation of Local Associations," and I am pleased to know that at least you speak of it as likely to be of some use. I am in hopes of its being of great use, and if the proposals put forth at the recent meeting held in Glasgow receive anything like support from local associations, I have no hesitation in saying that the Council of the Society will be a much more active body in the future than it has been in the past. Do not misunderstand me. Whatever is to be done can only be done through the agency of the Society, but if by the simultaneous consideration of matters of importance relative to our calling a unanimous verdict can be arrived at, then the Council will be in the position of knowing that certain reforms are imperative, and, knowing that it has the trade at its back, will act accordingly. The Federation was not formed (as many suppose) for the purpose of superseding the Pharmaceutical Society. That it never can do; but will rather support it, by establishing a bond of union between local associations and assisting and advising in the formation of new ones. If the Federation can be the means of finding out the mind of the trade on all questions of interest, who can say it will not serve a useful purpose? The Pharmaceutical Society has at present no means of knowing the feeling, except by isolated communications; why not therefore take advantage of any attempt to supply the want? If each association will only appoint a delegate to attend the meetings and take part in the deliberations, I am satisfied that good will result from the interchange of opinions thus obtained from all parts of the country. My heartiest wish is that the modest body formed at Nottingham in 1893 may yet prove itself of some value.

Glasgow, October 18, 1897. William L. Currie.

The Education of Pharmacists.

Sir,—The address of the President of the Society to the students of the Sheffield School of Pharmacy, which appeared in your last issue, is in every way worthy of the attention of all those who hope some day to take a good position in the profession of pharmacy. His remarks respecting scientific pharmacy are especially worthy of note, and might well have been enlarged upon with profit to all students. The great advance made in recent years in "animal medication" makes an elementary knowledge of zoology almost a

necessity to the advanced pharmacist, and those who intend to make their calling truly a profession must of necessity possess some knowledge of this most important subject, as well as of bacteriology, etc. On reading his address, the thought struck me that, as President of the Pharmaceutical Society, Mr. Hills stands in an unrivalled position for carrying some of his theories into practice. Might I suggest that the Council should consider the advisability of adding a third course to the present curriculum of that admirable institution the School of Pharmacy? Such a course, including elementary zoology, bacteriology, and instruction in the examination of urine, sputum, milk, and so forth, might be instituted during the last three months of the session, when no Major work is being carried on, a Fellowship of the Society to be conferred on those who are successful in the examination at the end of the course. If the Council did not see its way to establish such a course in the School, this need not prevent the institution of an examination in these subjects, and as there would be no necessity to hold the examination more than once a year, no great expenditure would be incurred. An opportunity would moreover be thus opened to insist on a systematic course of study in a school recognised by the Society, no one being eligible for examination who had not spent two years in such a school, and of course passed the Major examination. From what I know of the School of Pharmacy, I am convinced that many students who had spent fifteen months there would certainly not grudge an extra three months in obtaining knowledge which would so well equip them for a successful career. Your remarks in the same issue of the Journal respecting apprenticeships also impressed me with the desirability of obtaining powers to insist upon registration of all apprenticeships. Until such registration is compulsory, undesirable men will continue to get on the rolls, and thus keep down the standard of the profession by acting as qualified assistants to limited companies. It is a well-known fact that at present many men enter for examination who have never been properly apprenticed. A registration fee of £15 would keep out such persons, and, by allowing, say £5 of the fee to go to the Benevolent Fund, serious opposition to such a scheme would, I think, be effectually silenced.

October 18, 1897. FYTON (112/40.)

The Anti-Cutting Movement.

Sir,—The enclosed is a copy of letter sent out to the more prominent proprietary medicine manufacturers, with a view to inducing them to protect their articles:—

> We, the members of the local branch of the P.A.T.A., note with regret that your preparation has not been added to the protected list of proprietary articles. Could you not see your way, in the interests of the retail trade as well as your own, to do so? We venture to think that it would form a practical way of showing sympathy with the retailers (among chemists), and would certainly result in benefit to yourselves.

Bradford, October 13, 1897. S. NORMAN PICKARD.

Sir,—When will chemists awake to the fact that so-called patent medicines are and have been the curse of our trade? We have to thank them in the past for store trading, for the diminution in our profits and incomes, for constant friction with our customers, who look upon us as rogues—let us sell at what price we may—and for the resulting loss in status, which many of us feel keenly, and deeply deplore. If we ask, "What return have we had or are likely to have for all this?" Mr. Beecham's letter supplies the answer, and I hope all those who have helped to spread his fame and make his pills "worth a guinea per box" will be gratified by the result. But is it not time some combined effort were made to put an end to quack medicines altogether? is there no prominent man among us who will take the first step in this direction? It was something when eminent artists and others protested against the hideous advertisement boards which threatened to line our railways and deface every landscape, but their protest did not go far enough. There are many chemists I am perfectly sure who would gladly assist in such a crusade, who look upon the testimonials flaunted in the public press as an insult, not only to the medical profession, but also to the growing intelligence of the age. My proposition is, therefore, that a society be formed to oppose, by every constitutional means, the evil of quackery; and I would suggest that someone on the Pharmaceutical Council might take the initiative.

October 15, 1897 PHARMAKOS (112/15).

ANSWERS TO QUERIES.

PHARMACOPŒIA.—When the book is published you will know all about it; until then we are unable to inform you what it will or will not include. The date of publication is uncertain as yet. [*Reply to* T. A. D.—112/2.]

INCANDESCENT OIL LAMPS.—The lamps have been exhibited at the premises of the Incandescent Gas Light Company, York Street, Westminster, who will doubtless supply you with particulars on application. [*Reply to* W. L. P.—112/31.]

COUGH MIXTURE.—Probably something on the following lines will answer your purpose:—Tinct. chloroform. et morphinæ, 40 ♏; acet. ipecac., 40 ♏; syrup pruni virg., ℥iij.; oxymel. scillæ, ad ℥i. Dose: One teaspoonful; for adults only. [*Reply to* W. N.—111/18.]

BORAX AND ALUM.—The precipitate formed on mixing aqueous solutions of borax and alum is aluminum borate. Probably the salts are prescribed together in the recipe with the idea of combining the properties of both in the solution. Needless to say, this will not be the result, as the insoluble aluminum salt is practically inert, and therefore materially lessens the quantity both of borax and alum left in solution. [*Reply to* W. H. D.—111/16.]

HAIR-CURLING LIQUID.—Borax, 3 ozs.; gum acacia, 1 drachm; hot water, 40 fl. ozs.; carbonate of potash, 2 drachms; spirit of camphor, 1½ fl. oz. Dissolve the solids in the hot water; when cold add the spirit of camphor. Moisten the hair with this and adjust loosely; allow to dry. To keep "curls" in shape: Gum arabic, 1 drachm; simple syrup, 1 drachm; rose water, 2 ozs. Moisten the hair thoroughly with this preparation before curling in paper. [*Reply to* AMY.—112/9.]

WARBURG'S TINCTURE.—The original formula published by Dr. Warburg was:—Aloes soc., 12 ozs.; rhubarb, angelica seeds, conf. damocrat, of each 4 ozs.; gentian, zedoary, cubebs, myrrh, camphor, larch boletus, of each 1 oz. Digest the above in 500 fl. ozs. of proof spirit in a water bath for twelve hours, then press, and add quinine sulphate, 10 ozs. The mixture is warmed until the quinine has dissolved, then cooled and filtered. A simpler formula, which is more generally employed than above, is as follows:—Socotrine aloes and zedoary root, 5 troy ozs.; camphor, angelica seeds, 2 drachms; saffron, 3 drachms; quinine sulphate, 3 troy ozs. 288 grs.; proof spirit, 9 pints. Macerate seven days, strain, press, and filter. [*Reply to* W. M.—111/10.]

[Several Answers to Queries and Letters are held over.]

OBITUARY.

TAYLOR.—On August 19, John Taylor, Chemist and Druggist, Kendal, Westmoreland. Aged 87.

GALL.—On September 4, Andrew Gall, Chemist and Druggist, Melbourne, Australia. Aged 60.

PULLAN.—On October 9, Thomas Pullan, Chemist and Druggist, Bradford, late of Manningham, Yorks. Aged 70.

HUGHES.—On October 14, John Griffith Hughes, Chemist and Druggist, Holyhead. Aged 49.

GENERAL INDEX

TO THE

"PHARMACEUTICAL JOURNAL."

A general index for the seventeen years ending June 29, 1895—including volumes VIII. to XXV. of the 3rd series—is in course of preparation, and will be printed by subscription if a sufficient number of orders are received. The subscription price is fixed at one guinea, and—if the work is to be proceeded with—orders should be addressed without delay to the Editorial Department, "Pharmaceutical Journal," 17, Bloomsbury Square, London, W.C.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Bowdler, Branch, Branson, Butcher, Chambers, Cowie, Cuff, Currie, Dowling, Fisher, Forster, Gibbs, Glyn-Jones, Grier, Harrie, Hill, Hudson, Kemp, Macfarlane, McKellar, McKnight, Powell, Preston, Reynolds, Smith Sykes, Tocher, Venn, Wain, Ward, Watson, Welford, Wilson.

ROYAL COLLEGE OF SURGEONS
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"THE MONTH."

Mydriatic Bases. At the recent meeting of the Naturforscher in Brunswick Professor E. Schmidt spoke in the Pharmacy Section on the subject of scopolamine. The circumstance that the commercial scopolamine hydrobromide has a much lower rotatory power ($[\alpha]_D = -6°{\cdot}62$ to $-13°\,2'$) than the salt prepared from henbane seed ($[\alpha]_D = -25°\,43$) is attributed by him to the presence of a varying admixture of the salt of a base that is an optically inactive form of scopolamine (*i*-scopolamine) into which normal scopolamine is convertible by the action of argentic oxide or caustic alkalies, but without any alteration of the other physical characters of the base or of its physiological action (*Pharm. Journ.*, lvi., 341). The fact that scopolamine hydrobromide may be obtained with normal rotatory power or with feeble rotatory power, according to the mode of operating upon scopola root, is regarded by Schmidt as indicating that the inactive base does not exist naturally in the root, but is produced in the course of extraction. O. Hesse (*Pharm. Journ.*, liv., 822, lvi., 289), on the contrary, contends that the inactive base is a distinct substance, isomeric with scopolamine, actually existing in scopola root, and having characters different from those of normal scopolamine. He distinguishes it by the name of atroscine. The characters of *i*-scopolamine and its salts are described by Professor Schmidt as follow :—The base crystallises in hard rhombic prisms, having air-dried the composition $C_{17}H_{21}NO_4 + H_2O$, melting point 56° C. The hydrobromide, $C_{17}H_{21}NO_4 \cdot HBr$ (at 100° C.). The aurochloride, $C_{17}H_{21}NO_4 \cdot AuCl_4H$, melting point 208°–210° C. Hesse describes the air-dried crystals of atroscine as containing two molecules of water, $C_{17}H_{21}NO_4 + 2H_2O$, and the melting point as 36°–37° C., the hydrobromide as containing water of crystallisation, $(C_{17}H_{21}NO_4 \cdot HBr)_2 + H_2O$, and the aurochloride as melting at 201°–202° C. On these grounds he contends that the base which he has named atroscine is substantially different from the *i*-scopolamine of Schmidt, the difference being also recognisable in the physiological action, as shown by the observations of Dr. Königshöfer (see *Pharm. Journ.*, lvii., 61), even in his comparison of an atroscine salt with a scopolamine salt, having a rotatory power of $[\alpha]_D = -12°$, that of the hyoscine salt being $[\alpha]_D = -25°{\cdot}7$.

Compounds of Iodine with Albuminoids. The possibility of combining albumin with cyanogen and with bromine or iodine has already been established by Loew (*Journ. f. Chem.* [2], xvi., 63; xxxi., 138) and Jendrassik (*Jahr. Fort. Thierchemie*, xxii., 9). Analogous compounds of casein have now been obtained oy A. Liebrecht. By heating casein with one-fourth of its weight of iodine and extracting excess of iodine from the resulting brown powder by means of ether, a product was obtained containing 17·8 per cent. iodine. It is a yellow powder, soluble in hot dilute alcohol, and separates on cooling in brown flocks. This casein periodide contains most of the iodine loosely combined. When washed with alcohol and ether part of the iodine is removed and a casein iodide remains, containing 5·7 per cent. iodine in a state of permanent combination. This is a white powder insoluble in most solvents, but like casein it is soluble in dilute alkaline solutions, and is precipitated again on neutralisation. On treating casein periodide in the manner adopted by Baumann in preparing iodothyrin from thyroid gland (*Pharm. Journ.*, lvi., 161), a product was obtained resembling iodothyrin, and containing about 8·7 per cent. iodine. This caseo-iodin is soluble in hot dilute alcohol and alkaline liquids, but is insoluble in most other menstrua. This product has been tried by Professor Kocher, of Berne, in the treatment of patients, and he has obtained very good results.—*Berichte*, xxx., 1825.

Properties of Liquid Fluorine. Moissan and Dewar succeeded in May last in reducing fluorine to the liquid state, and have continued their work on that element. They now find that gaseous fluorine is readily liquefied at the boiling point of air. Liquid fluorine boils at $-187°$ C. The investigators have not yet succeeded in reducing it to a solid condition, although the temperature was reduced to $-210°$ C. Its density, determined by floating particles of solids of known density in the liquid, was found to be 1·14, since amber floated indifferently in various portions of the liquid. In conducting these experiments it was found necessary to expose the substance floated to a temperature of $-200°$ C. for some time. A piece of caoutchouc not properly cooled burnt completely with a brilliant light and without any deposit of carbon when introduced into the liquid. Liquid fluorine exhibits no absorption bands, and is not magnetic. At $-210°$ C. it is without action on oxygen, water, and mercury, but combines with explosive violence with oil of turpentine and with hydrogen, even at that low temperature. —*Comptes rendus*, cxxv., 505.

Noxious Gases in Mines. Mermet recommends the following process for the detection of noxious gases in the air of mines. A reagent is made by dissolving (*a*), silver nitrate, 2 grammes, in distilled water, 1000 C.c.; (*b*), 1 litre of distilled water is boiled with a few drops of nitric acid (free from HCl), and a few drops of permanganate solution added to give it a permanent pink tint. When cold, 1 gramme of permanganate of potassium is dissolved in it, and 50 grms of pure nitric acid added. For use, 20 C.c. of the silver nitrate solution, and 1 C.c. of the permanganate reagent are mixed and made up to 50 C.c. with pure distilled water. To collect a sample of air, a flask filled with pure distilled water is emptied in the gallery, when the air enters by displacement. If the air is very dusty the flask should be fitted, like a wash-bottle, with two tubes—the entering air being filtered through loosely packed cotton wool. The flask is then closed with a glass stopper. A second twin flask is filled with normal air, and some of the reagent is added to both, and they are placed side by side on a sheet of white paper. After some time the impure air will decolorise the permanganate, whereas the solution in the control flask will retain its colour.

—*Scientific American*, lxxvii., 187, after *Colliery Guard*.

Gelatin as a Hæmostatic. Carnot finds that a solution of gelatin applied locally acts promptly as a hæmostatic; the clot is rapidly formed and healing by first intention favoured. The solution employed contained 5 per cent. of gelatin and 0·7 per cent. of sodium chloride. It was sterilised before use and applied at the temperature of the body. In cases of rectal hæmorrhage, injections of gelatin were as efficacious as the application of the solution to external wounds.

Répertoire, ix., 454, after *Presse Medicale*.

Determination of Santonin. A weighed quantity of santonin in powder is extracted with ether, the solvent distilled off, and the residue boiled with milk of lime and filtered. The filtrate is then treated with a solution of aluminium acetate, boiled, neutralised with magnesium, evaporated to complete dryness, powdered, and exposed to a temperature of 105° C. for two hours. The dry powder is then extracted with ether, the solvent evaporated, and the residue weighed as santonin.—*Pharm. Zeit.*, xlii., 604.

Poisoning by Rhus Toxicodendron. A fatal case of "ivy" (*Rhus toxicodendron*) poisoning is recorded in the *Boston Medical Surgical Journal*. The patient, a female, sixty-nine years of age, came into contact with the plant early in July. Her whole system seemed to be profoundly affected by the poison, and death resulted after two months of great suffering.

Determination of Indican in Urine. The following rapid method, in which persulphate of sodium is employed as the oxidising agent, is due to Amann. Twenty C.c. of urine are taken and acidulated with a few drops of sulphuric acid; 5 C.c. of chloroform are then added, followed by the addition of 5 C.c. of solution of persulphate of sodium. The tube is then shaken in such a manner as to divide the chloroform without producing an emulsion. The indigo formed is dissolved in the chloroform. The aqueous layer is coloured more or less intensely red by the partial oxidation of the scatoxyde and from the intensity of the colour an approximation of the amount of scatol present may be inferred.—*Répert. de Pharm.* [3], ix., 437.

Iceland Moss as an Anti-Emetic. Deying and Bricemoret found that a tincture of Iceland moss (*Cetraria*, 1; alcohol 80 per cent., 5) had marked properties in arresting vomiting in numerous cases in which emesis resulted from various morbid states. The dose given was 30 to 50 drops. The authors have not had the opportunity of trying the remedy in the sickness of pregnancy.

—*Répertoire*, ix., 461, after *Journ. des Pract.*

Toxicity of Uranium Salts. Since it has been proposed to employ uranium nitrate in diabetes in doses of from 30 to 60 centigrammes three times daily, Angermayer calls attention to the fact that, notwithstanding the close chemical analogy between uranium and iron salts, the former are highly toxic, half a milligramme per kilogramme of body weight being quite sufficient to cause death. —*Pharm. Zeit.*, xlii., 79.

A New British Plant. Mr. Cedric Bucknall has been successful in adding a new labiate, *Stachys alpina* to the list of British plants. The plant was found on the Cotswold Hills, near Wootton-under-Edge, apparently in a truly wild state, and accompanied by the same species of other plants with which it is associated on the Continent. An account of this interesting find is given in the *Journal of Botany*, xxxv., 380.

Euphthalmine. This is a new synthetic mydriatic, the chemical name of which is hydrochloride of *n*-methylvinyl-diacetonalkamine. It is used in 5 or 10 per cent. solution, dilating the pupil and paralysing the accommodation as rapidly and as completely as homatropine. The effects disappear more quickly after the use of euphthalmine than after homatropine.—*L'Union Pharm.*, xxxviii., 436.

Basic Phenylhydrazine Hydrochloride. Schmitz Dumont has observed that when phenylhydrazine and carbon tetrachloride are mixed at ordinary temperatures, a separation of brilliant silky needles occurs. If the mixtures be warmed, small pearly scales are obtained which are very soluble in water and are at the same time decomposed in that liquid, giving off small bubbles of nitrogen. These crystals are two isomeric forms of the same substance, basic phenylhydrazine hydrochloride, $(C_6H_5NH\cdot NH_2)_2HCl$. Ether, chloroform and other solvents remove the phenylhydrazine from combination. The salt is very volatile at 100° C., and at 195° C. it decomposes entirely without melting.—*Chem. Zeit.*, xxi., 511.

Oxy-cellulose. Experiments conducted by Vignon on the action of oxidising substances on cellulose, in the form of pure cotton, show that the most satisfactory results are obtained by the use of a solution of chlorate of potassium acidulated with hydrochloric acid. Pure cotton plunged into this mixture at a boiling temperature for one hour is in great part converted into oxy-cellulose, the formula for which, according to the author, is $C_{24}H_{33}O_{21}$ or $4(C_6H_{10}O_5) - H_2 + O$. Oxy-cellulose has a greater affinity than cellulose for basic colouring matters. It partially dissolves in aqueous potash solution, giving a liquid which reduces Fehling's reagent, and is re-precipitated by acids. It gives an intense violet coloration with Schiff's reagent, and would, therefore, appear to possess aldehydic properties.—*Comptes rendus*, cxxv., 450.

Saliformin. The compound to which this name has been given has the formula $C_6H_{12}N_4\cdot C_6H_4{<}^{OH}_{COOH}$. It occurs as a white crystalline powder, readily soluble in water and in alcohol, and has an agreeable acid taste. From its solvent action on urates and uric acid, and its antiseptic properties, it is recommended for use in the treatment of various affections of the bladder and urinary passages, such as cystitis, with ammoniacal fermentation. It may with advantage replace urotropine. It is given in doses of 1 to 2 grammes daily, taken in one dose, dissolved in water.—*Nouveaux Remèdes*, xiii., 527, after *Thérap. Woch.*

Emetic Action of Apomorphine. Experiments conducted by Guinard to throw some light on the emetic action of apomorphine have given some interesting results. It is found that certain animals, such as pigs, are uninfluenced by the drug. With dogs and cats it readily gives rise to vomiting, but large doses are less effective than small or medium ones. With massive doses the nervous centres which control vomiting become paralysed and no emesis results. In the condition of asphyxia, whether resulting from drowning or from carbonic acid gas suffocation, apomorphine is inert. This is an important fact, since the drug is sometimes injected in cases of drowning in the hope that the act of vomiting will start respiration. For this purpose it is useless. It is also found to be useless as an emetic when the patient is under the influence of morphine.—*Répert. de Pharm.* (3), ix., 477.

Retamine Salts. Battandier and Malosse have continued their research upon retamine (see *ante*, p. 298). They establish the formula $C_{15}H_{26}N_2O$ for the alkaloid. It forms two hydrobromides containing one and two molecules of hydrobromic acid respectively. The sulphate separates from aqueous solution in crystals containing 5 molecules of water. From strong alcoholic solution a similar salt containing but two molecules of water of crystallisation is obtained. Retamine gives neutral salts containing two molecules of monobasic acids, or one molecule of dibasic acid, and basic salts containing one molecule of alkaloid and monobasic acid in combination.

—*Comptes rendus*, cxxv., 450.

Researches on Chlorophyll. Stocklasa finds that a great similarity exists between lecithin and chlorophyll, both in constitution and in decomposition products. Chlorophyll cannot be formed without lecithin, while the action of the sun produces both lecithin and chlorophyll. The former accumulates in the leaves, developing phosphorus-containing bodies. Green leaves contain large quantities of phosphoric acid in the form of lecithin and chlorophyll. Stocklasa was unable to obtain the chlorophyllan isolated by Hoppe-Seyler; he obtains chlorophyll by the process for isolating pure lecithin. In this way he obtained a body which he

terms chlorolecithin, a blackish-green crystalline mass containing 3·37 of phosphorus. Chlorolecithin was found to contain choline, glycerin, phosphoric acid, and chlorophyllinic acid; the colouring of the substance being due to the latter body. This compound is, however, different from the chlorophyllan isolated by Hoppe-Seyler. After numerous tests the author concludes that the formation of chlorophyll depends on the presence of phosphorus; he also confirms the opinion of Gautier and Molisch that no iron is contained in chlorophyll or chlorolccithin. Iron plays an important part in the constituents of the cell nucleus, however, since it has been ascertained that this structure is not formed without phosphorus and iron, while chlorophyll contains phosphorus only.—*Pharm. Zeit. Russ.*, xxxvi., 419.

Production of Hydrocyanic Acid in the Pomeæ.

According to M. L. Lutz, amygdalin and emulsin are present in the seeds of plants belonging to the genera *Cydonia*, *Malus*, and *Sorbus*, but not in those of *Pyrus*, *Mespilus*, and *Cratægus*. In the Pomeæ emulsin was found in the parenchymatous cells of the cotyledons, especially in the neighbourhood of the vascular bundles, but not in the palisade-cells; none was found in the hypocotyl, plumule, or radicle. Amygdalin occurs in the cells of the cotyledons which contain emulsin, trituration giving rise to the odour of bitter almonds; it is also present in the hypocotyl, plumule, and radicle.—*Bull. Soc. Bot. de France*, 1897, p. 26.

Vegetable Teratology.

M. C. de Candolle proposes a classification of the phenomena of vegetable teratology under the two heads ataxinomic and taxinomic. The former class includes such abnormal structures as are not represented in plants in a normal condition, such as fasciation, torsion, chloranthy (when not resulting from the action of parasites), doubling of flowers (when resulting from the substitution of petals for stamens and carpels), etc. The second class comprises those abnormalities which correspond to taxinomic differences between species, such as the coalition of leaf-sheaths usually distinct, the transformation of leaves or leaf-sheaths into pitchers, the formation of emergencies or supernumerary laminæ, prolifcration, the coalition of cotyledons, synanthy, peloria, the arrest or abortion of some of the floral whorls, etc. The author points out that the general tendency of teratological malformations is towards a greater simplicity of development.—*Arch. des Sciences Physiques et Nat.*, 1897, p. 197.

Pollination by Bats.

In the *Bulletin of Miscellaneous Information*, issued from the Botanic Garden, Trinidad, for April, Mr. J. H. Hart records the interesting fact that the flowers of a species of *Bauhinia*, *B. megalandra*, n. sp., belonging to the Leguminosæ, a native of the island, is pollinated by the agency of bats. The flower is white, and is strongly scented, opening only in the evening, when it is freely visited by several species of bat, which alight upon and hold fast to the protruded stamens, attacking the erect and recurved petals, which are often completely destroyed, and carrying the pollen from the anthers to the stigma. The bats are apparently not in search of nectar, but of insects.

Fertilisation of Spring Flowers.

Mr. J. H. Burrill gives a carefully prepared list of the insect-visitors observed on spring-flowering plants on the Yorkshire coast. The general result arrived at is that short-tongued flies predominate in early spring to a very marked extent, and that they visit freely flowers with honey, whether the honey be concealed or exposed. Some of the earliest flowering species appear to derive no advantage from this precocity. Thus *Capsella bursa-pastoris* frequently has abortive stamens, *Ranunculus ficaria* rarely produces seed, *Petasites vulgaris* is nearly always male, *Ulex europæus* and *Primula vulgaris* set but little fruit. In other cases the advantage of the early flowering is clearly in the flowers opening before the appearance of the leaves, as in the case of the hazel, no obstruction being thus presented to pollination, whether by the wind or by insects.—*Journ. of Bot.*, 1897.

Influence of the Soil on the Colour of Flowers.

Herr H. Molisch has carried out a series of experiments on the influence of the chemical composition of the soil in changing the natural pink colour of the flowers of *Hydrangea hortensis* to blue. He finds that this change is invariably brought about by the presence of alum in the soil; and that the efficient constituent in the alum is the aluminium sulphate, which has, by itself, the same effect as alum. Ferric sulphate produces a similar effect; while with other salts of iron the results were mostly negative. The blue colour is due to a chemical combination of the salts in question with the anthocyan which is the cause of the natural pink colour of the flowers. The filaments of the stamens are most sensitive to the change in colour.—*Bot. Zeitung*, 1897, 1st Abth., Heft 3.

Influence of Light on Dorsiventral Organs.

According to observations made by Miss K. C. Burnett on leaves of *Salix alba*, palisade tissue, when once formed on the surface of a leaf exposed to light, is not changed when light is removed. But the parenchymatous tissue of the under side will assume the characteristics of a palisade tissue if exposed for a sufficiently long time to the action of light. Gemmæ of *Lunularia* are said to develop rhizoids on the morphologically upper surface when placed in contact with the soil, but only when the gemmæ are in a very young state of development.—*Bull. Torrey Bot. Club*, 1897, p. 116.

Red Spots on Leaves.

Sig. G. Mattej has investigated the nature of the red spots which occur on the leaves, petals, and other organs of many plants, species of *Lysimachia*, *Oxalis*, *Hypericum*, *Myrsine*, etc., and states that the pigment is composed essentially of a gum-resinous substance coloured by a yellowish-red essential oil, its chemical constitution varying with the species. These spots are not, as a rule, found in the earliest stages of development of the organ, and are evidently the results of the transformation of leucites. They are often surrounded by a membrane, and are always imbedded in the parenchyme, and are surrounded by ordinary cells.—*Bull. Soc. Bot. Ital.*, 1897, p. 83.

Laboulbeniaceæ.

In the 'Memoirs of the American Academy of Arts and Sciences,' 1896, p. 187, Mr. R. Thaxter gives a monograph of this very curious and interesting family of Ascomycetous fungi. The Laboulbeniaceæ are all minute parasites on living insects, mostly aquatic. Far the larger number of species are American; out of twenty-eight genera, representatives of only nine have at present been found in the Old World. The main structure of the fungus is usually quite simple; the aërial vegetative portion is composed of only a few cells, and is attached by a disc-like structure to the chitinous body of the insect, but does not penetrate its tissues in the form of a mycele. The sexual organs are antherids and procarps; the latter are multicellular bodies, containing a carpogenic cell, and bearing a trichogyne resembling that of the Rhodophyceæ among algæ. The trichogyne appears to be impregnated by the minute rod-shaped antherozoids or pollinoids which become attached to its apex. The carpogenic cell then divi des severa times, giving birth to the asci, which are enclosed in a flask-shaped perithece, which in many respects resembles the cystocarp of the

Rhodophyceæ. The trichogyne is never in direct communication with the carpogenic cell, but the cells of the trichogyne are connected with one another by strands of protoplasm. The fertilising agent must be carried through one or several cells before reaching the carpogenic cell; and it appears as if the nucleus of the pollinoid must pass from cell to cell through the whole length of the trichogyne before fusing with the female nucleus of the carpogenic cell.

Bacteria in Cheese.

Messrs. Russell and Weinzirl have studied the rise and fall of bacteria in cheddar cheese, determinations of the number of bacteria per gramme in American cheddar cheese being made at different stages of the ripening process, whilst the varieties present were roughly classified under the heads of lactic acid bacteria, gas-producing bacteria, casein-digesting bacteria, and inert bacteria, or those having apparently no effect on casein in milk cultures. In samples of green cheese examined immediately after being removed from the press, a diminution in the numbers of bacteria present was noted as compared with the initial number present in milk. This period of bacterial decline, however, generally lasts but two days, and is followed by a very marked increase in the numbers present later on, so much so that in the course of a few days, generally from eight to twenty, the germ contents may increase many-fold. This active bacterial growth is not by any means equally distributed amongst all the varieties of microbes present, but is almost exclusively confined to the lactic acid group of organisms, the gas-producing bacteria as well as the casein-dissolving varieties rapidly disappearing. The relation between this pronounced multiplication of the lactic acid bacteria and the ripening process in cheese is not yet exactly established, although the presumption is that these organisms are mainly responsible for these changes. This presumption is rendered more likely by the fact that Freudenreich, studying Emmenthaler or Swiss cheese, found the same coincidence between ripening and multiplication of lactic acid bacteria, and Lloyd, in his investigations of English cheddar cheese, arrived at the same result and came to a similar conclusion. The maximum period of bacterial development is followed by a period of final decline; in the course of time cheese may become sterile, although an examination of a hard dry skim cheese over two years old demonstrated the presence of a few lactic acid bacteria.—*Centralblatt für Bakteriologie*, through *Nature*.

Drugs at Kew.

The completion of the tenth annual volume of the *Kew Bulletin* has made it desirable to publish a detailed index to the whole series, since the increase in the number of volumes has rendered it more difficult to find the information they may contain on any particular subject. The opportunity has been taken to pass in review briefly the more important subjects which have been treated, and this has the more interest as the period covered has been one of more than usual activity in the development of British tropical possessions. Amongst other matters of interest many little-known drugs have been investigated. The seeds of *Sophora secundiflora* have a singular use among the Indians of Mexico, where they are taken as an intoxicant. Half a seed is said to produce exhilaration followed by sleep lasting two or three days (*Kew Bulletin*, 1892, 216). *Derris elliptica*, now growing in the Economic House at Kew, yields the Malayan fish poison known as "Aker Tuber" (*Kew Bulletin*, 1892, 216). From the account given of Natal aloes and of the plants supposed to yield this product (*Kew Bulletin*, 1890, 163) it appears that it differs in some important respects from the more commonly known Cape aloes. The discovery of the plant, also in the Kew collection, yielding the true star anise of commerce is noticed (*Kew Bulletin*, 1888, 173). The manufacture of quinine in India, and the wide distribution at a nominal price of this valuable medicinal agent amongst the natives (*Kew Bulletin*, 1890, 29), is one of the most important services which European rule has rendered to the Indian Empire. Paraguay jaborandi (*Pilocarpus*) is discussed (*Kew Bulletin*, 1891, 179) from materials sent to this country by Her Majesty's *chargé d'affaires* at Buenos Ayres in 1881. The origin of myrrh and frankincense is discussed in considerable detail (*Kew Bulletin*, 1896, 86), while the first authentic information respecting the district whence Siam benzoin or gum benjamin of commerce is obtained is a subject of another article (*Kew Bulletin*, 1895, 154). Next to gum benjamin, Siam gamboge is the most interesting of Siamese products (*Kew Bulletin*, 1895, 139). The peculiar Ai camphor prepared in China from a shrubby composite, a species of *Blumea*, is described (with a plate) from information supplied by Dr. Augustine Henry (*Kew Bulletin*, 1895, 275). The plants yielding the leaves known as coca, and the drug cocaine, with their characteristics, are discussed (*Kew Bulletin*, 1889, 1), with the suggestion that a plant long cultivated at Kew (*Erythroxylon Coca*, var, *novo granatense*) might be suited for cultivation at a lower elevation than the type. The little-known iboga root of the Gaboon and bocca of the Congo, possessing tonic properties, is traced to *Tabernanthe iboga*, Baill. (*Kew Bulletin*, 1895, 37); the tree yielding the ipoh poison of the Malay peninsula is identified with that yielding the upas poison of Java (*Kew Bulletin*, 1891, 24); but the remarkable point is brought out that while, in Java, the upas tree (*Antiaris toxicaria*) furnishes a very effective arrow poison, in the Malay peninsula the juice of what is regarded as an identical species is apparently innocuous, and the defect is remedied by the use of arsenic.

Eutropy.

Professor G. Linck, in a recent paper, treats of the relations between the geometric constants of a crystal and the molecular weight of its substance. He has already called attention to the fact that the characteristics of crystals, that is, their geometric and optical constants, stand in direct relation to the atomic or molecular weight of the elements contained in them. This is most clearly shown in the eutropic series: a eutropic series being defined as a series of substances, crystallising similarly, but differing, only in that they each contain a different element, though the elements are yet similar according to the periodic system of Mendeléeff. If such a series is arranged according to increasing molecular or atomic weight, then the series, for all characteristics of the crystal, remains unchanged. The fundamental law of these phenomena the author has designated "Eutropy." For the present investigation it was necessary to know the system to which the crystal belonged, its axial relations, the specific gravity and the atomic weight. Tables computed from these data lead to the following conclusions:—(1) The actual volumes of the various chemical compounds, if formed into equivalent crystals, stand in a very simple relation to each other. (2) The weights of these equivalent volumes stand in the same relations to each other as the molecular weights. (3) The volumes in a eutropic series increase with increasing molecular or atomic weights. (4) The weights of equivalent volumes always increase with increasing atomic weights. (5) Bodies which are isomorphous but not eutropic likewise stand in a very simple relation to each other according to their crystal volume, or their actual volume as the case may be. (6) Many crystals which have heretofore been considered eutropic or isomorphic are not so, since they probably possess a larger or smaller molecular weight according to the number of atoms. —*Zeitschrift für Krystallographie*, vol. xxvi., through *Nature*.

THE NEED OF LOCAL ORGANISATION IN PHARMACY.*

BY G. T. W. NEWSHOLME,
Vice-President of the Pharmaceutical Society.

To the observer who devotes any consideration to the state of matters pharmaceutical in Nottingham, the most striking feature that presents itself is the excellence of the means adopted for the promotion of scientific and technical education, and the conservation of professional and trade interests. Your local organisation, in fact, is probably as complete as it is possible to make it. And this is no new thing, but the outcome of some thirty years' steady, persistent work. The policy so clearly indicated in the address delivered by your first President—the late J. H. Atherton—on December 10, 1868, has been consistently and ably carried out ever since. He pointed out the necessity that existed for all chemists in business to help to carry out the good work commenced by the Pharmacy Act then but recently passed, and he also expressed the opinion that local organisation offers the only means available to that end. It was proposed, therefore, that every chemist, assistant, and apprentice in the county should be urged to join the Association, which was formed with four main objects: First, the promotion, as far as possible, of the general advancement of pharmaceutical science; second, the scientific education of assistants and apprentices; third, the discussion of all matters affecting the chemists of the district as a body; and fourth, the prevention of evasions of the Pharmacy Acts in the district. No better programme could possibly have been drawn up, and with such individuals at the head of affairs as your first President, Mr. Atherton, your first Treasurer, Mr. Raynor, and your first Secretary, Mr. Fitzhugh (who is still, I am pleased to say, a valued member of your Society), that programme was vigorously carried out from the beginning. Of course, like the chemists of other towns, your periods of enthusiasm have been alternated with periods of comparative depression, but those have been but fleeting, and regarded as a whole, your thirty years' record is one of which you may well be proud.

Local Organisation in the Past.

Early as Nottingham was in the field, however, other districts take precedence of it in point of time, in this matter of local organisation. To Aberdeen must be accorded the honour of forming the first British Society of Chemists and Druggists, the date of its commencement being about 1839, that is to say two years before the Pharmaceutical Society of Great Britain came into existence. The Aberdeen Association further distinguished itself in 1853, when it decided to join the Pharmaceutical Society as a body. Colchester comes next on the roll of honour, an independent local association of chemists and druggists having been started there in 1841. The following year branches of the Pharmaceutical Society were formed at Bath, Exeter, and Manchester, their example being followed ten years later by Edinburgh, and Newcastle and Gateshead. To quote from the *Pharmaceutical Journal* of December 1, 1849:—"Soon after the establishment of the Pharmaceutical Society the Council thought it wise to encourage the formation of provincial branches, and suggested that in every town a secretary should be appointed, as well as other officers, where the numerical force of the members afforded scope for active and systematic proceedings. Periodical meetings were recommended, and reading rooms, with other means of spreading useful information, were established in many places. In some large towns or cities arrangements were made for the delivering of lectures, and the Council, under certain conditions, voted grants of money or books to such an extent as circumstances required and the gross amount of subscriptions received from the locality appeared to justify. In the first instance, the plan appeared to work well. It was warmly adopted at Manchester, Bristol, Bath, Norwich, Birmingham, and Exeter; and in some small towns libraries or reading rooms on a moderate scale were established. But soon afterwards the subscription of the Society was reduced from two guineas to one, in compliance with the expressed wishes of a majority of the country members." By this means the funds became inadequate to the purpose of assisting provincial schools, so that these, being unable to support themselves, relapsed into a latent state, and I have so far failed to find any record of the work done by the Birmingham and Norwich branches, but in 1847 the Birmingham Pharmaceutical Institution commenced operations, and the same year saw the formation of the Bristol Chemists' Association, which became converted into a branch of the Pharmaceutical Society three years later. Leicestershire had an independent association of chemists and druggists as early as 1845, and it is noteworthy that one of the objects with which it was started was the prevention of "cutting" in prices. As was observed in the *Pharmaceutical Journal* of that time, "it cannot be denied that the 'cutting system' is highly injurious, and the interests of the public are best secured by a fair and uniform charge."

The Decay of Branches.

One of the most vigorous and successful associations, that of Liverpool, came upon the scene in 1849, and would have been constituted a branch of the Pharmaceutical Society but for the fact that it was desired to admit all chemists in the district as members, whether connected with the Society or not. The Manchester branch had disappeared by 1852, being replaced by the Manchester Chemists' Conversational Society and the Manchester Chemists' and Druggists' Institute, both of which shortly became merged in the Manchester Pharmaceutical Association. Moreover, all the other branches except Edinburgh, now termed the North British Branch, had by this time ceased to exist as such. We find, however, that independent and local associations with similar aims to those branches were springing up, and inasmuch as all chemists in the respective districts were eligible for membership of these associations, their range was wider than that of mere branches could be, having consideration for the fact that so large a proportion of chemists and druggists have always remained without the pale of the Society. It might be advisable now to have half a dozen branches, somewhat like the North British, in different parts of the country, but at the same time more responsibility is thrown on the members of independent local associations, better work is probably done by them under the circumstances, and full credit for what is accomplished is received by those to whom it is due. In addition to the associations already referred to, Brighton, Glasgow, Leeds, York, Dundee, and Sheffield had each formed associations of chemists and druggists prior to the passing of the Pharmacy Act of 1868, doubtless with as much advantage to their members in all cases as in those we are able to speak of from personal experience. I may close my list by stating that the year 1868 itself saw Halifax and Nottingham placed in a similarly advantageous position, the associations in those two towns having begun work about the same week, if not the same day. It is not my intention to go into details concerning what has been done since, though it should be observed that there is probably no town of any considerable size in Great Britain which has not, at one time or another, been the seat of a pharmaceutical association. Suffice it to say that most of the places I have mentioned still possess a more or

* Address delivered before the Nottingham and Notts. Chemists' Association, on Wednesday October 27.

less complete organisation, and that several other important districts have seen the wisdom of organising for defence and improvement, whilst a remarkable wave of enthusiasm tending in this direction has spread over the country during the past few years.

The Pharmaceutical Society's Position.

The question as to the need and use of local organisation in pharmacy is perhaps best answered by a brief statement of what the Pharmaceutical Society is able to do and what it must perforce leave undone. It will then be apparent, I think, that much is left to be done, and that this margin is sufficiently important to demand the serious consideration of the craft. Some things may be, and are, best done by individuals; others again require for their successful accomplishment that those individuals should unite forces and work together in their respective districts. To quote once more the time-worn words, the Pharmaceutical Society was established for the purpose of advancing chemistry and pharmacy and promoting a uniform system of education of those who should practise the art; its further objects have been defined to be the protection of those who carry on the business of chemists and druggists, and the provision of a fund for the relief of distressed members and associates, and of their widows and orphans. Now, it is quite unnecessary that I should occupy any of your time in attempting to demonstrate what should be a most palpable fact, namely, that no small portion of the great advances that have been recorded during the past half century—not only in chemistry and pharmacy, but also in botany and materia medica—have been in a very great measure due to the action of the Pharmaceutical Society and its members. The Society founded the first laboratory that existed in this country for the teaching of practical chemistry, its museum and library are beyond question the most complete of their kind in the world, and by every means in its power it has consistently encouraged the study of physical and natural science, and their application to the problems of pharmacy. It is also needless that I should enlarge upon the grand success achieved by the Society's Benevolent Fund, which now supports fifty annuitants, and annually affords relief in some scores of casual cases. The only point I should like to emphasise in this connection is the catholicity of the Fund. All registered chemists, or their widows or orphans, are assisted in case of need, whether they have ever been connected with the Pharmaceutical Society or contributed to the Fund or not.

With regard to the other objects for the accomplishment of which the Society was founded, it is desirable, before proceeding, to point out that the scope of the Society's powers in the direction of promoting a uniform system of education and protecting the interests of chemists and druggists were narrowly limited by the Legislature when, in 1868, the compromise was agreed upon which resulted in the passing of the Pharmacy Act of that date. The intentions of the Council of the Society at that time were that, after giving proof of a sound general education, followed by a real apprenticeship, would-be pharmacists should pass the Minor examination, and thus become qualified to act as assistants to pharmaceutical chemists; the right to carry on business independently being reserved to those who proceeded further with their studies and passed the Major examination. Unfortunately, the opposition of an ill-advised section of "the trade" prevented the realisation of this scheme in its entirety and, as a result, the ranks of pharmacy have ever since been largely recruited from an inferior class, whilst apprenticeship is in some measure a farce, and assistants cannot receive the stamp of competency without acquiring a qualification which fully entitles them to practise pharmacy on their own account. The original project failed, therefore, owing to internal opposition, and what I wish to make clear on the present occasion is that it is quite beyond the Society's existing powers to promote a uniform system of pharmaceutical education more than it has done. Such approach to uniformity as there has been in the past has been achieved through the medium of the Society's examining boards, a comparatively unsatisfactory means of accomplishing what is desired. To attain the ideal position requires that, in the future, one of two things shall happen, either the imposition of a compulsory curriculum of study or—what may perhaps serve the desired purpose as well in the end—the enforcement of an interval of three years between passing the scholastic and qualifying examinations.

The Society and Trade Protection.

Regarding protection, what shall I say? I hesitate, not because there is nothing to claim in this direction, but rather because of the difficulty of saying all that may be said in the brief time at my disposal. The establishment of the Pharmaceutical Society saw pharmacy neither a definite trade nor profession, but a mere hanger-on of grocers' shops, herbalists' stores, and chemical laboratories, regarded by many as a sort of illegitimate practice of the apothecary's art as it was in those days. The rise and progress of the Society were shortly followed by the organisation of all who professed and called themselves chemists and druggists, opponents of the Society organising against it, whilst the rest realised that they had found a good thing and stuck to it. As the direct outcome of the work accomplished by the Founders of the Society, chemists and druggists in Great Britain at the present day are recognised by their fellow countrymen as a distinct and important body with special privileges. The latter, if not so generous as they might be, are yet worth possessing, if we may judge from the eagerness to enter the craft displayed by hundreds of young men every year. All that chemists and druggists enjoy to-day in the way of privilege, protection, and public recognition is due to the work of the Pharmaceutical Society, and that it is not more is entirely due to themselves as a class. The Council—as the Executive of the Society and to some extent the representative of the entire craft—takes steps to protect titles and privileges whenever definite information is laid before it. True, it does not employ a staff of spies and detectives, but all information supplied is received in confidence and acted upon whenever possible. It is not necessary to wait for a local secretary to act; any chemist, whether connected with the Society or not, can lay an information in respect of illegal practices, and his communication will receive the fullest consideration. If any chemist thinks the Council does not help him enough let him ask, like Oliver Twist, for more, and so long as what he asks for is reasonable and practicable he need not despair of receiving the assistance he merits. So far as the Pharmacy Acts are concerned, the Council can protect titles and secure to registered chemists the dispensing and sale of scheduled poisons, except in those instances where Her Majesty's judges have decided that it cannot successfully intervene. Joint-stock companies it cannot touch, so long as they conduct their dispensing departments with registered chemists in charge, and in the present state of public opinion it is hopelessly absurd to complain that the Council of the Society takes no steps to remedy this state of affairs. Neither can it force amending Acts of Parliament through the legislative chambers, and much as the members of that Council desire to see the position of pharmacy and pharmacists improve, they are at one in recognising that it is useless to waste time in

drafting and considering Bills that cannot possibly pass. When a suitable occasion offers, the Council will not hesitate to initiate legislation, such as is required to remove inequalities of membership of the Society, to improve educational facilitics, to free chemists and druggists from liability to serve on juries, and so forth. Meanwhilc, however, the extent of the moral influence the Society possesses with Government Departments and such public bodies as may have the power to aid in the realisation of its ideals is strictly limited by the extent to which it is representative of the whole craft.

What Local Associations May Do.

In regard to trade protection, in the sense of attempting to regulate prices or solving any other problem of purely commercial importance, the Society and its Council cannot take action. It must always be remembered that the Pharmaceutical Society is to some extent an under-department of State, and, as such, it must ever maintain itself beyond the suspicion of attempting to fill the pockets of its members at the expense of the public which has delegated to it certain powers. And this is where local organisation steps in and finds its opportunity. What is not permissible for the Pharmaceutical Society as a corporate body to do is open to all chemists and druggists to attempt by associated action. In every district where two or three chemists carry on business they are perfectly at liberty to meet and discuss any and every difficulty that may present itself to them. More than that, they ought to regard it as a positive duty to do so, and a pleasant duty at that, for they cannot fail to reap great advantage from working in concert with their fellows. Having decided upon a joint line of action, there is nothing to prevent them entering upon their plan of campaign, for of course I assume that nothing would be done that is not strictly legitimate. But it may happen that the matter is of importance beyond the immediate neighbourhood; in that case some one individual would naturally be delegated to open up communications with adjoining districts, and it is even conceivable that a matter of national concern might thus first receive consideration in some outlying country district. At any rate there ought to be nothing to prevent that district taking its proper share in all deliberations affecting its interests. The main idea that should influence us, in connection with this matter of universal organisation, is that the impulse to combine for mutual aid and improvement should proceed from within outward. It is utterly hopeless to anticipate that we can work out the details of some plausible scheme, and then force our organisation upon those who are not prepared to receive it. What I would suggest is that existing local associations might well add to their other duties that of attempting to prepare chemists who are yet in outer darkness, as it were, in so far as regards matters relating to organisation, and so prepare them to realise the advantages of belonging to a body strong for defence. An attempt should be made to disabuse the minds of many chemists that connection with any such simple organisation necessarily implies the payment of subscriptions which they can, perhaps, ill afford to spare; neither ought they to regard it as incumbent upon them to attend either scientific or social meetings. The great thing is to have each chemist's name and address upon a list in the hands of a responsible person, who is willing to undertake the duty of calling together all the chemists in a given district whenever occasion may arise. The expense of such an organisation need not amount to more than a few shillings a year for stationery and postage, and so far as matters of trade importance are concerned, the machinery would be quite as effective as that of the most elaborate organisation in thc country. The local secretaries of the Pharmaceutical Society might well take a prominent part in this work, and I am even inclined to think that, if those officials were thus more fully occupied than some of them seem to be, they would be all the better pleased to fill the post, and their duties would be more cheerfully and more satisfactorily performed generally. Do not misunderstand me in this: I have no desire to minimise the importance of the work done by local secretaries, or to accuse them as a body of inattention to the duties which they volunteer to perform without recompense. My point is that no such official is likely to be thoroughly happy in his post unless at times he is set to do work which may reasonably be expected to be productive of tangible results. As an instance of useful work waiting to be done, I may point to the scantiness of the information we possess regarding the number of chemists actually in business throughout the country, the nature of the business in each case, thc special difficulties that trouble different districts, the kind of opposition encountered in various parts of the country, and so forth. In fact, we ought to effect a complete survey of the whole of Great Britain. Considered from a pharmaceutical point of view, the value of such a survey would be inestimable, and even when it was completed there would yet remain plenty of work for local secretaries and others to perform in keeping the details of the survey up to date.

The Crying Need of the Time.

But to return to my subject, the crying need of the time is a system of local organisation amongst pharmacists which shall embrace the whole body. I hold no special brief for the Pharmaceutical Society on this occasion and am not come as one crying in the wilderness, that the only way for chemists to escape all their difficulties is to join the Society. Of this much I am firmly convinced, however, that when any chemist properly realises the full value of combination for mutual defence and professional advancement, it will not be long before he perceives that the Society offers the simplest means of alleviating his condition. But let that be as it may, I am firmly of opinion that every man in the craft who is worth associating with may be, in one way or another, induced to unite with the rest of us to work for the common benefit. Everyone is imbued with selfishness to the extent of being desirous to do the best he can for himself in the struggle for existence; if then a man is approachable on no other side, take pains to demonstrate to him how, by no greater effort than granting permission for his name to be used in conjunction with those of his fellow-craftsmen, benefit may accrue to himself. Then persuade him to attend a meeting at your own house or that of some other chemist, if the advantages offercd by a local association be lacking in the district, have a friendly chat and a smoke at the same time—if he should happen to be a slave to the fragrant weed—and it will not be long before you find him, if not as ardent a unionist as yourself, at least sufficiently imbued with the importance of the subject for you to be able to depend upon him to take an intelligent and appreciative interest in matters that come up for discussion. Of course there is the individual who is not a "clubable" man, and who will not work with anyone or join anything. Him you can only leave to pursue his own course. He represents a class which is but too numerous in pharmaceutical circles. Out of the nine thousand odd chemists in business that class probably accounts for at least twenty-five per cent. Of the rest more than half belong to the Pharmaceutical Society; a portion of the other half is organised locally. Now, what I want to see is the whole of the chemists in Great Britain united in some bond of union, however slight, and I appeal to you, men of Nottingham, and to the members of all other local associations throughout Great Britain, to help in the realisation of that ideal.

THE BRUSSELS CONGRESS.

At the concluding general meeting of members of the Pharmaceutical Congress held in Brussels last August, the General Secretary, M. Duyk, read a report of the resolutions passed in reference to the several subjects which had been discussed. An official draft of these resolutions has now been issued, and from it we extract the following particulars.

In regard to pharmaceutical education it was decided (1) that in all countries there should be established independent pharmaceutical schools equal in position to the departments of a university and having similar powers; (2) that the following additional compulsory subjects of study should be introduced into the curriculum of pharmaceutical students:—*a*. Pharmacy law and ethics. *b*. General hygiène. *c*. Bacteriology (theoretical and practical).

In regard to the practice of pharmacy it was decided—

1. That the practice of medicine and that of pharmacy should not in any instance be carried on by one and the same person; consequently that medical practitioners should be prohibited from selling medicines to their patients, except in the case of a doctor living in a place where there is no pharmacist and then on the condition that he should only supply medicine to patients residing at a certain distance from the nearest pharmacy.

1 *bis*. That legislative effect should be given to the same principle in the case of veterinary practice.

2. That every open pharmacy should be the property of the pharmacist by whom the business is carried on and that every form of association other than that between legally qualificd pharmacists should be prohibited, as well as any combination by which the proprietorship of a pharmacy would be shared by a pharmacist and by other persons not having the diploma of pharmacist; the only exception to this rule to be in the case of the widows and heirs of pharmacists, and then only for a limited period.

3. That the number of pharmacies should be limited in proportion to the wants of the population.

4. That mutual aid associations, excceptionally allowed to be proprietors of a pharmacy, should be prohibited from supplying medicines to any persons except their own members.

5. That civil hospitals should be allowed to keep pharmacies, but on condition that the pharmacy is in each instance managed by a qualified pharmacist, and that it is used exclusively for the internal service of the hospital.

6. That the druggist qualification should be abolished.

The Congress was of opinion that the composition and strength of medicinal preparations should be uniform and that the amounts of their important constituents should be regulated by competent authorities.

In regard to the analysis and standardisation of galenical preparations, it was decided—

1. That from the double point of view of therapeutic progress and of pharmaceutical science, the establishment of uniform processes and methods for the determination of active constituents of potent medicines has become essential.

2. That every pharmacopœia should indicate the analytical processes applicable for the standardisation of medicines.

3. That such processes should be as far as possible uniform and applicable to drugs, as well as to galenical preparations.

4. That with the view of realising that desideratum, the duty of elaborating a codex of analytical methods, suitable for the valuation of drugs and galenical preparations containing alkaloids, glucosides or other definite constituents, should be entrusted to an international commission.

The Congress was also of opinion that in regard to new medicines, serums, and the opotherapeutic products recently introduced, the following regulations should receive legislative recognition:—

1. That the denominations of medicines should be public property and not restricted to particular individuals or used as trade marks.

2. That in every country a commission should be established fully authorised to carry out a complete study of new medicinal agents and if requisite, to revise the nomenclature applied to them. The results of such work to be reported annually by the commissions.

3. That pharmacists should have the exclusive right to sell organo-therapeutic products, serums, antitoxines, etc., which are only to be manufactured in laboratories having the sanction of Government for that purpose.

4. That in the event of experiment proving the clinical action to be the same, it would be desirable to employ dried organs as the organo-therapeutic products.

In regard to pharmaceutical legislation, the Congress was of opinion that the law regulating the practice of pharmacy in each country should be embodied in the respective Pharmacopœias.

That a compulsory minimum tariff should be established for medical aid associations, insurance societies, etc.

That every medicinal specialty should be required by law to bear a label stating the names of all the substances entering into its composition and their doses.

That the revision of pharmacopœias should be carried out by commissions, consisting in great part of pharmaceutical members, practical as well as professional.

That the commission engaged in compiling a universal pharmacopœia should continue its labours and indicate the medicines which are in most general use.

That arrangements should be made between medical and pharmaceutical societies with the object of repressing the trade in secret remedies and opposing every form of quackery.

That the office of inspection of articles of food, etc., should be distinct from that of the inspection of pharmacies and that the warehouses, etc., of wholesale druggists should also be subject to inspection.

That when a legal inquiry requires consideration of chemical details, the court should engage a chemical adviser, who would conduct any necessary analysis, etc., conjointly with the chemist acting on behalf of the defendant or other party to the litigation. Both should then present their reports to a superior court of reference, or when some special subject had to be dealt with, to delegates chosen for the purpose, who would then consider the matter from the purely scientific point of view, and report their conclusions for the assistance of the court.

That, in specifying the maximum doses of medicines, pharmacopœias should include all substances administered in the form of glysters, bougies, suppositories, irrigations, hypodermic injections, lotions, etc.

A commission was constituted for considering and giving effect to these resolutions and, for the several countries represented at the Congress, the following members were appointed:—

Belgium	Professor Ranwez.
Great Britain	Dr. Paul.
Ireland	Professor Tichborne.
Holland	,, Wefers Bettinck.
France	M. Petit.
Sweden	,, Sebardt.
Norway	,, Strömer.
Mexico	,, Morales.
United States of America	Professor Remington.
Austria	,, Vogl.
Portugal	M. Tedeschi.
Spain	,, Colomer.
Italy	,, Ceruti.
Roumania	,, Altan.
Secretary	,, Duyk.

STUDY DURING APPRENTICESHIP.*

BY E. M. HOLMES, F.L.S.,

Curator of the Pharmaceutical Society's Museums.

It is most important for those who are commencing or undergoing their apprenticeship to recognise that knowledge is rapidly increasing every year, whilst the time that can be devoted to study in schools of pharmacy cannot at present be extended. Consequently, either more knowledge must be acquired in less time or the candidate for examination will be compelled to extend the time by repeated failures. Under these circumstances it behoves young men to economise their time by acquiring an elementary knowledge of theoretical and practical chemistry, of morphological and practical botany, and of mathematics, during their apprenticeship. Knowledge of this kind is now obtainable in all large towns. If it is neglected, the student, when he attends his first lecture on materia medica, will have no correct idea of the meaning of such terms as rhizome, corm, bulb, achene, bract, perianth, etc., or the chemical terms, salt, alkaloid, glucoside, phenol, carbohydrate, hydrocarbon, and other terms which he will constantly meet with; and he will find the lectures on physics almost as difficult as Hebrew or Russian if he has no elementary knowledge of mathematics. Moreover, when he has to work all day long with his brains, day after day, the continuous study will produce the same effect as if a man unaccustomed to physical labour had to dig, to bicycle, or to swim all day. His mental muscles, so to speak, will be injured rather than strengthened. But by gradual study during apprenticeship the mental powers become developed, and study becomes a pleasant exercise rather than a painful and wearisome labour.

It is also important to recollect that there are for the future pharmacist two sides to his education, if he really wishes to succeed in making a livelihood in the face of the keen competition of the present day. The one side has been attended to as far as possible by the Pharmaceutical Society in the provisions they have made for a scientific education, but the other, viz., the business side, has been left to the apprentice to gain, and to his employer to impart, during apprenticeship, and it is, judging from results, too often neglected by both. This has been so much the case that the Pharmaceutical Society has of late years found it necessary to add the teaching of practical dispensing to the other subjects.

It is obvious, however, that business habits, such as punctuality, promptitude, orderly arrangement, and dispatch of work and careful calculation of profits cannot be taught in a pharmaceutical school. Neither can commercial morality and upright dealing or dependableness, yet these have a great deal to do with success in life, for a man in business whose promise is not certain to be kept or whose word is known to be unreliable, soon finds that scientific knowledge without these will not fill his pockets, or even bring him a reasonable livelihood. Even an assistant will find that a man with business habits is preferred to a man with scientific knowledge who is unbusinesslike.

I would like to impress upon you, therefore, that during apprenticeship, while you should particularly pay attention to the requirements of the Pharmacopœia with regard to drugs and preparations to be used in medicines, you should also recognise that there is such a thing as a wholesale drug list, and that a great number of qualities of drugs are met with in commerce which are not intended for use in prescriptions, but which the public require and on which legitimate profit is to be made. Take, for instance, caraways. The fine quality or English are suitable for medicinal use; the Dutch, or second quality, are suitable for cakes, biscuits, comfits, etc., and are the kind usually supplied by grocers for the simple reason that the druggist has let them slip out of his hands; and a third variety, too inferior for household use, answers for veterinary medicine. What would be thought of a grocer who said he only kept the best quality of tea and coffee, or sugar, and was not prepared to meet the wants of the public by keeping cheaper qualities. The makers of varnishes or French polish would not be prepared to pay the price of Siam benzoin for the quality that suits his purpose, nor would the maker of pastilles or of incense, whilst the maker of benzoic acid would find the Palembang variety to answer his purpose best. Again, the cutler of Sheffield would find that the variety of resin used in medicine would be useless to him for knife-handles. Unfortunately, the descriptions of many drugs in the Pharmacopœia are so loosely framed that an unscrupulous manufacturer can label inferior preparations "P.B.," and the conscientious pharmacist who is unacquainted with the low grades of drugs, as, for instance, senna and liquorice root, cannot satisfactorily explain to his customers why he cannot compete in lowness of price with his less scrupulous neighbour. If he were able to demonstrate the facts of the case, like the grocer who offers coffee as a mixture of chicory and coffee, or who can offer margarine cheaper than butter, he would not lose customers so often as he does. I trust that my meaning will not be misconstrued. I hold that the Pharmacopœia should strictly limit the drugs to be used in medicine to the best quality obtainable, so as to ensure as far as possible certainty and uniformity of action, and that its descriptions should be so limited and precise as to exclude all inferior qualities, but that nevertheless the pharmacist should be prepared to meet the wants of his customers for inferior qualities when they insist upon having them, after the difference is explained. If a person wishes to have milk of sulphur containing 72 per cent. of sulphate of calcium, after being told that such is the nature of the preparation, instead of sulphur precipitatum, there is no reason why the chemist should not take the profit thus offered him as a pure business transaction.

I would urge upon you, therefore, that whilst you make yourselves familiar with all the scientific knowledge required in your calling, you should not neglect the business side, but study the price-list and make yourselves familiar with all the articles and grades of drugs used in trade. Trade differs much in different localities. In the midland counties herbs are sold in large quantities, in the northern manufacturing towns borax, sal ammoniac, and other chemicals, used as fluxes, etc., are sold by the pound or hundredweight instead of by the ounce. In cider districts salicylic acid is sold in large quantities, and in grazing districts glacialine and formaldehyde, etc., in agricultural districts sulphate of copper, and so on. The pharmacist should, therefore, keep his eyes open to the requirements of the neighbourhood in which he resides, and let no sale of drugs or chemicals be lost to him which his scientific knowledge of chemistry and botany bring within his business scope. In these days of keen competition (for the business of pharmacy is as overcrowded as others, and the demand for medicine is too limited to afford a livelihood to all) every opening for legitimate business must be turned to account. With increasing knowledge there come demands for new products. In every direction there are new openings for men possessing botanical and chemical knowledge. Thus, as regards chemistry, the pharmacist who can analyse urine, water, air, beer and milk, manures, soils, etc., will find that the new science of sanitation will afford him remunerative employment. If he is as he should be, a microscopist, he can, if he will, find work in

* Address delivered before the Plymouth, Devonport, Stonehouse and District Chemists' Association (Junior Section) on Wednesday, October 20.

examining, for medical men, sputa of patients for bacillus tuberculosis, linseed or other food cakes used in agriculture, etc., and if he has a fair knowledge of plants he may even obtain remuneration for the examination of agricultural seeds for the percentage weed seeds, or of seeds that will germinate. In fact the education of a pharmacist fits him for many varieties of work by which he might add to his income in places where a living cannot possibly be made by dispensing alone.

There are also many preparations which the pharmacist has allowed to slip out of his hands; such, for instance, as weed-killers, plant foods, dressings to prevent fungoid diseases, or insect attacks on plants, but which bear a fair amount of profit, and from the chemical knowledge required in making them, should certainly come within his business scope. Too often these things fall into the hands of good business men who have comparatively little knowledge of chemistry.

Finally, I would like to say to you that besides a knowledge of science and a knowledge of business methods there is something else that is necessary to success in your calling. To this I may give the name of the moral sense. By this I mean that consideration for the rights of others which induces you to act to others as you would they should do to you. The man who utilises his knowledge of drugs to take an unfair advantage of a customer, as, for instance, to sell him English rhubarb at the price of the Chinese, or to use an inferior quality of ipecacuanha for ipecacuanha wine, is bound sooner or later to be found out by the results, and his business is certain to suffer, for if a medical man finds that his prescriptions do not give the usual and expected results, he will direct his patients to some one whom he knows he can trust. All large dispensing businesses have been founded on the reputation of their founders for upright dealing and for care and accuracy—or in other words, upon dependableness. This, in the first place, arises from a consideration of what is due to others, to that gentlemanliness of spirit and self-respect which ensures respect and confidence on the part of customers. Examinations can neither guarantee this nor business capacity; all that it can do is to afford a guarantee that the man who has passed knows how to dispense medicine properly if he will.

A FUNGUS FORAY BY THE ESSEX FIELD CLUB.

For many years Epping Forest has been noted for the variety and abundance of its fungi, its celebrity being due in great measure to the action of the Essex Field Club in holding annually a meeting for the express purpose of gathering and examining the Forest fungi. Such a "fungus foray" was made on October 16, under the guidance of Prof. Boulger, Dr. Cooke, Mr. E. M. Holmes, Mr. Geo. Massee, and other eminent mycologists. Through the kind introduction of Mr. Holmes several of the students of the School of Pharmacy were enabled to attend the afternoon meeting. Assembling at High Beech Church at 2.30, the party, numbering upwards of a hundred, scoured Honey Lane Quarters and Monks Wood, returning towards Loughton by way of Debden Slade. With so many collectors it was to be expected that a great number of specimens would be gathered, and this was fully borne out when the party re-assembled. The specimens were examined at Warren Hill House, where the whole party was entertained. The Forest was at its loveliest, attired in the russet and gold of autumn, and the bright sunshine showed off its beauties to their full advantage. Under the trees and round the decayed stools of the last generation, and in the open glades, there was a great abundance of fungi, and among the many beautiful specimens that appeared on the tables at Warren Hill House were *Pezeza aurantia*, a beautiful pink, cup-shaped fungus; *Stropharia aruginosa*, and *Amanita muscaria*. Amongst the rarer species found were *Amanita nitida*, *Boletus duriusculus*, and *Polyporus rufescens*, the last named being found by Mr. Holmes. Some of the party industriously collected the edible species *Hydnum repandum*, *Craterellus cornucopioides*, and *Boletus edulis* for subsequent consumption, and many interesting members of the genera *Amanita*, *Boletus*, *Polyporus*, and *Hypholoma* were met with.

At the evening meeting of the Club, which followed the excursion, Professor Meldola, presided, and Dr. Cooke and Mr. Massee reported on the day's spoils, and Professor Boulger gave a few notes on the phanerogams of the season. Mr. Massee emphasised the value of an intimate knowledge of the life history of such fungi as infest crops and forest trees, and recommended research in this direction to all mycologists. The attraction of the evening was a short paper by Dr. M. C. Cooke, M.A., LL.D., entitled—

British Mycology During Sixty Years.

Dr. Cooke drew attention to the scarcity of books on botanical science, especially that part of it dealing with mycology, in the early years of Her Majesty's Reign. Among these works he mentioned Hooker's 'Continuation of Smith's English Flora,' 1833; and Lightfoot's 'Scottish Flora.' In those days too, the microscope was little more than a toy, which accounts for the fact that so little was then known of the anatomy of plants. At that time the workers in mycology could almost be counted on the fingers of one hand. Whereas in the year 1836 about 1390 fungi were catalogued, in 1896 we were acquainted with no less than 40,000. The improvement in the compound microscope and the painstaking investigations of many illustrious observers of nature, not only account for our present advances in botanical science, but promise even greater strides in the future. The lecturer went on to mention briefly the discoveries of the brothers Tulasne concerning polymorphism, the work of Du Bary on fermentation, and Pringsheim's labours on the subject of symbiosis. These distinguished men, by riding one hobby well, have separated many hitherto mixed species of fungi by the exactness of their observations, the distinction between two species often amounting to only one or two micro-millimetres. Dr. Cooke emphasised the importance of histological investigations, and expressed his opinion that our knowledge of British mycology has been spread chiefly by means of those cheap publications which put fairly illustrated books within the reach of the masses. In conclusion, Dr. Cooke showed the usefulness of field clubs such as those which flourish in Essex and Hereford, inasmuch as both those counties possess a greater variety of known fungi than any other county.

Behaviour of Vegetable Oils at Low Temperatures.—Goldberg states that olive oils begin to cloud at $+2°$ C. and deposit 28 per cent. of solid matter at $-6°$ C. Cottonseed oil sometimes becomes cloudy at 12° C., and sets firm at zero C. to $-1°$ C. In order to re-melt the congealed oil, the temperatures of 2° C. for olive oil or 12° C. for cottonseed oil may be exceeded by a few degrees. Both oils cooled for hours at $-15°$ to $-20°$ C., and firmly set take some considerable time to re-melt. Mixtures of the two oils melt much more readily. The author has carried out various experiments in order to determine whether the iodine number of the partly dissolved mixtures would furnish a clue to their composition and effect their separation. He has not, however, succeeded in this, but states that the relative time taken to dissolve congealed mixtures of oil will no doubt prove in some cases very useful in determining the purity of the sample.—*Pharm. Zeitg.*, xlii., 310.

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AN HONOUR FOR THE PRESIDENT.

The Queen has been graciously pleased to bestow upon Mr. Walter Hills, President of the Pharmaceutical Society of Great Britain, a mark of Royal favour in connection with the sixtieth anniversary of Her Majesty's reign, by presenting him with a medal to be worn as a decoration commemorative of that event. All connected with the Pharmaceutical Society will certainly be gratified that this honourable recognition has been conferred upon the President as its official representative. It is a conspicuous indication of the progress that has been made within a comparatively recent period towards placing the pharmaceutical craft in the position of respectability and credit contemplated by the Founders of the Society as desirable in the interests of those engaged in the practice of pharmacy and necessary in the interests of the general public. By the grant of a Royal Charter of Incorporation at the outset of the Society's labours and in the early days of Her Majesty's reign great assistance was rendered for the attainment of the objects then in view, and the present recognition of the Society may be regarded as evidence that the use which has been made of that assistance is considered to have been conducive to the welfare of the community.

THE NEED OF LOCAL ORGANISATION.

It is gratifying to find that the appeals recently addressed to readers of the Journal (see *ante*, pp. 91 and 199), to organise themselves for self-defence and improvement in the position of registered chemists, are already being satisfactorily responded to. Moreover, it seems peculiarly appropriate that the first public utterance on the subject should proceed from the respected Vice-President of the Pharmaceutical Society. An address from Mr. Newsholme is somewhat of a novelty, but the quality of the one we are privileged to publish *in extenso* this week may doubtless be expected to bring him many invitations from other centres desirous of being addressed in similar style. The chemists of Nottingham are fortunate in having their business session opened by such a stirring call to arms. They have carefully nurtured the tender flower of unionism in the past, and are now lucky in being offered the opportunity of being first and equally prominent in the field of what may be termed the newer unionism. The combination for mutual aid of even a limited number of registered chemists is invariably followed by valuable results, but a much wider scope is offered by the ideal plan sketched by Mr. Newsholme, the object aimed at being the advancement of the many rather than the advantage of the few only.

The Pharmaceutical Society has—incorrectly enough, as any intelligent chemist can prove for himself—been termed an exclusive body, despite constant and well-founded protests as to its ultra-democratic constitution. Now, the Vice-President has shown how organisation in protection of trade interests may be simply and usefully effected without calling upon the Council of the Society to perform impossibilities; though, in the same breath, he candidly expresses his firm conviction that any steps taken in the direction indicated cannot fail to be productive of good to the Society at the same time. This is as it should be; the time is gone by for the Pharmaceutical Society to require apologists. As a public body it is now so firmly established that its supporters need not pay any attention to misstatements and innuendoes instigated by petty spite on the part of irresponsible individuals. In fact, Mr. Newsholme has distinctly scored in assuming such an independent position and, instead of appealing to non-members to join the Society, assuring them of their impotence to secure any permanent benefit to the craft without the aid of the body they attempt to ignore. But though in professional matters, closely affecting the progress of pharmacy, the Society and its Council are alone powerful for good, in numerous affairs of minor and more local import some further organisation is necessary. The means are already available, lying ready to hand on every side, and if the opportunity is not taken advantage of, so much the worse for those who miss it.

A conspicuous instance of how not to proceed is afforded by Mr. Cuff's letter, published this week (p. 395). On most points that letter is replied to in anticipation by Mr. Newsholme's address, and regarding the rest, it is hardly necessary to say much, as exaggeration and misstatement invariably miss their aim in the long run. It may be observed, however, that if half the trade gets its living out of proprietary medicines—which we doubt—the trade is in an exceedingly bad way. Presumably our correspondent means secret nostrums, and if that be so, registered chemists who are content to depend upon such a means of livelihood are not worthy to exist as a privileged class. But Mr. Cuff is in error with regard to his facts on this point, as much as in his reference to the number of members of the Society, or the discouragement offered by the Society to the trade. The Society includes the majority of registered chemists in business, after allowing for those who are hopelessly incapable and not worth reckoning, and as to the rest of his remarks, if those who give utterance to opinions such as Mr. Cuff appears to hold will not help themselves, they must not expect to receive assistance that they, by their action or non-action, avow themselves unable to appreciate. If there is anything in the complaint of insufficient representation, chemists and druggists themselves are to blame, and beyond that point local organisation is the remedy for many grievances which the Pharmaceutical Society is totally unable to redress. If ever the local and national organisations should be fully developed together, chemists will find little or nothing left but what they can remedy by their own unaided action. Meanwhile, it is time to work and not to grumble.

ANNOTATIONS.

The Question of an Intermediate Examination was referred to by the President of the Pharmaceutical Society in speaking at Sheffield a fortnight ago, and he expressed his belief in the desirability of such an examination "on certain lines" (see *ante*, p. 370). It is necessary to recognise clearly that two distinct ideas influence those who advocate the establishment of an intermediate examination, between the First and the Minor—some regarding it simply as a means of encouraging a more deliberate and systematic study of the subjects in the pharmaceutical curriculum, whilst others desire to make it the basis of an assistant's qualification. Taking the first view, the examination would be designed to test the candidate's knowledge of the purely scientific subjects which the law requires the registered chemist and druggist to be conversant with, and an interval of twelve months would probably be enforced between the passing of that stage and proceeding to the second or qualifying portion of the examination, which would cover the more technical subjects. In other words, the present Minor examination would be divided into two parts, both of which must be passed prior to qualification, and no certificate or anything that could be held out as a proof of qualification would be granted on passing the intermediate stage. In that respect, in fact, the suggested intermediate examination would strictly resemble the existing First examination, which is officially regarded as part of the qualifying examination. A similar proposal was made by the Council some years ago, but was not accepted.

An Assistant's Qualification is a much more serious thing to contemplate, and it is doubtful whether many of those who advocate the creation of such a qualification realise exactly what it would imply. The reason urged for establishing a lower qualification than that of "chemist and druggist" is an alleged scarcity of qualified assistants. But no proof has yet been forthcoming of such scarcity, and there is good reason to believe that the real object is to secure qualified assistants at a lower rate of remuneration than is now becoming general. It is, of course, quite comprehensible that the undoubted increase in salaries, accompanying reduced profits, affects many chemists in business very seriously. At the same time they ought to think twice before advocating any step which may lead them into an even worse position. Let us consider what is required by those who call for an assistant's qualification, lower in value than that secured on passing the Minor examination. They would certainly not be satisfied unless the suggested qualification sufficed for the individual possessing it to be left in charge of the pharmacy on occasion, and that may be taken to imply that the intermediate examination would be expected to serve as a test of the candidate's ability to read prescriptions, dispense, and so forth, the more purely scientific subjects being deferred to the later stage. The probability is that the study of those subjects would then be indefinitely postponed in numerous cases, assistants being content to possess the lower qualification. Moreover, those who ask for "cheaper" assistants would expect them to have a legal right to dispense and sell scheduled poisons when left in charge. But this right is the chief—some say the only—privilege possessed by registered chemists and druggists, and to seek to delegate it to a class of individuals with a lower qualification is equivalent to selling one's birthright for a mess of pottage. The "cheap" qualified assistant might feel inclined to commence business on his own account, whilst his services would be available to joint-stock concerns as well as to the registered chemist and druggist, so that the final stage of the latter's condition would almost certainly be worse than the first.

The Irony of Fate has never been more plainly manifested than in this demand that is being made for an inferior qualification in pharmacy. As Mr. Newsholme clearly explained at Nottingham, on Wednesday (see p. 381), the intention of the Council of the Pharmaceutical Society in 1868, prior to the passing of the Act which more than any other shapes our course, was that the Minor qualification should enable a man to act as an assistant only. But as the result of internal opposition, the original project failed and the Legislature accepted the lower stage as sufficient for the full legal qualification. To-day, however, the business descendants of many who opposed the complete scheme are clamouring for reversion to a position resembling but inferior to that originally aimed at. Support of this suggestion by a trade organ owing most of its commercial success to censorious opposition to the Pharmaceutical Society is a curious phenomenon. Just as any stick may serve to beat a dog with, so any pretence serves to abuse a body which has been instrumental in securing to that organ such notoriety as has fallen to its share. But surely chemists and druggists are sufficiently wide awake to detect the self-interest manifested in the overtures made to them by this journalistic Rip van Winkle, which has just made a wonderful discovery of what was apparent to others many years ago. And they certainly ought not to require warning that they should beware of advice tendered by candid friends (?), who are admittedly biassed in all that concerns the welfare of the only body that is and can be truly representative of the craft and its best interests. *Verb. sap.*

Elementary Pharmaceutical Education appears to be engaging the attention of many of our readers, judging from comments made on the suggestions published in these pages last week, and it is hoped that more will devote most earnest consideration to the matter. Given a scheme that meets with general approval, and willingness on the part of chemists in business to assist their pupils in the pursuit of knowledge, it ought not to be difficult to make the necessary arrangements as to classes and laboratory instruction. University colleges and science schools now exist in most, if not all, districts, and the purely scientific subjects should most decidedly be dealt with in institutions of that nature. The knowledge of chemistry, physics and botany required by pharmaceutical students is not primarily different from that required by other students, and they ought not to concern themselves about the practical applications of those sciences in their daily work before they have gained a sound scientific substratum to build upon. As regards the more technical subjects—pharmacy and prescription reading, and materia medica—it would be equally desirable that they should also be taught by teachers who can devote the major portion of their time to the work. It might, therefore, be advisable to form fairly large districts, which should include several teaching centres, and let those "provinces" be worked by peripatetic teachers. The same individual might well take the whole of the technical subjects, and though the demand for his services in any one town would necessarily be limited, it is quite conceivable that the working of such a plan as suggested might fully occupy his time and remunerate him sufficiently.

An Eighteenth-Century House in a fine state of preservation has been secured by Messrs. Raimes and Co., of York, and that firm is to be congratulated upon occupying business premises

which must almost be unique in their way. An illustrated description of the house appears in the *Architectural Review*. The building is constructed of red brick, relieved by stone quoins, strings, and arch-keys, finished with a well-proportioned wood cornice, having a pediment over the central part. Some of the fall pipes are lead rectangular conductors bearing the crest of the Bourchier family, and two of those convey the rain-water into fine old lead tanks—the only examples of the kind in York—which are richly decorated with Jacobean ornaments and Gothic tracery. The area railings and entrance gates of hammered ironwork are equally artistic, whilst the interior of the house is much too full of similarly attractive features to be described in detail. There is a spacious staircase, five feet wide, protected by handsome carved and moulded balusters, varying in design; beautiful pedimented doorways to the reception rooms are set in the thick walls; and an enriched entablature of the Corinthian order completes the wall, whilst the ceiling has ornamental panels filled in with charming designs. In the drawing-room, library, and bed-rooms are found beautifully carved marble or wood chimney-pieces and overmantels, and even the kitchen and garden are distinguished by special old-world features. Altogether Micklegate House must have been a most desirable residence, and as a place of business it would appear to have lent itself to ready adaptation to its new purpose. Some may exclaim at what they would term the barbarity of the uses to which the old place is to be put, but others will only envy those whose lines have fallen in such pleasant places.

The Need of Systematic Commercial Education was the subject of a paper recently read by Mr. T. A. Organ, who said that whilst it was agreed that in the matter of technical industrial education we were making leeway, there is a decided consensus of opinion that in technical commercial education we were drifting to leeward. The attempt of the London Chamber of Commerce to infuse life into the subject by means of examinations has failed, owing to the inadequacy of existing schools to train young men for a commercial career. Schools of commerce are needed of different grades. The first-grade school should provide a training for the lad who leaves the elementary school at twelve years of age and who wishes to enter business life at fifteen; another grade should provide the training which the son of the proprietor of a business man requires; a third, or highest, grade school or college should be open to those who are actually engaged in business, and ought to provide lectures of the most advanced type on economics and their concrete application to the affairs of commerce.

The Linnean Society re-assembles at Burlington House, W., on Thursday, November 4, at 8 p.m., to inaugurate the new session, and a tempting programme is provide d for the evening The Rt. Hon. Sir John Lubbock, Bart., M.P., F.R.S., will read a paper "On the Attraction of Flowers for Insects"; and Mr. W. C. Wordsell will treat of "On Transfusion-Tissue: Its Origin and Function in the Leaves of Gymnospermous Plants." There will also be two exhibitions. Mr. F. G. Jackson will show some zoological and botanical exhibits collected by the Jackson-Harmsworth Polar Expeditions, and Mr. Reginald Lodge will exhibit lantern-slides of marsh-birds and their nests, from photographs recently taken in Spain and Holland.

Sir Joseph Norman Lockyer, who has charge of one of the three official expeditions sent out by the 1898 Eclipse Committee to observe the total solar eclipse of January 21, 1898, will leave London on December 10 for Colombo, according to the *Daily Telegraph*. With him will be Dr. W. J. S. Lockyer and Mr. A. Fowler, F.R.A.S. Their equipment will be chiefly spectroscopic, and the method of observation photographic. The instruments taken will include two telescopes, one of nine and the other of six inches aperture, furnished with objective prisms, and an integrating spectroscope having two three-inch prisms of 60°. Sir Norman hopes with these instruments to determine the chemical and physical conditions of the sun's corona and chromosphere, the corona being visible only during the few moments of a total solar eclipse. It is hoped to reach Colombo on January 5, and the party will be met by Her Majesty's ship "Melpomene," which has been told off by the Admiralty to assist in the eclipse observations. The land-path of the line of the 1898 total eclipse of the sun commences from a little south of Ratnagiri, and runs in a north-easterly direction to Nepal, passing nearly over Mount Everest, and then disappearing in Thibet. The length of the path through India is about a thousand miles, and the width of the shadow roughly fifty miles, but the number of stations at which eclipse observations can be made is limited, and there will be but three official expeditions.

The President of the Society of Public Analysts writes (see p. 395) suggesting that, in our remarks on his letter to the *Times*, his views were either misread or misunderstood. It is, therefore, necessary to mention that the remark as to Dr. Dyer having overlooked the "important qualifications" of the Committee's recommendation of food standards and of a court of reference, was based upon the fact that he omitted to quote the passages stating those qualifications, as will be seen in the extract from his letter which he asks to have reprinted. The inference as to Dr. Dyer being impressed with the idea of a board of reference being recommended (not "merely" but mainly) "to aid public analysts in the discharge of their duties" was based on the statement in his letter to the *Times*, that public analysts now find their work to be "difficult or even impossible" in the absence of agreement on points which are in reality outside the scope of their proper functions. It is the expression of opinions on those points, rather than inability to perform, as chemists, the work of establishing analytical data, that has given rise to the charge of incompetence against public analysts. It is a mistake to suppose that the Statute requires from analysts opinions on subjects with which they are imperfectly acquainted and, when they have sometimes too readily acted upon the permissive provision for such opinion to be given, "at the discretion" of the analyst, the result has not infrequently been to convert the administration of the Act from performance of an important public service, into a case of the blind leading the blind.

The Secretary of the Grocers' Federation writes to the *Times* in reply to Dr. Dyer pointing out that the necessity felt by public analysts for the speedy amendment of the law relating to adulteration, is still more urgently felt by retail traders. In support of that opinion, he refers to the remark made by the Special Committee in its report "that in the taking of samples every care should be used to avoid harassing traders by what may be regarded as attempts to manufacture cases of violation of the law," and he speaks of the experience of traders in regard to standards, as being so unsatisfactory as not to encourage the idea of their statutory adoption. As yet there is not, on the part of the public, any expression of opinion—if it exists—on this subject, and the interest taken in legislation upon it seems to be so limited that there is only the prospect of a contest between analysts and traders on the one hand and between the interests of competing trades on the other.

FORMULÆ, METHODS, AND REACTIONS,
KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 365.)

Slater (Strychnine).—A maroon-red colour is produced on treatment with sulphuric acid and potassium chlorate.

Smith (Biliary Pigments).—This is a modification of Maréchal's test, in which tincture of iodine is poured carefully upon urine, and the zone reaction observed. A greenish colour is produced.

Smith (Free Acids).—Silver chloride is thrown down from a solution of freshly precipitated chloride dissolved in ammonia.

Smith (Santonin).—A greenish yellow colour is produced on heating with nitric acid, and changes to deep red with alkalies.

Snelling (Emetine).—An orange-red colour, changing to violet, is produced on pouring a few drops of hydrochloric acid upon a little potassium chlorate and adding a drop of the suspected liquid.

Snow (Colchicine).—Shake out with a mixture of 18 C.c. of chloroform 2 C.c. of alcohol, 80 C.c. of petroleum ether, and 10 to 15 drops of ammonia water.

Soldaini (Glucose).—Dissolve 15 Gm. of cupric carbonate in 1400 Gm. of water, with the aid of 416 Gm. of potassium bicarbonate. Upon boiling this solution with glucose, cuprous oxide separates out. Compare Ost's copper reaction.

Sonnenschein (Alkaloids).—(1) Suspend cerous hydroxide in caustic potash solution and pass chlorine gas through the mixture until the formation of brownish-yellow ceric hydroxide is complete. Collect, wash and dry the hydroxide and add a trace to a solution of the alkaloid in sulphuric acid. For particulars of the colour reactions see Hager, 'Pharm. Praxis,' i., 207. (2) Precipitate a solution of ammonium molybdate in nitric acid with phosphoric acid, wash the precipitate, boil with nitro-hydrochloric acid to drive off ammonia, evaporate to dryness, and dissolve the residue in 10 per cent. nitric acid. Weak acid solutions of alkaloidal salts give yellow precipitates with this reagent, as do also ammonia and some other bases. Compare Jungmann's reaction.

Sonnenschein (Blood).—On extracting blood stains with distilled water and precipitating with sodium tungstate solution, strongly acidified with acetic acid, a reddish-green fluorescence appears on adding ammonia.

Sonnenschein (Protein).—A precipitate is thrown down on adding a saturated solution of sodium tungstate, strongly acidified with acetic or phosphoric acid.

Sonstadt (Calcium).—Sodium tungstate gives a precipitate with calcium salts.

Souchère (Peanut Oil).—Separate the free fatty acids from the suspected oil and dissolve them in boiling alcohol. In the presence of peanut oil crystals of arachaic acid separate out on cooling the solution.

Southey (Opium).—A blue colour appears on adding sulphomolybdic acid.

Souza, De (Pyridine for Hardening).—Pyridine is recommended for hardening, dehydrating, and clearing tissues at the same time. They may be stained after hardening by means of aniline dyes dissolved in the pyridine, or passed through water and stained by the usual processes. It is said to harden quickly, and to give particularly good results with brain.

Spee, Graf (Prepared Paraffin).—To prepare a mass particularly favourable for ribbon-section cutting, heat paraffin (m. p. 50° C.) in a porcelain capsule until disagreeable white vapours are given off and the mass shrinks a little. In about 1 to 6 hours, according to the quality of the paraffin, the mass becomes brownish-yellow, and, after cooling, shows a soapy surface on being cut. Its melting point will have risen several degrees.

Spence-Esilman (Mineral Acids).—Free mineral acids discharge the colour of very dilute aqueous solutions of ferric chloride.

Spicea (Salicylic Acid in Wine).—The wine is extracted with ether, the residue left on evaporation warmed with concentrated nitric acid, and ammonia added in excess. Any salicylic acid present is converted into picric acid, and woollen fibres dipped into the solution are coloured yellow.

Spiegler (Albumin).—Acidulate urine suspected to contain albumin with acetic acid, filter out any precipitate formed (mucin), and add a layer of a solution consisting of 8 Gm. of mercuric chloride, 4 Gm. of tartaric acid, 20 Gm. of glycerin, and 200 Gm. of water. In the presence of albumin a white zone will appear, while if iodine should be present a yellow flocculent precipitate, soluble in alcohol, will be found at the line of contact. Rafaële uses hydrochloric acid in place of acetic. Compare Jolles' reagent.

Sprengel (Nitric Acid).—A reddish-brown colour is produced on adding to a dry nitrate a few drops of a solution of carbolic acid, 1 part, in sulphuric acid, 4 parts, and water, 2 parts.

Squire (Acidulated Alcohol).—Add 0·5 to 1 per cent. of hydrochloric acid (sp. gr. 1·16) to 70 per cent. alcohol.

Squire (Acidulated Glycerin).—Mix equal parts of glycerin and water, and add 1 per cent. of glacial acetic acid, if sections are to be mounted in Farrant's medium or 1 per cent. of formic acid (sp. gr. 1·2), if glycerin is the mounting medium.

Squire (Actinomycosis).—See Plaut's method.

Squire (Blueing Sections).—After staining with hæmatoxylin, treat for a few seconds with a solution of sodium bicarbonate (1:1000) in distilled water.

Squire (Canada Balsam).—Dry the balsam over a water bath until brittle when cooled, then to each 200 Gm. add 100 C.c. of benzol or rather less xylol.

Squire (Dammar Solution).—(1) Dissolve 100 Gm. of dammar in 100 C.c. of benzol. (2) Dissolve 100 Gm. of dammar in 200 C.c. of turpentine oil, and add 50 Gm. of mastic dissolved in 200 C.c. of chloroform.

Squire (Decalcification Fluid).—(1) Mix 95 parts of glycerin with 5 parts of hydrochloric acid; used for softening teeth. (2) Use a 4 per cent. aqueous solution of arsenic acid at a temperature of 30° to 40° C. After softening tissues in this solution, keep them in alcohol.

Squire (Farrant's Medium).—Dissolve in 200 C.c. of distilled water, 1 Gm. of arsenious acid, and 130 Gm. of gum arabic, then add 100 C.c. of glycerin. Filter through fine Swedish filter paper upon which has been deposited a thin layer of talc.

Squire (Glycerin and Gum).—Dissolve 130 Gm. of gum arabic in 200 C.c. of chloroform water (1 in 200), then add 100 C.c. of glycerin and filter.

Squire (Glycerin Jelly).—Soak 100 Gm. of French gelatin in chloroform water, drain when soft, and dissolve with heat in 750 Gm. of glycerin. Add 400 Gm. of chloroform water, with which has been incorporated about 50 Gm. of fresh egg albumin, mix thoroughly, and heat to boiling point for about 5 minutes. Make up the total weight to 1550 Gm. with chloroform water and filter in a warm chamber.

Squire (Hæmatoxylin Stain).—Dissolve 0·4 Gm. of ammonium carbonate and 2 Gm. of hæmatoxylin in 40 C.c. of proof spirit, and expose to the air in a shallow dish for 24 hours; make up the volume to 40 C.c. with proof spirit, warming, if necessary, to dissolve any separated crystals, and add 2 Gm. of ammonia alum dissolved in 80 C.c. of distilled water, together with 100 C.c. of glycerin, 80 C.c. of rectified spirit, and 10 C.c. of glacial acetic acid. Dilute 1 part of this solution with 9 parts of distilled water when required for use.

Squire (Picro-Carmine).—(1) Dissolve 1 Gm. of carmine with a gentle heat in 3 C.c. of strong solution of ammonia, and 5 C.c. of distilled water, then add 200 C.c. of saturated aqueous solution of picric acid, heat to boiling and filter. (2) Dissolve 10 Gm. of carmine in a solution of 1 Gm. of caustic soda in 1000 C.c. of distilled water; boil, filter and make up to 1000 C.c. with water Mix the solution with an equal quantity of water, and add 1 per cent. aqueous solution of picric acid so long as the turbidity produced disappears on agitation.

Squire (Potassium Acetate Solution).—Dissolve 250 Gm. of potassium acetate in 100 C.c. of water, by the aid of gentle heat, and filter. This is used as a mounting medium.

Squire (Strengths of Alcohol).—The useful formulæ for different strengths of alcohol published by Squire are sufficiently near for all practical purposes. Absolute alcohol (sp. gr. 0·797) containing about 98 per cent. of ethylic alcohol is taken as the basis in most instances. Alcohol of 90 per cent. (sp. gr. 0·823) is pre-

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

pared by mixing 14 volumes of absolute alcohol and 1 volume of distilled water ; 84 per cent. alcohol (sp. gr. 0·838) is rectified spirit, B.P. (560 p.) ; 70 per cent. alcohol (sp. gr. 0 872) may be obtained by adding 1 volume of distilled water to 3 volumes of absolute alcohol, 6 volumes of rectified spirit, or 4 volumes of methylated spirit; 50 per cent. alcohol (sp. gr. 0·918) is prepared by adding 4 volumes of distilled water to 5 volumes of absolute alcohol, 3 volumes of water to 5 volumes of rectified spirit, or 3·5 volumes of water to 5 volumes of methylated spirit. Absolute alcohol, 75 C.c , mixed with acetic acid, 25 C.c., serves as an excellent fixing agent for nuclei. Immerse tissues in it for 6 to 12 hours, then transfer to 90 per cent. alcohol until hardened, afterwards preserving in 70 per cent. alcohol till wanted.

Squire (Treatment of Sections).—Imbed tissues to be cut in paraffin melting between 45° and 50° C., according to the temperature of the room and the nature of the material. Afterwards preserve the sections, prior to staining and mounting, in 50 per cent. alcohol, or in a mixture of equal volumes of glycerin and thymol water (1 in 1500). Sections may be conveniently washed in alcohol, dehydrated, and cleared, in small wide-mouthed bottles.

Städeler (Chloroform).—On dissolving bilirubin in pure chloroform a yellow colour is produced. A green colour indicates decomposition.

Stahl (Test Paper).—Filter paper saturated with a 1 to 5 per cent. solution of cobaltous chloride is blue when dry, but assumes a reddish colour in moist air. Compare Merget's test.

Standford (Iodine).—A violet colour is produced on adding carbon bisulphide and 1 drop of nitro-sulphuric acid, prepared by saturating sulphuric acid (sp. gr. 1·843) with gaseous nitrous anhydride.

Stas-Otto (Alkaloids).—These bodies are classified according as they are taken up by ether from acid or alkaline solutions. Morphine is not removed in either case.

Steenbuch (Flour).—To examine flour, remove starch by the action of diastase, pour into water and remove albuminous matter with a weak solution of soda, then examine the residue under the microscope.

Stefanelli (Alcohol in Ether).—Aniline violet is insoluble in pure ether, but is soluble in alcohol.

Stein (Narceine).—A blue colour results on adding to a liquid containing narceine a solution of zinc and potassium iodides, together with a drop of aqueous solution of iodine.

Stein (Nitric Acid).—On heating a nitrate with litharge and exposing to the gas evolved filter paper moistened with an acid solution of ferrous sulphate, the paper is coloured yellow to brown.

Stenhouse (Caffeine).—On heating for a few minutes with fuming nitric acid, evaporating the yellow solution to dryness, and moistening the residue with ammonia water, a purple colour results similar to that of murexid. This colour disappears on adding caustic potash, that of murexid is thereby changed to blue.

Stephenson (Mounting Medium).—A solution of mercuric iodide in potassium iodide solution, of specific gravity 3·02.

Stevenin (Alkalimetry).—A glycerin extract of the petals of violet or mallow flowers is turned red by acids, and green by alkalies.

Stieda (Cements).—(1) Rub up zinc oxide with turpentine, and for each drachm of oxide add 1 ounce of thick solution of dammar in turpentine. (2) Replace the zinc oxide with vermilion and add 1 ounce of dammar solution for each 2 drachms.

Stillingfleet-Johnson (Creatinine in Urine).—This is a modification of Marly's separation process. A large volume of urine is treated with 5 per cent. of its volume of saturated aqueous solution of sodium acetate and 25 per cent. of saturated mercuric chloride solution. The precipitate is filtered immediately and the filtrate left for 48 hours. The creatinine separates in microscopic spherical masses of mercuric chloride compound and is collected, washed with cold water, and decomposed by sulphuretted hydrogen. The liquid is decolorised with animal charcoal and evaporated over H_2SO_4, when creatinine hydrochloride crystallises out. This salt is decomposed with excess of lead hydrate and the filtrate, evaporated over sulphuric acid, gives effloresced crystals of creatinine.

Strassburg (Biliary Acids).—See Pettenkofer's reaction.

(*To be continued.*)

THE WORLD OF PHARMACY.

PLYMOUTH, DEVONPORT, STONEHOUSE, AND DISTRICT CHEMISTS' ASSOCIATION.

At a meeting of the Junior Section, held on Wednesday afternoon, October 20, Mr. Jas. Cocks, President, occupied the chair, and was supported by Messrs. J. Hinton Lake (President Exeter Chemists' Association), O. A. Reade, C. T. Weary, R. F. Roper, Jas. Maurice, J. R. Johnson, C. J. Park (Member of the Pharmaceutical Council), and many members of the Junior section. The President proceeded to welcome Mr. E. M. Holmes, Curator of the Pharmaceutical Society's Museums, and at the same time took the first opportunity of congratulating him on the distinction recently conferred upon him by the award of the Flückiger Medal. He said he thought the members of the Junior Section should consider themselves highly honoured at being addressed by one occupying the position Mr. Holmes did.—Mr. Holmes then proceeded to address the students (see p. 385), after which he distributed the prizes. He said that, in looking over the herbaria, he was most agreeably surprised to see the excellence of the work and the painstaking care that had been bestowed upon them, and was delighted to find that the beautiful specimen he had shown at their last annual meeting from Mr. Frank Giles' herbarium had been followed as the type of excellence in herbaria. In some respects, as in describing the parts of the flower which they had dissected, they had even improved upon Mr. Giles' specimens. He was sure that if Mr. Giles saw these specimens he would be very pleased to find that his own attempts to do conscientious work had produced so good an influence on others. As an illustration of the value of dissecting flowers instead of merely collecting and drying them, he might mention that there was only one plant wrongly named in the two collections, and that was one with comparatively weak distinctive characters. He hoped that in the future some Devonshire man would send a herbarium for competition for the Pharmaceutical Society's silver medal, if only to show that Devonshire men could do as good work as men of Kent. Such thorough painstaking work in itself was valuable as giving habits of minute observation, neatness, and precision, apart from their scientific value for reference and the mental pleasure derivable from all work done faithfully and well. Mr. Holmes also announced that Mr. James Maurice had intimated to him a wish to help the botanical studies of the students by the presentation of microscopic slides to the value of two guineas. Herbarium Prizes, presented by the Association :—1st prize (one guinea), W. Hellyer ; 2nd prize (half-a-guinea), J. Reynolds. Botany, Morphology, and Classification, prizes given by Messrs. J. K. Bond and C. J. Park :—1st prize, W. Hellyer ; 2nd prize, J. Reynolds ; 3rd prize, A. Downing.—Mr. O. A. Reade remarked what great pleasure it was to him to hear such words of commendation upon the herbaria from Mr. Holmes. He sincerely hoped that the pharmaceutical silver medal would come to Plymouth next year.—The Chairman (Mr. Cocks) moved a vote of thanks for the very practical address which Mr. Holmes had delivered ; he hoped the juniors would all take advantage of the wise advice tendered therein.—Mr. R. Roper seconded, and Mr. J. Hinton Lake, in supporting, exhorted his hearers to train for the Major examination as well as the Minor ; by this means they would acquire a good knowledge of analytical chemistry, etc., which would be of great use to them afterwards.—Votes of thanks to Messrs. Maurice, Bond, Park, Reade, and the Chairman concluded the meeting.

CHEMISTS' ASSISTANTS' ASSOCIATION.

This Association has an enterprising President in Mr. T. Morley-Taylor, who took the chair at a meeting held at 73, Newman Street, W., on Thursday, October 21, and the members seem to have been imbued with a fair portion of the spirit which animates him, being evidently determined to make his term of office successful. At the call for nominations to membership of the Association, seventeen names were proposed and seconded, several "Square" men being amongst the number. This gratifying part of the evening's business accomplished, Mr. M. J. Cole was introduced, and proceeded to give a

Demonstration of Practical Microscopy.

The object for which he was present that night, he explained, was

to illustrate briefly the methods employed in section-cutting, staining, and mounting specimens of drugs, roots, plants, and other articles with which they as chemists would have to deal in the pursuit of their art or profession. He then selected from amongst an assortment of specimens a fresh stem of the palm tree, which he proposed to subject to the processes before mentioned. Of course, the time at his disposal would not allow of the sections being finished in perfect style, but he thought if they carefully observed the delicate manipulation required in the different processes, they would with practice be enabled to satisfactorily prepare their own objects for microscopical research. At the outset he would impress upon them the necessity for absolute cleanliness in all processes, otherwise when mounted the specimens would be dotted with dark spots. Mr. Cole then explained the methods of dealing with dried specimens; first swelling with water to natural size, and afterwards freeing from water in methylated spirit. Sections could then be cut while held between the finger and thumb, but to secure good sections a microtome must be used. The various processes of embedding in paraffin, celloidin, wax and oil, gelatin, etc., so as to prevent any distortion, displacement, or injury to the tissues, were next described, and a practical illustration of embedding in carrot was given, a "well" microtome being used to obtain transverse and longitudinal sections. The uses of "lifters," needles, glasses, and many other instruments were explained, and the double process of staining with the acid green and carmine fluids was demonstrated, also the subsequent clearing in oil of cloves, mounting in Canada balsam, finishing off and labelling. Various other clearing and mounting media were touched upon, and at the conclusion of the demonstration a hearty burst of applause came spontaneously from the audience who had followed with the keenest interest the different processes described and illustrated.—Several speakers then expressed their great appreciation of Mr. Cole's efforts to interest and instruct those present, and a number of questions were asked and answered, the most important one being with regard to the best kind of razor to use when cutting without a microtome—hollow ground or flat? The answer was to the effect that a flat razor was to be preferred for hand cutting, but with a microtome a hollow-ground razor should be used.—Mr. C. E. Robinson then proposed a cordial vote of thanks to Mr. Cole, which was seconded by Mr. Goatcher and carried with acclamation, Mr. Cole briefly responding.—A number of slides were placed under microscopes, illustrating the oil cells of eucalyptus leaves; leaf of *Mnium punctatum*, showing chlorophyll; section of a grain of maize, showing the embryo; the structure of stem of the *Cycadaceæ;* epidermis showing stomata from leaf of *Araucaria imbricata*, and sieve tubes showing sieve plates of the stem of vegetable marrow.—The microscopes were kindly lent for the occasion by Messrs. W. Watson and Sons, High Holborn, W.C.

NORTH STAFFORDSHIRE CHEMISTS AND DRUGGISTS' ASSOCIATION.

The first meeting of the session of this Association took the form of a social evening, which was held at the Copeland Arms Hotel, Stoke-on-Trent, on Thursday, October 21. The chair was taken by the President, Alderman J. Averill, J.P. (Stafford), and there was a large and representative company.—In opening the proceedings, the Chairman briefly referred to the formation of the Association, which took place in the early months of the present year with the object of advancing pharmacy, protecting legitimate trade interests, and promoting friendly intercourse among the chemists and druggists. That night they were beginning the coming session with a social evening. At the next meeting he hoped a paper would be read on some subject connected with pharmacy, because the advantage to be derived from papers was most invaluable. He hoped to see the membership greatly increased, and its usefulness largely extended, and ere long he did not see why a school of pharmacy should not be established in the district where assistants and apprentices might have the advantage of a systematic course of instruction in scientific subjects having an immediate bearing on pharmacy. That would make their education gradual and lasting, and would do away with the present system of "cramming" for a few months before examination. He would advocate that an examination equivalent to the Preliminary should be passed before apprenticeship was commenced. That was a point upon which he thought all members should insist. But all this would take time, and they must be content with a small beginning and gradually work up to a state of perfection. In this connection he reminded them that the Pharmaceutical Society commenced in a small way in 1842, but gradually and steadily grew until, in 1868, the Pharmacy Act was passed. He was sorry to say that there was an omission in that Act. It did not contain a clause preventing

Limited Liability Companies

from trading as chemists and druggists. These companies were enabled to do what a single individual could not do. To a considerable extent company trading had revolutionised the trade of the chemist and druggist. A man who had spent time and money and brain power in acquiring special qualifications in his business ought to be protected from the unfair competition of limited liability companies. He would like to see all chemists and druggists members of the Pharmaceutical Society. If they were, the Society, being largely increased, would have greater influence and be able to do much more in legal and parliamentary matters than at the present time. Speaking of the Minor examination, he was of opinion that it should be continuous instead of there being a break of a week between the first part and the second. The present system made young men nervous. After recommending the Association to support the Benevolent Fund as being an institution upon which they were all liable to be indebted, the Chairman concluded by referring to adulteration. He had seen the report issued by the Local Government Board on adulteration. The percentage for the last four years had only been about 11 per cent., and that appeared to be about the average. He found that sweet spirits of nitre was adulterated to what was apparently an alarming degree. But they knew that nitre was unstable, and, if kept a little time, lost its strength, falling below the standard of the Pharmacopœia. He did not believe that chemists and druggists would substitute an inferior for the proper article. These things were only done by those who were not so careful or so responsible as the chemist and druggist. The chemists and druggists were, as they ought to be, most careful in everything they did, so that they could retain the confidence of the public for which they worked.—Mr. Croydon, in moving a vote of thanks to the Chairman for his address, said that in more populous districts similar societies were doing a work which he hoped they were just commencing to follow.—Mr. Moore seconded the motion. They could not, he said, get away from the fact that they were only just beginning to face the question of limited liability competition. They were bound to suffer by it, but in co-operation, bound together, they might do something to avoid the worst evils of the competition, and he did hope that under all circumstances the chemists and druggists would maintain the quality of their drugs, and not be led away by the bloodthirsty example of people who supplied the public with cheap and worthless stuff. He believed that the public were only led away by cheapness for a little while; they found they did not get what they required, and they then returned to the legitimate traders. But still the cheap competition was doing both themselves and the public an injury; good and popular remedies were sold so cheaply that they could not be of the proper quality, and therefore they lost popular favour. He instanced, as an illustration of this, citrate of magnesia.—Mr. Jenkins supported the motion, which was carried unanimously.

The Benevolent Fund.

Mr. T. C. Cornwell moved—

> "That at this meeting, and at all subsequent meetings, a collection be made on behalf of the Benevolent Fund."

In doing so he said the question of competition was an extremely large one. People were deserting citrate of magnesia and turning their attention to health salts—everyone had his "health salts." Seriously, he believed the competition was more serious for the public than for the chemists and druggists themselves.—Mr. Weston Poole, in seconding the proposal, said the fact of boys being apprenticed without having passed an examination was largely responsible for the establishment of cheap drug stores. Many boys were apprenticed who could not pass the qualifying examinations, and naturally they became the worst enemies of the trade. He thought all the chemists and druggists in the district should combine to fix a standard price for certain drugs, and he believed the public would then rather go to a responsible man and pay a little more than to an irresponsible man and get things cheap.—The motion having been carried, a collection, which realised ten shillings, was taken.—Mr. Halls (Newark) said he had pleasure

in subscribing £1 1s. to the Association.—The remainder of the evening was spent in a convivial and musical manner, Messrs. Moore, Brinson, Edmund Jones, Emery, Prince, Poole, Christopher, Cornwell, Allison, and Elmitt contributing to the programme. Mr. Turner accompanied.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION.

On Wednesday evening the Nottingham and Notts. Chemists' Association opened their winter session with a successful meeting at the Albert Hotel, Derby Road, at which Mr. G.. T. W. Newsholme, Vice-President of the Council of the Pharmaceutical Society, delivered an excellent address on "Local Organisation in Pharmacy." The President of the Association (Mr. Richard Fitzhugh, J.P.) occupied the chair, and there were also present the following members of the Association:—Messrs. F. R. Sergeant (Vice-Chairman), C. Bolton, J. Welford (Treasurer), A. Eberlin (Secretary), Adams, S. Cook, W. Widdowson, R. Beverley, T. Wilson, J. Radford, T. Rason, F. Lumby, A. Beilby, W. Gill, E. Gascoyne, Freeman, Brown, A. Middleton, and R. Widdowson. —On the motion of Mr. W. Widdowson, seconded by Mr. F. R. Sergeant, Mr. J. G. Agar, of Mansfield, was elected a member of the Association.—The Chairman, in opening the proceedings, said they had that evening the privilege of the presence amongst them of an illustrious visitor—a gentleman who held a very high position in the pharmaceutical world. Mr. Newsholme was Vice-President of the Pharmaceutical Society, and he was quite sure they would all give Mr. Newsholme a very hearty welcome. It was not the first time that gentleman had been in Nottingham, but it was the first time they had had a paper read by him to the Association. He hoped they would receive from the visit great assistance in their work and also considerable good to themselves individually. The Nottingham Association was an old one, and had been looked up to as a pattern. It had been established many years, and like other societies, they had had their ups and downs, and perhaps it was as well that they had, because when they had been down they had got up and entered with greater zeal into the work before them. He thought they might say that as an Association they had done a great deal of good. He had been a member for many years, and many around the table that night were very young when he joined; in fact, they came into the trade when he first became identified with the Association. The greatest pleasure he had derived from his connection with it had been to see the many members who had received assistance from it and now held an important position in the trade. It was not for him to say much before Mr. Newsholme, but he did congratulate him on the high position which he held in pharmacy, and he hoped Mr. Newsholme would have many such years of honour before him, not only to fill the Vice-Presidency but also the Presidency of the Pharmaceutical Society.—Mr. Newsholme then delivered his address, which is printed in full at page 381. —Mr. Sergeant opened the discussion. He said he had listened with great interest to Mr. Newsholme's paper: it was thoughtful, and one that was likely to do them a great deal of good. Mr. Newsholme's two chief ideas were, first, that they must be loyal to the Pharmaceutical Society, and secondly, that they must be strong in local organisation. Those two points had been before them in different ways and many times, but they had come home to them, he trusted, that night with a force which would bear a good result. It had been pointed out over and over again that if the Pharmaceutical Council had only more of the chemists at its back, it would be able to do more, and he thought that in that point lay the gist of the matter. It seemed to him that there was plenty of work for the local organisations. They had in Nottingham a good local organisation, but he thought they were praised rather too much, as he felt that they did not get the members of the trade so well together as they might do either in a social or business way. Mr. Gascoyne remarked that he had listened with very great pleasure to the paper of Mr. Newsholme, which was of a somewhat non-contentious character. He thought they might fairly say—although he did not altogether agree with his estimate of the Pharmaceutical Society—that they thoroughly agreed with what he had said in regard to local associations. Speaking with reference to the point on which he did not agree with Mr. Newsholme, Mr. Gascoyne said that local associations, or rather provincial chemists, were out of touch with the Pharmaceutical Society. This was shown by the fact that many local associations had altogether separated themselves from it. Mr. Newsholme had told them what the Pharmaceutical Society could not do. Well, as Mark Twain said of the ancients, what they did not know was very voluminous. What the Pharmaceutical Society could not do was very considerable. But it was no satisfaction to know that the Society could not do those things. To his mind the great failing of the Pharmaceutical Society in the past had been that it had been too much representative of the high-class pharmacy of the Metropolis, and they had only to read the specches of some gentlemen to see how little they understand what provincial pharmacy meant. Mr. Gascoyne expressed the opinion that it was hopeless to expect that the House of Commons would do anything to protect pharmacists, and it was useless to expect they would get any redress as regarded company pharmacy. When the famous trial took place, then was the time for the Society to have done something in the interest of the trade, instead of which they allowed the bottom to be knocked out of the Act of 1868. —Mr. Bolton (the local secretary of the Pharmaceutical Society) said the difficulty of getting members to join the Pharmaceutical Society appeared to be great. Even the wisdom of some of the Society's friends outside could not give them the receipt by which they might be able to enliven and energise the members of the trade and get them to see that it was to their advantage and interest to become members of the Pharmaceutical Society, and make it of much more benefit to the trade than it was at the present time. As local secretary of the Society, he felt, after all, somewhat isolated. Local organisations were what the individual members made them. The question which every member ought to ask himself was, "What can I do to make the Society more interesting and useful." As it was, they simply left it to the members of the Council and leading members of the trade. Some of them owed a great deal to local organisation, and he was very glad that their chairman saw the pleasure of his work lay in doing what he could with those of his time to put advantages within the reach of those who were perhaps less fortunate, to assist them in qualifying as members of the trade. The question was How were they to improve matters? They could only do that, as individuals, by taking an interest in their own affairs. There was no other trade, perhaps, in which those who did not sow expected to reap. The Pharmaceutical Society was not to blame; it was the trade that was to blame. Unless the Society had power at its back, of course it became a society without power. The machinery was there; it was the power that they wanted. They had got a few more local members, and he should be very glad if, as the result of that night's meeting, there was a further increase. Speaking of the protection of the trade, Mr. Bolton said it was largely in their own hands. Illegal trading was very much larger in their own city than many members had the least idea of. If individual members who knew that in their own districts certain things were going on which were illegal would report thereon, he was certain the Society would take the matter up, and he could assure them that the public would be very much benefited thereby. With regard to what Mr. Gascoyne had said about the Act of Parliament having the bottom knocked out of it in connection with company pharmacy, all he could say was that no one was more surprised when the verdict was given against the Society than the Council was. They had not the slightest idea that what an individual could not do half-a-dozen men could do. Therefore it was not fair to blame the Society for a circumstance which could not possibly be foreseen. The only way to alter the working of the Society was for all chemists and druggists to become members and place on the Council men who best represented their opinions. He was quite sure that the members of the Council were waking up to the spirit of the trade at the present time by coming down amongst them in the provinces. They had had their President down to Sheffield, another representative had been to Plymouth, and that night they had the Vice-President amongst them. There was but one desire on the part of the Pharmaceutical Society and that was to protect the trade as far as they possibly could within the four corners of the Pharmacy Act.—Mr. Middleton said he did not think the Nottingham Association had separated itself from the Society. As far as Nottingham was concerned, he was sure the Pharmaceutical Society was ably represented. In his humble way he should be glad to volunteer to help forward the interests both of the Pharmaceutical Society and also the local Association. They had perfect machinery in the Pharmaceutical Society, but they wanted steam from the local organisations, and hoped that every chemist in Nottingham would come forward to help to supply that.—Mr. Beilby said there was little doubt that the present

position of chemists and druggists was not the most satisfactory. It was not a position that was contemplated by themselves when they joined the trade, nor by their fathers when they paid the somewhat high premium that was demanded at that time. It was thought that their future was pretty well assured, and that their position would not only be monetarily successful but also honourable. They must all admit that at the present time that was not exactly the case. What was the remedy? It might be divided into two parts—support for the Pharmaceutical Society and for the local organisation. If they supported the Pharmaceutical Society, it was said, greater attention would be given to educational matters, something would be done in the benevolent way, but they might secure exemption from serving on juries. He could not look upon those as being in any sense essential or important. Personally, he would much rather serve on a jury than behind a chemist's counter. He did think there were many things that the Pharmaceutical Society might do. It was too late to remedy the company matter, but there were other points, such as limiting to druggists the sale not merely of poisons, but also of pharmaceutical preparations. When men did not know the difference between borax powder, soda, and cream of tartar, it was time the Pharmaceutical Society or some other institution should take the matter in hand. He was not opposed to the Pharmaceutical Society; he was inclined to think that, after all, it was the most effective way in which they could work. If they could democratise it more he really thought they would have a very much more effective institution, and one which would have far more sympathy with provincial chemists. —Mr. R. Widdowson agreed that the great want of the Pharmaceutical Society was the support of the general trade. He thought if they started to democratise the Society by giving the subscribers representation according to number, it would be worth trying. The Council would then represent the whole trade and speak with a united voice.—Mr. Gill also continued the discussion, remarking that when the Council was asked for increased stringency of the examinations the application was nearly always complied with, but when it was asked for protection that was nearly always refused.—Mr. Newsholme, replying on the discussion, said he believed that if the whole of the chemists in the country were organised, everything that had been suggested could be done. Their first duty was to the public, and he ventured to think that by protecting the interests of the chemists they were looking after the interests of the public also. If the Society had double the number of members it could do a great deal more, and would be able to bring a great deal more pressure to bear on the public. The Pharmaceutical Society was the one common bond of union, it was part of the State, and under the control of the Privy Council. —On the proposition of the Chairman, seconded by Mr. Eberlin, a cordial vote of thanks was passed to Mr. Newsholme, and brought a successful meeting to a close.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

The first social meeting of the session, taking the form of a smoking concert, was held on Thursday evening, the 21st inst., at the Kardomah Café, Church Street, Liverpool, where about fifty of the "students" and their friends assembled under the direction of the President, Mr. Pierson. A well-selected programme of vocal and instrumental music had been arranged for the evening's entertainment, the various items in which were rendered to the satisfaction of the audience and to the credit of the several performers, who were as follows:—The Ivy Glee Singers and Messrs. W. Smith, Barlow, Wood, Moody, Mitchell, Cooke, and Billington. The glees contributed by the Ivy Glee Singers received well-merited encores, and may be considered the feature of the evening. Speeches of the usual character relative to the work of the session were delivered by the President, the Secretary, Mr. J. Harris Burns, and Messrs. Marsden, Cowley, and Mitchell, who, whilst touching upon certain necessary and important topics interesting to their hearers were commendably concise in their remarks. An extremely enjoyable evening was brought to a close about 11 o'clock by the singing of "Auld Lang Syne."

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

A meeting of the members of this Association was held at the Exchange Restaurant, on October 20, Mr. H. Jessop in the chair. —Mr. F. H. Alcock, F.I.C., read an interesting paper on "Microscopic Gems of the Three Kingdoms," the same being elaborately illustrated with lantern slides supplied by Mr. J. Davis, pharmacist, Summer Lane. Mr. Alcock dealt with a large variety of forms in animal and vegetable life, that portion of his paper dealing with chemical bodies and the diagrams illustrating the same being followed with an absorbing interest. At the conclusion Mr. Alcock was heartily thanked for his paper in a resolution proposed by Mr. Lawton, and seconded by Mr. Selly.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

At a meeting of this Association held on Wednesday, October 20, at their headquarters, Cannon Place, Brighton, there were three papers read by Messrs. C. A. Blamey, A. S. Kent, and P. M. Short, of Trommer Extract and Malt Co.—Mr. Blamey, who took for his subject "Alchemy," dealt very exhaustively with his subject, tracing the history of alchemy from the olden times down to present-day chemistry and pharmacy. The rendering of the paper showed a thorough grasp of the subject, which proved very interesting and instructive.—Mr. A. S. Kent took "Sulphur" as his subject, speaking first of derivation of the word sulphur and also its synonym brimstone. He said there could be no reasonable doubt that the latter comes from the Teutonic word "brinnstein," which means "burning stone," the reason of the name being obvious. The word "sulphur" is considered to be a hybrid composed of the Latin word "sal" (salt) and the Greek "pur," meaning "fire," sulphur being the salt that burns. Reference was then made to the state in which sulphur is found.—Mr P. M. Short next read his paper, which was on the subject of the "Action of Diastase upon Starch as performed by Malt Extracts." Malt extract is rich in diastase, a substance which is possessed of the power of converting starch into maltose. Diastase is looked upon as an isomeride of starch. Maltose belongs to the sugar groups, and has the property of transforming starch into maltose by diastase. This renders it a most valuable therapeutic agent in the treatment of various forms of amylaceous dyspepsia, or dyspepsia resulting from the non-digestion of carbohydrate foods, such as potatoes, etc. The action of the extract of malt on the gelatinised starch was then demonstrated, the form of starch used being that known as cornflour.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

The annual general meeting of the above Association was held on October 13 in the rooms of the Chemical Club, Victoria Hotel. The report of the Council showed that the last session had been in every way a success, the meetings had all been well attended, the papers and lectures were of a high order, and proved most interesting to the members. Financially the Association is in a better position than for many years past, and with a good syllabus for the session just entered upon, which promises to be a busy one, it is hoped that the Association will increase in strength and usefulness to its members. A new retail price-list has recently been issued by the Council, and copies may be had from the Secretary on application.

LEICESTER CHEMISTS' SOCIAL UNION.

The Committee invited members and their friends to a social gathering at the Dover Street School, engaged for the occasion, on Thursday, October 21. There was a large gathering of about 120, including many ladies. In opening the meeting the Chairman, Mr. T. Howard Lloyd, said that he hoped such meetings as the one which was in progress would help to bind the members of the trade more closely together. It did not follow that because chemists were engaged in making bitter things that their relationships should also be bitter. He hoped that members of the trade would derive much benefit from the social intercourse which it was meant to provide.—The chief attraction of the gathering was a limelight lecture on Australia, by Mr. A. Bray (of Messrs. St. Dalmas and Co.), who has travelled extensively in that Colony. He discoursed pleasantly upon the subject, and seemed well versed in the geography, history, and politics of this great colony. —A capital musical programme was then provided, and refreshments were partaken of through the generosity of the President.

Anti-blennorrhagic Injection of Methyl Salicylate.—Salicylate of methyl, 1; subnitrate of bismuth, 20; liquid vaseline, 100. Mix. Three injections to be used daily. The bladder should be emptied before each injection, so as to ensure the contact of the injected liquid with the urethral canal for as long as possible. The subnitrate of bismuth is only added to give the injection a suitable consistence.—*Rev. Méd. Pharm.*, iv., 196, after *La Semaine Méd.*

LETTERS TO THE EDITOR.

The Government Adulteration Bill.

Sir,—You were good enough in your last issue to draw attention to a letter of mine which recently appeared in the *Times*, but it seems to me that you have in some directions either misread or misunderstood the views I endeavoured to express. You say that I appear to have overlooked certain "important qualifications" of the Select Committee's recommendations with regard to the appointment of a court of reference, and "to be impressed with the idea that a specific recommendation was made to appoint a scientific board of reference in order that public analysts might no longer find difficulty in discharging their duties owing to absence of agreement concerning definitions of genuineness and adulteration or variation of quality." I do not think I have overlooked any of the qualifications of the Committee's recommendations, but I could not quote the whole of their report in the *Times*. May I ask you, however, to kindly reprint for your readers the following extract from my letter :—

> Having heard full and detailed evidence on all these points, the Select Committee recommended:—" . . . that an authority should be constituted who should act as a Court of Reference upon scientific and other questions arising under the Acts, and who should be empowered at their discretion to prescribe standards and limits of the quality and purity of food." They were of opinion, as expressed in the body of their report, ". . . that it would greatly facilitate the working of the laws as to the adulteration of food, and also serve the interests of traders, if standards or definitions of food were promulgated by competent authority;" and " . . . that the question of fixing food standards should receive the consideration of a specially constituted scientific body familiar with questions of analysis and the chemistry of food." Their recommendation was that such body or Court of Reference should ". . . be empowered to make such orders as they think proper respecting standards of the quality and purity of food, and that such orders should, when confirmed by a Secretary of State, have the force of the law" ; and they were of opinion that ". . . the formation of an authority having the functions indicated would result in the removal of many practical difficulties met with in the administration of the Acts, and by rendering more precise the law affecting adulteration would obviate the costly litigation in which, under existing circumstances, traders and others have sometimes been involved." Repeatedly in the course of the report matters are referred to about which the committee, after considering the evidence brought before them, refrained from making any definite recommendations, on the ground that such matters should properly be dealt with by the Court of Reference already mentioned. It was recommended that the proposed " . . . Court of Reference should take the form of a standing departmental committee appointed by the Board of Trade;" and that " . . . such committee should include the principal officer of the Government laboratory, nominees of the Local Government Board and Board of Agriculture, one or more analysts of repute, and representatives of the General Medical Council, the Institute of Chemistry, and the Pharmaceutical Society." "Other scientists," it is added, "whose services are available, and whose presence on the committee may be expected to lend weight to its decisions, should find places thereon." It is further suggested that " . . . representatives of the trading and manufacturing community should also be included."

I think no one, having read the recommendations, could remain under the impression which you seem to attribute to me, viz., that the appointment of a court of reference was recommended merely to aid public analysts in the discharge of their duties. The interests of trade are specifically referred to in more places than one, even in the extracts quoted, and the interests of trade, as distinct from the interests of the consumer, are discussed over and over again in the course of the report. The public analyst is but the servant of the public, and the appointment of such a reference committee, in as far as it would facilitate the duties of the public analyst, would be merely serving the interests of the public. My desire was to point out that at present, for lack of some such authority, the public analyst is often forced to stand aside and neglect his duty, but you in your article find it "difficult to understand how the duties of a public analyst could be rendered more difficult by diversity of opinion" "concerning definitions of genuineness and adulteration or variation of quality." You say that "questions as to the use of salicylic acid or boric acid as food preservatives do not properly come within his province otherwise than by establishing their presence in articles submitted to him for examination," and you say that my statement, that "under the present administrative difficulties, the public analyst is all but powerless to deal with such additions, even when he believes them to be injurious," seems to reveal a strange misconception of the public analyst's proper function. The proper function of a public analyst, from an abstract, or ethical point of view, may be a fit subject for discussion, but you overlook, sir, that at the present time his duties are defined by statute, and among these duties is that of inserting, at his discretion, his opinion whether the ingredients or materials mixed with any article of food or drugs are or are not injurious to health. It is, then, sir, the legislature and not my individual self that possesses what you consider "a strange misconception" of the public analyst's proper function. You go on to admit, however, that in the absence of such an authority as the Select Committee contemplated, the decision of the question as to whether the facts ascertained by the public analyst afford fair ground for prosecution under the Acts "has been a matter of haphazard," that "it has sometimes been undertaken by public analysts on one-sided theoretical grounds, and, as the Committee points out in its report, not unfrequently with the result of causing great hardship to defendants, while in other instances real offenders have escaped punishment because analysts have been reluctant to express an opinion in view of the possibility of their certificates being set aside." This, although somewhat differently phrased by your good self, forms part and parcel of the views which I endeavoured to express in my letter to the *Times*. That there may be some difficulty in constituting such a reference committee as would be satisfactory to all persons concerned is, of course, obvious. The Select Committee was far from overlooking this difficulty, and its recommendations were phrased with such difficulty in mind; but the difficulty of carrying out a scheme which, from all points of view, is recognised as desirable "as a matter of principle" is surely not a justification for postponing the matter indefinitely by the promulgation of a new Act of Parliament, which, as a reformatory measure, having no provision for the appointment of such a reference committee, can only be described by the old and threadbare illustration of the play of "Hamlet" without the Prince of Denmark. The pharmaceutical interest could, perhaps, better dispense with a statutory standard-making authority than can some other interests, inasmuch as a quasi-official standard for most drugs already exists in the British Pharmacopœia. That, however, is at present only quasi-authoritative as far as the sale of drugs is concerned, having no actual force of law. It seems probable that one of the first steps of a standard-making reference committee would be to adopt the British Pharmacopœia as the standard for drugs.

London, October 27, 1897. Bernard Dyer, D.Sc., F.I.C.,
President of the Society of Public Analysts

The Anti-Cutting Movement.

Sir,—I must write and express my appreciation of the very sensible and straightforward letter of "Pharmakos" in this week's *Pharmaceutical Journal*. It is indeed time that some combined effort was made towards ending the present quack medicine trade, and I should be only too willing to join any combination for the purpose, and feel sure that such a movement would be supported by all thinking members of the craft. In connection with this subject I note your paragraph in which you refer to the impudent assertion of an advertising emulsion manufacturer "that a first-class emulsion of cod-liver oil cannot be made in a chemist's shop." I do not, however, look upon such assertions with absolute equanimity, for my experience leads me to believe that the "intelligent public" not influenced by such statements are in a very small minority. The great majority are unfortunately only too ready to believe and act upon them.

Enfield Town, N., October 25, 1897. F. Goldby.

Proprietary versus Official Preparations.

Sir,—I have read with great interest your remarks on proprietary medicines and the relation of doctors and chemists to them. In theory I agree with every word, but in regard to practice I think it simply shows that the Journal is out of touch with that large class of chemists who have to adopt the very means there decried in order to get a living at all. We are practically told to discourage the sale of proprietary medicines, while probably I am understating the case when I say that half the trade gets its living out of them. In this small suburban neighbourhood there are four chemists and there are six doctors (three firms) who dispense their own medicines. In conversation with some of them they have told me that they are obliged to do so, that the people could not afford to pay for medicine in addition to the doctor's charge, and I know that, to a very large extent, at any rate, this is true. In cases such as these, what is to become of the chemist? Every now and again we hear a great deal about the number of chemists on the Register, and the few who are members of the Society. Is it a wonder? Would it not be a wonder if things were round the other way? Can men be expected to support a society that does its utmost to discourage the very trade that gives them the bread they eat? No. Men want to feel that they will get

some return for the money they subscribe, and when they think they see some chance of this they will become members, but not before. In Parliament we have representatives of all classes of men—good, bad, and indifferent. In the chemists' parliament (the Council of the Pharmaceutical Society) do we see the representatives of the store chemist, the chemist-grocer, etc., sitting side by side with those of the large dispensing businesses? No, these are looked down on as being an inferior rank of men. But are they? Are they not as much the product of a national want as the others? Is not a chemist living in a small village, where he has to add some other business on in order to avoid starving, of as much service to the nation as the one who devotes himself to so-called high-class pharmacy in Bond Street or Piccadilly? In writing this, I am not actuated by any objection to high professional aims for pharmacists, but desire only to advance a plea for a more moderate and gradual propagation of them. Let the Council consist more of men from all ranks of the trade, let its policy be formulated by those who understand the wants of the whole trade, not only those of a part; let all methods of work that are legal obtain equal recognition, and so gather together the whole trade, not by sacrificing high aims to catch votes, but by an honest endeavour to grapple with things as we find them instead of pushing forward fancy high-flown theoretical ideas that are absolutely impractical in the present day.

New Southgate, N., October 19, 1897. H. Cuff, A.P.S.

*** Our correspondent is referred to the text of Mr. Newsholme's Nottingham address, printed at page 381, as that seems to reply to most of the points raised. [Ed., *Ph. J.*]

Medical Men and Prescriptions.

Sir,—Twice, within the last few weeks, I have had handed to me, for dispensing, prescriptions ordering "Mist. tuss." "—— ——s." The only deductions one can make from such prescriptions are either that the medical men (for they were from different sources) ordering such things are not competent to write out a simple prescription for cough, or else they were too idle to do so. In any case they are unworthy of their profession, and are, to the extent to which they so prescribe, doing their utmost to bring it into contempt. On the label of each preparation—they were not made by the same firm—it stated that the active ingredients were ac. hydrocy. dil., ac. hydrob. dil., and morph. hydroch. Are we, therefore, to understand that these doctors are afraid of prescribing separately these ingredients in their proper doses, and so have to trust to the right dose being in "each teaspoonful," or are they simply cloaking their ignorance? Surely it is time for the better men of the profession to protest against an evil which will, if allowed to grow, produce that inability to exercise the thinking power involved in prescribing which neglect inevitably brings. I need hardly say that I had to get at least eight times the quantity ordered, and that the other seven-eighths remain dead stock. My advice to men who "prescribe" (*sic*) thus is to go to the nearest chemist, and he will doubtless be able to do for them what they are evidently incapable of doing for themselves.

October 25, 1897. H. R. (113/29).

Simple Microscopes and Condensers.

Sir,—I think that Mr. Bolas, in his interesting address, which you reproduce in your last issue, when he spoke of the manufacture and use of the simple spherical lens as a microscope, might have at the same time hinted at its greater value and importance as a simple condenser for use with the higher powers. Long before I became possessed of an Abbe condenser (which I do not by any means regard as a perfect instrument for its own particular work), I mounted one of these spheres of glass in one of the diaphragm buttons supplied by Baker in connection with the substage fitting, and used it for this purpose and for many a day with great satisfaction.

October 25, 1897. Scotch Chemist (113/28).

OBITUARY.

Prosser.—On October 17, David Prosser, Chemist and Druggist, Sheerness. Aged 60. Mr. Prosser had been a member of the Pharmaceutical Society since 1869.

Robinson.—On October 21, George James Robinson, Chemist and Druggist, late of Mayfair, London, W. Aged 57.

Bower.—On October 23, William Bower, Pharmaceutical Chemist, Tottenham Court Road, W. Aged 78. Mr. Bower had been a member of the Pharmaceutical Society since 1852.

ANSWERS TO QUERIES.

Botanical.—They are *Clematis vitalba* and *Acer campestre*. [*Reply to* W. F.—112/33.]

Composition of Ointment.—This seems to be nothing but a mixture of beef suet and resin or resin ointment. It contains no lead or any other chemical salt. [*Reply to* Cytis.—113/3.]

Varnish for Straw Hats.—Best black sealing wax in powder, 1; methylated spirit, 4. Dissolve by allowing to stand in a warm place. Apply while warm and dry in the sun or near the fire. [*Reply to* W. B.—112/19.]

Sample of Poultry Powder.—The poultry powder contains powdered capsicum, powdered grains of paradise, coarsely powdered wood charcoal, dried sulphate of iron, and powdered licorice root. [*Reply to* J. H. W.—112/26.]

Combined Toner and Fixer.—A good combined bath may be made by dissolving gold chloride, 2 grs., potassium sulphocyanide, 60 grs., and sodium hyposulphite, 2 ozs., in sufficient water to make 8 ozs. [*Reply to* W. B.—112/17.]

Formulæ, Methods and Reactions.—The matter will be re-published in book form if there appears to be any likelihood of a sufficient demand to cover the cost of printing, etc. In any case, it is proposed to publish a complete index to subject matter. [*Reply to* H. W. H.—112/39.]

One Per Cent. Solution of Apomorphine.—It all depends upon what is meant by the term "per cent." In hypodermic injections this is taken to mean 1 grain in 100 minims, and a one per cent. solution of apomorphine should therefore be made by diluting 50 minims of the B.P. solution to 100 minims. These injections are always dosed and given in minims; that is why the arbitrary, and strictly speaking, incorrect measurement is adopted. [*Reply to* Nemo.—113/23.]

CORRECTION.

Plymouth District Association.—In the course of transmission by telegraph, a slight inaccuracy crept into the report of the dinner of this Association published last week, Dr. Wilson being wrongly credited with a response to the toast of "The Honorary Members and Officers." Mr. G. Breeze, who proposed the toast, uttered the remarks ascribed to Dr. Wilson, and the report should have run as follows (see p. 374):—"Mr. G. Breeze, in proposing 'The Honorary Members and Officers,' alluded to Mr. Holmes; they felt it a great privilege to number him among the honorary members, also Mr. J. K. Bond, who had so kindly given one of the prizes, Dr. Wilson and Mr. Ginn. He did not think that chemists had made that material advance which they ought to have done. . . . He would propose that a committee be formed which could interview some of the medical profession, the outcome of which might be of benefit both to themselves and the medical profession." Mr. Holmes then responded and was followed by Mr. Ginn.

[Several Answers to Queries and Letters are held over.]

GENERAL INDEX

TO THE

"PHARMACEUTICAL JOURNAL."

A general index for the seventeen years ending June 29, 1895—including volumes VIII. to XXV. of the 3rd series—is in course of preparation, and will be printed by subscription if a sufficient number of orders are received. The subscription price is fixed at one guinea, and—if the work is to be proceeded with—orders should be addressed without delay to the Editorial Department, "Pharmaceutical Journal," 17, Bloomsbury Square, London, W.C.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Adams, Ayrton, Bingley, Bolton, Bruce, Burnett, Burton, Cresswell, Cummings, Draper, Durrant, Fisher, Foster, Fowler, Gabell, Gamble, Gardner, Goldby, Goodess, Hawkes, Hill, Howes, Jackson, Low, McKellar, Mair, Newsholme, Priestman, Raimes, Reynolds, Richardson, Roberts, Russell, Saunders, Shorthouse, Stanford, Vibert, Weary, Williams, Wright.

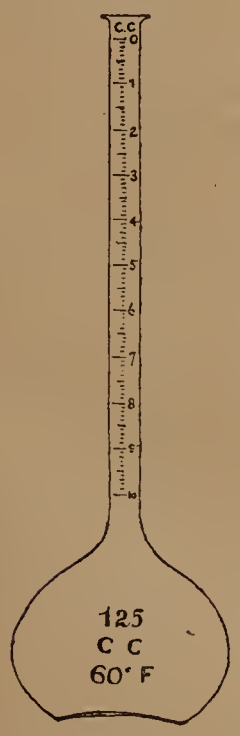
NOTE ON THE ANALYSIS OF CASSIA OIL.

BY J. OLDHAM BRAITHWAITE.

Those who are familiar with the analysis of cassia oil are well aware that the quality of the oil in different bottles of the same consignment is apt to vary between wide limits. It has been repeatedly shown that the results of analysis of one or two original bottles is of little or no value as an indication of the aldehyde percentage of the bulk of any one consignment. Although this is well known, a recent experience proves that this very obvious fact is often lost sight of, and that the practice prevails in the London market at the present time of basing analytical reports on cassia oil from improperly bulked samples.

A client recently submitted to me for analysis a sample from one case of cassia oil which he had purchased, with a guarantee that it contained from 80 to 85 per cent. of cinnamic aldehyde. This sample submitted to me, drawn from one bottle, only assayed 66 per cent. of that body. The remaining three bottles gavc on analysis 78, 77, and 77 to 78 per cent. of aldehyde respectivcly. The mean aldehydic percentage of the contents of the four bottles fell, therefore, below 75 per cent. It afterwards transpired that the certificate had been given in the first instance from a sample drawn from one bottle only, which was taken to represent the aldehydic value of the whole consignment consisting of many cases. The fallacy of this procedure is obvious, and such analytical data are worthless and misleading, being unsatisfactory alike to the vendor, the purchaser, and the analyst.

In order to obtain definite results it is absolutely necessary that the sample of oil submitted for analysis should fairly represent the bulk of the article. Since cassia oil bottles are approximately of the same capacity, this might be effected by taking a definite volume from each bottle and mixing these portions before submitting them to analysis. For ordinary commercial purposes this would probably be sufficiently accurate. If not, the purchaser should specify that the analysis should be made upon the oil actually purchased or upon "worked" oil. The assumption that the aldehydic valuc of one bottle of a consignment of cassia oil may represent the value of the remainder is neither logical nor scientific.



I have found the slight modification here figured of the ordinary Herschon flask, suggested and made for me by Mr. C. C. Muller, 148, High Holborn, although trivial, a decided improvement on the ordinary form. It consists simply of a 10 C.c. pipette graduated in tenths, blown on to a 125 C.c. flask; the range of graduations is longer than in the ordinary form, which is usually only marked up to 6 C.c. in tenths. This longer scale allows the flask to be used with greater accuracy for other purposes than the assay of cassia oil, such as the determination of phenols in those oils which contain them. The longer tube, too, allows the pipette employed in introducing the cassia oil to hang in the neck of the flask as a kind of loose stopper during the violent reaction which takes place on first mixing the oil with the sodium bisulphite solution; in this way it acts as a sort of valve, preventing loss by spurting, which is apt to occur with the old form of bottle. The graduation being from top to bottom, when the level of the lowcr meniscus of the non-aldehydic fluid is exactly adjusted to the 10 C.c. mark, the unoccupied space in the scale may read off directly as aldehyde.

THE CHEMISTRY OF CLOVE OIL.

Erdmann* has published some interesting results of his investigation of clove oil and the oil distilled from clove stalks. In preparing caryophyllene by treating clove oil with solution f caustic alkali the undissolved portion of the oil was always fou d to be oxygenated, and only by using alcoholic potash was it obtained free from oxygen. Oil from clove stalks shaken with dilute caustic alkali yielded at once the sesquiterpene.

On treating the oil that is separated from clove oil by solution of caustic alkali, with alcoholic potash and adding some ether, to dissolve and separate the terpene, the alkaline solution was found to contain eugenol, which was separated on acidifying with sulphuric acid, and on distilling the acidified liquid acetic acid was obtained. Hence it was evident that clove oil contains as one of its constituents aceteugnol, a compound which is at once saponified by alcoholic potash, but less readily by a water solution of caustic alkali, and thus the presence of oxygen in the oil undissolved by caustic alkali solution was accounted for, as well as the circumstance that neither this undissolved oil nor clove oil itself has a constant boiling point. That is not due to difference in the amount of caryophyllene, for though it has a somewhat higher boiling point than eugenol, the tension of both substances is nearly the same at 123° C., under a pressure of 13 Mm., and the higher boiling point, 125°-150° C., of the oil undissolved by caustic alkali is due to the presence of aceteugenol.

In the determination of eugenol in clove oil by Thoms' method† it is assumed that the whole of the eugenol is present in the free state, and the question arose whether the presence of some portion of it in the state of ester affected the determination. That was found to bc the case by comparative experiments with clove oil previously saponified by heating to 100° C. with caustic alkali, and with oil which had not been so treated, the results given by three samples being as follows :—

	Thoms.	Total eugenol.
Clove oil A.....	83·9	85·68
Clove oil B.....	82·97 82·77	84·84
Clove oil C.....	80·2	81·9

The low specific gravity of the oil distilled from clove stalks as compared with the large amount of eugenol it contains is explained by the absence of aceteugenol, the relation between the specific gravity and the amount of eugenol in the case of clove oil being due to the presence of some aceteugenol, the specific gravity of which is much greater than that of eugenol.

On saponifying clove oil with a known quantity of alcoholic potash and determining the residual free alkali, a result was obtained indicating the presence of a much larger quantity of aceteugenol than was actually present, and this was ascertained to be due to the presence of a compound yielding salicylic acid, the occurrence of which in clove oil was pointed out by Scheuck,‡ but disputed by Wassermann.§ By merely shaking clove oil with solution of caustic alkali, no indication of salicylic acid is obtained, but after the saponification effected by boiling with soda solution, salicylic acid can be detected in thc aqueous liquor. It is suggested that the compound present in clove oil and yielding salicylic acid by saponification may be eugenol ester of acetylsalicylic acid.

The yellow coloration produced on treating clove oil with caustic alkali was suggestive of the presence of an aldehyde, and a product was obtained which proved to be furfurol, a substance which Messrs. Schimmel have also found in clove oil together with normal amyl-methyl ketone, to which they attribute some influence

* *Journ. Prackt. Chem.*, lvi., 175.
† *Pharm. Journ.* [3], xxii., 450.
‡ *Ann. Chem.*, 125, 14.
§ *Ann. Chem.*, 179, 369.

as the cause of the ether-like odour of clove oil, which a mixture of eugenol caryophyllene and furfurol does not possess.

Erdmann also suggests that eugenol is probably not the only phenolic constituent of clove oil, because the boiling point of the crude product has a wider range than is consistent with its chemical individuality, and also because in re-distilling eugenol he has obtained a residue of phenolic character, though its resinoid character did not invite further investigation.

THE DIGESTIVE POWER OF PEPSIN IN THE PRESENCE OF ALCOHOL.*

BY C. SYMES, PH.D.

Some years ago I conducted a series of experiments with a view of determining the relative digestive value of the various pepsins then on the market, and published the result of the inquiry.† Subsequently I was requested to continue and extend the investigation for publication in one of the medical journals, and in consequence I gained some amount of experience in this kind of work. The experiments were carefully conducted and after a lapse of time were repeated by a French investigator, who confirmed my results. Time "which tries all things" also testified to their correctness, for the pepsin, which was then mostly prescribed and relied on, has since practically disappeared from the market, its quality having been found by experience to be inferior to that of similar preparations by other makers. Apart from the relative value of various pepsins I also experimented on the digestive power possessed by pepsin in the presence of alcohol, and found that its activity was reduced in proportion to the amount of alcohol present. From this I drew deductions which I have since learnt to modify, although the facts remain. I condemned wine as a vehicle for the administration of pepsin because of its property of retarding the activity of the medicinal agent it carried, and recommended in the place thereof a solution of fresh pepsin in raspberry vinegar. This constitutes an excellent preparation, and at present I know of no better, but the public never took very well to this "pepsin elixir," as many persons have a decided objection to acids. It has however, been prescribed with satisfactory results.

The experiments referred to were conducted in glass bottles placed in a water bath kept at a uniform temperature of 100° F. by means of a Reichart's thermo-regulator. The importance of adopting the same temperature on all occasions when conducting comparative experiments was rendered evident by increasing the temperature to 110° F., when digestion was found to proceed much more vigorously than at 100° F., all other conditions being equal. Still, the presence of alcohol had the same prejudicial effect in retarding solution of the coagulated albumin used. If, however, the bottles were replaced by wetted animal membranes the condition of things was materially altered. It was found that the alcohol present in the liquid through which the coagulated albumin was distributed soon began to diffuse through the wetted membrane, and that the pepsin commenced to act with the same energy, as in those containers where no alcohol was present, so that at the end of two hours there was no considerable difference between the weight of undissolved albumin in each case. The interest which this experiment has for us as pharmacists is that it shows that an alcoholic liquid, such as wine, may be used in preparing a solution of pepsin for medicinal use, and that if properly made it soon becomes active when taken into the stomach in the presence of suitable food. Rectified spirit may also be used as a preservative in making essence of rennet, because its excessive dilution and ready evaporation, when mixed with the proper quantity of milk and warmed, overcome any prejudicial effect the spirit may have on the peptic bodies present. Glycerin is an excellent solvent of pepsin, as is well known, but unless it is used in sufficiently large quantity to render the solution distasteful to the patient it is not a good preservative. A solution of freshly prepared undried pepsin in dilute glycerin, to which 10 per cent. of rectified spirit is added, forms, when filtered, an excellent medicinal preparation which may be flavoured to taste.

* Read before the Liverpool Chemists' Association, October 28, 1897.

† *Pharmaceutical Journal* [3], iv., 1. See also note on "Latent Pepsin," by G. W. C. Phillips, in *Pharmacist*, viii., 200, and 'Year Book of Pharmacy,' 1875, p. 317; paper on "Pepsin and Alcohol," by M. Bardet, *Nouveaux Remedes*, 1887, p. 243, and *Pharmaceutical Journal* [3], xviii., 93; and paper on "Pepsin Wine," J. Clark, *Pharmaceutical Journal* [3], xxii., 597.

A NEW PLANT PRESS.

BY FRED. REYNOLDS.

Every botanist knows what slow, hot, and weary work it is to have anything to do with most plant presses. These consist as a rule of two boards with holes in the top board for the two screws to pass through. The screws are generally far too long and the worm

is very fine and therefore slow. The press which I have designed is on somewhat similar lines, but with this difference: the top board is slotted at the ends. The screws are short, with a quick worm, so that about two turns of the handle puts on pressure. The screws are hinged to the bottom board, and so fall down and allow the top board to be removed with the utmost despatch and facility.

ACCURACY IN PHARMACEUTICAL EXPRESSION.*

BY A. C. ABRAHAM, F.I.C., F.C.S.

If there is one thing more than another which distinguishes civilisation from the savage state it is the ability of man in the former to so record his discoveries that they may be useful not only to himself but to others; especially those who come after him. In this way, and in this way alone, can civilisation steadily advance, for the very simple reason that it soon becomes impossible for any generation to observe all the facts which are of value, which have been observed before, and are necessary for further advance. One generation consequently is always indebted more or less for the information upon which it depends to those who have gone before. This is specially true in science, but I venture to think that, as far as medicine and pharmacy are concerned, the experience of one generation is being largely lost to the next owing to the changes of names by which medicinal substances are known, and perhaps still more owing to the same name being applied to a medicament of a more or less different composition. A distinguished physician may find that a certain preparation is of great value in the treatment of a disease when certain symptoms appear. He may write a book explaining his treatment, but, if the preparation known under this name is altered in subsequent pharmacopœias to suit the whim of some would-be reformer the medicament may no longer be suitable for the symptoms described, and as the medical practitioner who endeavours to follow his treatment is probably unaware of the change, the system of treatment may be entirely lost, or, as I believe, constantly happens, his treatment may become utterly discredited owing to the employment of a preparation never recommended by the authority for the complaint in question.

Numberless instances of preparations now sold under well-

* Read before the Liverpool Chemists' Association, October 28, 1897.

known names, which are quite different to the preparations formerly known under the same names, must be familiar to all. I may, perhaps, however, cite a few. A preparation made by dissolving the old-fashioned carbonate or sesquioxide of iron in hydrochloric acid with the addition of spirit, was known for many generations as tinct. ferri muriatis, tinct. ferri sesquichloridi, or some other similar name. These preparations although slightly different in strength and composition, when made according to the instructions of the London, Edinburgh, or Dublin pharmacopœias were, in the main essentially the same. In 1864 a new process was adopted, which was devised to make a similar preparation, but in such a way that it might be more uniform than formerly, though its composition should remain essentially the same. In 1885, however, we have a very serious alteration in this preparation, so that it is extremely doubtful whether it can be in any way said to represent the older one. By substituting water for a large portion of the spirit the ethers which were formed in the older preparation are either not formed at all or are formed in very much smaller proportion. Now there were many uses to which this preparation was put, both by medical men and also popularly, to which it would appear as if the new preparation did not adapt itself. Perhaps the best proof of this is the fact that its use has diminished, I should say, to a third or a quarter, and also that a demand has arisen, certainly not a large one, for the preparations of the London and Edinburgh Pharmacopœias, in the latter case, of course, entirely by medical men, who evidently find that whereas they formerly got certain effects from the old preparation, they do not get them now from the new. Among other official preparations which were so altered in the last Pharmacopœia as not fairly to represent the recognised articles hitherto in use were the following: Syrup. ferri phosphas, which was very considerably increased in acid strength for no reason that I know of, as it certainly does not keep better; tinct. cinchonæ co., in which red bark was substituted for pale bark, thus depriving it of any right to be called "Huxham's tincture of bark," and making it, I believe, much more nauseous, and probably in no way better.

It would not, perhaps, be out of place in this note to allude to other sins of nomenclature adopted by the Pharmacopœia. For example, the employment of the term "absolute alcohol" for an article which is not absolute, of the term "æther purus" for æther which is only pure in the sense of being absolute, and, as I have shown in a paper read before this Association, is, as generally met with, far from pure. Again, the employment of the term "lini farina" or "linseed flour" to a crushed seed, which is quite different from that previously known under the name. I would also take great exception to several of the synonyms introduced, which, in common with most pharmacists, I hope to see omitted in the new Pharmacopœia. Amongst these I would particularly mention Blaud's pill, which, as I hope some day to be able to show, is a most wretched substitute for the genuine article, and in no way deserves the name.

To turn now to sins which are committed by the trade, and not by the Pharmacopœia, I may mention the concentrated decoction of aloes, which I think will be found in all wholesale druggists' lists, supposed to be a preparation four times the strength of the official one. That this is impossible need hardly be pointed out when I remind you that the tincture of cardamoms alone represents more than one quarter the bulk of the unconcentrated preparation. I was recently told by a medical man that some unconcentrated supplied by myself was stronger than the concentrated 1–4 he had been using measure for measure. Another want of accuracy I find constantly committed in respect to cinchona bark. If we ask for a sample of B.P. cinchona bark we shall probably be offered a sample of scrapings or chips of red cinchona bark, containing the correct proportions of alkaloids demanded by the Pharmacopœia, but entirely different from the quills there described.

Of course we have no guarantee that such samples contain the same proportion of the other ingredients, which render the alkaloids in the quills soluble in the various menstrua employed by the Pharmacopœia. Indeed, we have every reason to expect that they will not be there, and it will not, therefore, be possible to make from them preparations containing the proportions of the alkaloids which would be obtained if the correct quill cinchona bark of the Pharmacopœia were employed, to say nothing of the astringent principles. In matters of this sort many wholesale druggists evidently think that if the required percentages of alkaloids are present the other requirements of the Pharmacopœia may be utterly ignored. There is another expression which, I think, occurs in the Pharmacopœia, although I cannot at the moment recollect where, but it certainly appears in the B.P.C. Unofficial Formulary. I refer to the directions which will be found under the head of "liquor picis carbonis," where we are ordered to digest the purified coal tar in the tincture at 120° for two days. Now, although I am a member of the Formulary Committee, I must confess that I do not know what this means. If it means that we are to keep this preparation at the indicated temperature day and night for the time named, I am afraid that none of us would undertake to make it, and if it means, on the other hand, that we are only to keep it at that temperature during the day and allow it to cool during the night it is evident that it will only be at the required temperature for much less than half the time indicated, and although in this particular instance it probably does not much matter which way the directions are interpreted, I certainly think that specific instructions should be furnished at the beginning of the Pharmacopœia as to the intention where macerations are ordered to be continued for more than, say, eight hours.

Though I cannot call to mind any specific cases of difficulty arising in the interpretation of the Pharmacopœia directions in this way, I have certainly been in difficulty more than once as to how they could honestly be carried out.

In conclusion, I would urge not only that dispensers and makers of medicine should fully appreciate the importance of the strictest accuracy in the interpretation of pharmaceutical expressions, but that our official guide, the National Pharmacopœia, should be no less explicit. I need hardly add that I have no wish to hamper improvement—very much the contrary; but I do say, let new preparations have new names.

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 391.)

Stile (Double Staining Vegetable Sections).—Bleach first in solution of chlorinated lime, and wash out with sodium hyposulphite solution (1 in 4). Make the red stain from rosaniline acetate, 0·5 grain; rectified spirit, 1 oz. For the blue stain take soluble blue, 0·5 grain; distilled water, 1 drachm; dilute nitric acid, 10 minims; rectified spirit, 2 drachms. Immerse first in the magenta from 20 to 40 minutes, then wash out with spirit, next immerse in blue stain, again wash out and drain. Clear in oil of cajuput, transfer to turpentine and mount in balsam. By clearing in xylol the section may be transferred direct to xylol balsam. The bleaching may also be effected by treating the sections with hydrogen peroxide.

Stirling (Dissociating Medium).—A 10 per cent. solution of ammonium or potassium sulphocyanide. Macerate small pieces of epithelium in this for 24 to 48 hours.

Stolba (Potassium Salts).—Sodium or ammonium fluoboride gives crystalline precipitates with potassium salts, which colour a Bunsen flame green, and afterwards violet.

Stolba (Standardising Permanganate Solutions).—Lead oxalate is used in the same way as oxalic acid to standardise permanganate solutions, the salt being first warmed with dilute sulphuric acid. 1 Gm. of lead oxalate = 0·428 Gm. of oxalic acid,

Storch (Rosin Oil).—The presence of rosin oil in oil mixtures may be detected by the production of a violet-red colour on shaking 1 or 2 C.c. of the suspected sample with 1 C.c. of acetic anhydride, allowing to stand awhile, then separating the acetic anhydride by means of a pipette and treating with a drop of concentrated sulphuric acid or, according to Morawski, acid of sp. gr. 1·53.

Storer (Chromic Acid).—An intense blue colour is produced with an ethereal solution of hydrogen peroxide.

Streuz (Sodium Salts).—Minute yellow crystals are formed on adding a solution of uranium acetate, and may be examined by polarised light under the microscope.

Stricker (Imbedding Mass).—Prepare the objects in alcohol and imbed in a concentrated solution in gum arabic in a paper case, then throw the whole into alcohol and cut after 2 or 3 days.

Strohl (Mineral Acids in Vinegar).—If free mineral acid be present no precipitate is formed on adding to vinegar a solution of ammonium oxalate, followed by solution of calcium chloride.

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* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

Struve (Blood).—Extract suspected stains with dilute caustic potash solution, filter, and add tannin. A reddish-brown coloration indicates the presence of blood and, upon acidulating with acetic acid, a precipitate will be obtained, which will yield hæmin crystals after washing and treatment with acetic acid and sodium chloride. See also Selmi's test for blood and Teichmann's hæmin crystals. Urine containing blood yields a reddish precipitate upon adding caustic soda and tannin, and subsequently acidulating with acetic acid.

Struve (Hydrogen Peroxide).—A blue colour is formed on treating with an alkaline solution of litharge and a dilute solution of lead subacetate, then testing with potassium iodide starch paste and acetic acid. The reaction requires several hours.

Stuart (Alcohol in Essential Oils).—Iodoform is formed on distilling off the alcohol, and adding compound tincture of iodine (U.S.P.), together with potash solution.

Studenski (Urobilin in Urine).—Treat 20 C.c. of urine with 2 C.c. of saturated cupric sulphate solution, saturate the mixture with crystallised ammonium sulphate, add 10 C.c. of chloroform, and shake the mixture for some minutes. The chloroform is then separated, evaporated, and the residue weighed.

Stütz (Albumin).—Capsules are filled with Fürbringer's reagent, which see.

Suchannek (Mounting Medium).—Mix equal parts of Venice turpentine and absolute alcohol, agitate frequently, and keep in a stove until clear.

Sulzer (Alcohol in Essential Oils).—See Salzer, also the same as Puscher's test.

Svanberg (Phosphoric Acid).—A yellow precipitate is produced on adding ammonium molybdate solution in large excess.

Symons (Sodium in Lithium Carbonate).—Dissolve 10 Gm. of lithium carbonate in a tared flask containing 100 C.c. of water, boil and make weight of liquid to 100 Gm. ; then take 50 Gm. and evaporate to dryness, treat with 15 C.c. of hydrochloric acid, in which sodium chloride has been dissolved to saturation. The insoluble residue is thrown on a filter and washed, first with 10 C.c. of the same salted acid, then with 10 C.c. of pure acid. Then place the insoluble residue in a tared dish, dry, and weigh. The weight multiplied by 20 equals the percentage of sodium chloride.

Taguchi (Ink Injection).—Chinese ink is well rubbed up with water on a hone until the resulting fluid does not run when dropped on thin blotting paper or form a grey ring round the drop. The preparation is injected with this fluid until it appears quite black, and it is then thrown into some hardening liquid.

Tangl (Alum Carmine).—Boil powdered carmine in saturated solution of alum for 10 minutes and filter the resulting solution.

Tanret (Albumin).—Dissolve 3·32 Gm. of potassium iodide and 1·35 Gm. of mercuric chloride in 20 C.c. of acetic acid, then dilute with water to 60 C.c. With albuminous urine this reagent yields a white precipitate which is insoluble in acetic acid. Peptones cause precipitates, which redissolve on boiling; alkaloids give precipitates which are soluble in alcohol. Compare Mayer's reagent.

Tartuferi (Silver Impregnation Method).—Place a cornea for 3 days or more in a solution of 15 Gm. of sodium hyposulphite in 100 C.c. of distilled water, kept at a temperature of about 26° C., then remove for 2 days into water containing very finely-divided silver chloride in suspension.

Tassinari-Piazza (Nitric Acid).—On treatment with potash and zinc dust ammonia is formed.

Tattersall (Cobalt).—A blood-red colour is produced on adding potassium cyanide solution till the precipitate formed is redissolved, then adding a few drops of yellow ammonium sulphide solution.

Tattersall (Delphinine).—An orange colour, changing to pink and violet, is produced on rubbing with malic acid, and then with a few drops of sulphuric acid.

Tattersall (Morphine, Codeine and Papaverine).—A dirty violet colour, changing to sea-green, is produced on dissolving in concentrated sulphuric acid and adding a little sodium arseniate. Codeine yields a blue colour when similarly treated, and this changes to orange on adding water and excess of soda. Papaverine gives a red to violet colour on treatment as above and heating, whilst the addition of water and excess of soda turns the colour nearly black.

Teichmann (Blood).—Treat 2 or 3 C.c. of a not too dilute aqueous solution of blood with a few drops of glacial acetic acid, and about 0·01 Gm. of sodium chloride. On evaporating a few drops of the mixture on a cover-glass and examining under the microscope, dark-brown rhombic needles or plates of hæmin will be visible. See also Struve's and Selmi's tests.

Terreill (Cellulose).—A blue colour appears on dipping into a 1 per cent. solution of potassium iodide, then drying, immersing in sulphuric acid and rinsing in water.

Tessier (Iodine).—In the presence of tannin, iodine is liberated by adding tincture of ferric chloride, and produces a blue colour on testing with starch paper.

Teubner (Mercury).—If mercury be present, a white stain is produced on heating the substance in a crucible and allowing the vapours given off to strike a small spot on a cold gold plate.

Thénard (Aluminium).—On igniting with cobalt salts, aluminium oxide—separated from compounds by igniting on charcoal, with the addition of sodium carbonate if necessary—is converted into Thénard's blue.

Thiersch (Carmine Injection Mass).—Dissolve 1 part of carmine in 1 part of strong solution of ammonia and 3 parts of water, and filter the solution. Then dissolve 1 part of gelatin in 2 parts of water, warm to 31° C. on a water bath, and add 1 part of the carmine solution to 3 or 4 parts of the gelatin solution. Next add acetic acid, drop by drop, stirring continually, until the ammonia is neutralised, or drive off the ammonia by heating at a temperature of 31° to 38° C. Inject at a temperature not exceeding 44° C., then cool the preparation on ice, and subsequently harden in alcohol.

Thiersch (Green Injection Mass).—The Prussian blue and lead chromate masses are mixed in varying proportions.

Thiersch (Lead Chromate Injection Mass).—Mix 4 parts of aqueous gelatin solution (1 to 2) with 2 parts of aqueous lead nitrate solution (1 to 11), and a similar quantity with 1 part of aqueous potassium chromate solution (1 to 11). Heat both mixtures to 31° C., then mix them together with continual stirring, until all the lead chromate is precipitated, after which heat on a water bath to 88° C., and filter through flannel. This mass will not keep, as the gelatin gradually becomes insoluble.

Thiersch (Lilac Borax Carmine).—Dissolve 1 part of carmine and 4 parts of borax in 56 parts of distilled water; to each volume of the solution add 2 volumes of absolute alcohol and filter.

Thiersch (Oxalic Acid Carmine).—Dissolve 1 part of carmine in 1 of strong solution of ammonia and 3 parts of water ; to each volume of this solution add 8 volumes of an aqueous solution of oxalic acid (1 : 22), then add 12 volumes of absolute alcohol and filter. The addition of oxalic acid causes the filtrate to assume an orange hue, whilst ammonia changes it to violet.

Thiersch (Oxalic Acid Indigo-Carmine).—Make a saturated solution of commercial indigo-carmine in aqueous solution of oxalic acid (1 : 22 to 30), and dilute, if required, with alcohol.

Thiersch (Prussian Blue Injection Mass).—Mix 12 C.c. of saturated aqueous solution of ferrous sulphate with 28 Gm. of aqueous gelatin solution (1 in 2) at the temperature of 31° C., then mix, at the same temperature, 24 C.c. of saturated aqueous solution of potassium ferricyanide with 56 Gm. of the gelatin solution. To the second mixture add 24 C.c. of saturated aqueous solution of oxalic acid, stir well, then add the first mixture. Stir continually, keeping the temperature at 25° to 31° C., until the whole of the Prussian blue is precipitated. Finally, heat on a water bath to about 88° C., and filter through flannel.

Thoma (Decalcification Method).—Place bones in a mixture of 5 volumes of 95 per cent. alcohol and 1 volume of pure concentrated nitric acid, and change the liquid every 2 or 3 days for 2 or 3 weeks. When decalcification is complete wash out every trace of acid in 95 per cent. alcohol containing an excess of precipitated chalk. This may take 8 to 14 days, after which the tissues may be stained and otherwise treated as desired.

Thomas (Strychnine and Morphine).—In the presence of morphine, strychnine can be separated by dissolving it in chloroform ; potash solution dissolves morphine but not strychnine.

Thompson (Theine).—A blood-red residue is left on passing a current of hypochlorous acid gas through a solution of theine and evaporating.

Thomson (Iodine).—A blue colour is produced on passing chlorine through the solution and testing with starch paste.

Thoulet (Liquid).—A solution made by dissolving 1 part of potassium iodide, and 1·239 of mercuric iodide in water, and evaporating until it has a specific gravity of 3·196, is used for the mechanical separation of powdered minerals. Compare Klein's liquid.

Thresh (Alcohol).—Convert the alcohol into aldehyde by distilling off 20 C.c. from 100 C.c. of the suspected liquid, mixed with 2 C.c. of saturated potassium bichromate solution and 8 C.c. of diluted sulphuric acid (1 : 1). On adding 3 C.c. of soda solution, boiling for a few seconds and cooling, a yellow colour will be produced.

Thresh (Alkaloids).—A reddish-brown coloration or precipitate is produced on adding Thresh's reagent drop by drop. This consists of 90 grains of potassium iodide, 90 grains of strong hydrochloric acid, and 1 oz. of solution of citrate of bismuth and ammonium, B.P. ; or 1·8 Gm. of potassium iodide, 45 C.c. of hydrochloric acid, and 30 C.c. of bismuth solution. According to another formula, 4·68 Gm. of bismuth oxide is dissolved in 80 C.c. of hydrochloric acid and water added to 300 C.c. ; then dissolve 20 Gm. of potassium iodide in sufficient water to make 700 C.c., and mix the two solutions.

Thresh (Bismuth).—An orange-red to yellow colour is produced on adding a little hydrochloric acid to the suspected liquid, followed by a little potassium iodide.

Thresh (Sulphuric Acid).—When a known quantity of barium chloride solution is added to a solution (vinegar), containing sulphates and free sulphuric acid, on evaporating the liquid and igniting there will be a loss of chlorine equivalent to the amount of free sulphuric acid present.

Thwaites (Preservative Fluid).—Saturate 1 ounce of rectified spirit with creosote, mix with chalk in a mortar, and gradually add 16 oz. of water. Next add 16 oz. of camphor water, allow the mixture to stand for a few days, and filter. Compare Bealc's modification of this fluid.

Tidy (Albumin).—(1) A white precipitate is thrown down on adding equal volumes of carbolic and glacial acetic acids, or (2) On adding to suspected urine 15 drops of alcohol, followed by 15 drops of carbolic acid.

Tidy (Oxygen Process).—(1) Acid solution : sulphuric acid, 1 volume ; water, 3 volumes ; potassium permanganate, sufficient to give pinkish tint. (2) Standard permanganate solution : potassium permanganate, 0·395 Gm.; water, 1 litre. 1 C.c. = 0·0001 Gm. of oxygen. (3) Solution of sodium hyposulphite : 1 Gm. in 1 litre of water. (4) Solution of potassium iodide, 10 per cent. Wash out the flask with strong sulphuric acid. Take 250 C.c. of the water to be examined, warm to 176° C., add 10 C.c. of permanganate solution and 10 C.c. acid solution, allow to stand in the dark at 176° for 4 hours. If the colour fades materially before that time add another 10 C.c. Then add a few drops of potassium iodide and titrate with hyposulphite solution, using starch at end. Titrate a blank experiment with 250 C.c. of distilled water ; the difference indicates the oxygen absorbed.

Tilden (Aloin).—To aloin or powder aloes on white porcelain add nitric acid ; no change of colour indicates socaloin ; crimson colour, nataloin or barbaloin. To another portion add sulphuric acid with the fumes of nitric acid, a blue colour indicates nataloin and no blue colour, barbaloin.

Tilden (Iodine).—Potassium permanganate liberates iodine from its combinations, and it may then be tested for as most convenient.

Tocher (Sesame Oil).—Dissolve 2 Gm. of pyrogallol in 30 C.c. of hydrochloric acid (? sp. gr. 1·19), and shake 15 Gm. of this solution with an equal volume of oil. After standing awhile, remove the acid layer with a pipette and warm for 5 minutes, when a blueish-red colour should appear if sesame oil be present. Compare Baudouin's reaction.

Tollens (Aldehyde).—This test depends upon the reduction of a solution of 3 parts of silver nitrate in 30 parts of ammonia, to which a solution of 3 parts of caustic soda in 30 parts of water has been added. A silver mirror is formed.

Tollens (Glucose).—Precipitate silver nitrate solution with caustic potash, and add just enough ammonia to dissolve he precipitate formed. This solution is reduced by glucose.

(*To be continued.*)

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, NOVEMBER 3, 1897.

Present :

Mr. Walter Hills, President.
Mr. G. T. W. Newsholme, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Hampson, Harrison, Martindale, Savory, Southall, Symes, Warren and Young.

The minutes of the last meeting were read and confirmed.

The Jubilee Medal.

Mr. Bottle said before the business on the agenda was proceeded with, he desired to make a few observations which he had been requested to make on behalf of his fellow members of the Council. He had been requested to say what he was going to say, not because he had any particular eloquence to throw into his remarks, but rather because he happened to be the oldest member of the Council. He desired to congratulate the President in his own name and in the name of the Council for the high honour Her Most Gracious Majesty had been pleased to confer upon him in the presentation of one of the Jubilee Medals. It was felt that not only was the honour well deserved by the President personally, but it was also looked upon with gratification as some recognition of the good service the Society had rendered during Her Majesty's reign. He (Mr. Bottle) could carry his recollection back to the original charter ; it was not his privilege to be on the Council at that time, though he joined not very long after, and he had watched with very great satisfaction the progress that the Society had made during the time that Mr. Hills had had the honour of filling the presidential chair. Her Majesty had been pleased to recognise the ability and devotion with which the President had fulfilled the office, and it was hoped that he might be spared to continue the good work that he had so ably carried out.

The President thanked Mr. Bottle very heartily for his congratulations, and also the Council for the sympathy with which they had received Mr. Bottle's kind remarks. He would leave the personal question, because the Council were always very kind to him in the remarks they made from time to time. They were all conscious, and no one more than himself, that to one of their members particularly this honour would seem to come more naturally, but it so happened that he (Mr. Hills) was President during this eventful year, and therefore to him had come that honour, which he valued very much. He would take this opportunity of thanking his many friends throughout the country who, either personally or by letter, had conveyed their congratulations to him. He also wished to emphasise what Mr. Bottle had said as to the presentation of this medal being a recognition in the very highest quarter of the good service which had been rendered to the public and to the State by the Pharmaceutical Society, and he thought that everyone associated with the Society might feel gratified that such an award had been made.

The Late Duchess of Teck.

The President said before commencing the business of the day, he could not help saying a word with regard to a matter which he was quite sure was in all their thoughts, namely the mournful scene which was being enacted that morning in St. George's Chapel, Windsor. He felt sure he should be acting in accordance with the wishes of his colleagues in giving expression from the chair on their behalf to the deep sorrow they all felt at the lamented death of the Duchess of Teck. In her life and character were combined amiability and cheerfulness as well as that practical sympathy with the position of the friendless which they always associated with the idea of a true and noble woman. The nation was very much poorer by her death, and he was convinced that all connected with the Society shared in the nation's grief. Their heart-felt sympathy was with the Duke of Teck and the family in their bereavement, as well as with her Majesty the Queen and the members of the Royal family.

The Late Mr. Bower.

The President announced the death, since their last meeting, Mr. W. Bower, pharmaceutical chemist, of Tottenham Court

Road. He had been a member of the Society since 1852, and served the office of auditor in 1856, and again in the seventies, and they must all regret to hear of his death.

Diplomas.

The undermentioned, being duly registered as pharmaceutical chemists, were respectively granted a diploma stamped with the seal of the Society :—

Allen, Samuel Joseph.
Bell, Arthur Henry.
Davies, Percy.
Kerruish, Thomas Maltby.
Thompson, Sidney Cooke.

Election of Associate in Business.

Henry Lionel Hunt, of Reading, having passed the Minor examination, being in business on his own account, and having tendered his subscriptions for the current year, was elected an "Associate in Business" of the Society.

Election of Associates.

The following, having passed the Minor examination and paid as Studcnts their subscriptions for the current year, were elected "Associates" of the Society :—

Casscls, Thomas Henry ; Southend.
Castelow, Walter Thomas ; Leeds.
Davidson, George Graham ; Dundee.
Eaton, Henry ; Lutterworth.
Evans, John Richard ; Brierley Hill.
Francis, H. St. David ; Walthamstow.
Harrison, Sarah Susannah ; London.
Henderson, Henry John ; Lowestoft.
Jones, John Lee ; Ebbw Vale.
Lister, Frederick Spencer ; Cambridge.
Measday, Charles Stafford ; Deal.
Neale, Cecil ; Leicester.
Page, Harry ; Southwark.
Price, Arthur Henry ; Brighton.
Roberts, Frederick Walter ; Bexhill.
Saunders, John ; Worthing.
Thwaits, George Rose ; Edinburgh.
Turnbull, Charles Stevenson ; Greenock.
Ullett, Frank ; Ilminster.
Williamson, Edward ; Guisbro'.

Restoration to Register.

The name of the following person, who has made the required declaration and paid a fine of one guinea, was restored to the Register of Chemists and Druggists :—

Walter Bignold, 45, Falcon Road, Battersea, S.W.

Report of the Finance Committee.

The Secretary read the report of this Committee, which recommended the payment of sundry accounts.

The President, in moving the adoption of the report and recommendations, said there was nothing in them to which he need call special attention. He should like, however, to mention that during the month they had received from Mr. Chas. Maw another donation of 100 guineas to the Benevolent Fund, making a total sum received from him of 400 guineas. He would also mention with great pleasure that the Executive of the Glasgow meeting of the British Pharmaceutical Conference had given £10 to the Benevolent Fund and £5 to the Orphan Fund. Their thanks were due to their friends in Glasgow for so kindly helping both these Funds.

The report was unanimously adopted.

Report of the Benevolent Fund Committee.

The report of this Committee included a recommendation of grants to the amount of £76 in the following cases :—

The widow (68) of a member (1870–89) who has had a grant annually for the last fourteen years. (London.)

The widow (62) of a member and annuitant. (Southend.)

The widow (64) of a chemist and druggist, who has had assistance from the Fund annually for several years. (Crewe.)

The widow (53) of an associate who had three grants previously to his death in 1893, and applicant herself had a grant last year. She has seven children, four dependent on her. (Bangor.)

A registered chemist and druggist and subscriber (65), who has had three previous grants. He can only obtain employment intermittently. (Shirley.)

A registered chemist and druggist (74), who with his wife is entirely dependent on an allowance made him by a sister. (London.)

The widow (63) of a registered chemist and druggist, whose case was deferred last month for further information. (Auchterarder.)

Another case, which was deferred last month, was further adjourned for additional particulars.

The Vice-President moved the adoption of the report and recommendations, which was at once agreed to.

Benevolent Fund Investments.

The President moved—

"That the President, Vice-President, the Treasurer, and Mr. Carteighe, with the assistance of Mr. E. Butt, be appointed a Freehold Investment Committee, with power to take all necessary steps to purchase suitable ground rents when opportunity occurs, on the Benevolent Fund account."

There was now about £6000 on the Donation account invested in Consols, and it was considered advisable that at any rate a portion of this sum should be invested in freehold ground rents similar to those already held. It should be understood that these investments were rapidly picked up, and it was desirable to have a committee composed mainly of those resident in London, which should have power to deal promptly with any suitable investment which might offer itself. He hoped therefore that the resolution would be adopted, leaving the committee, with the valuable assistance of Mr. Butt, to take all necessary steps to effect a purchase if it were not possible to bring the matter before the Council.

Mr. Carteighe said they were fortunate in getting Mr. Butt to act with them in this matter. He should like to issue a word of caution to the Council in regard to what they might expect. During the time he was President he was able to induce his colleagues to convert the Consols which were then standing to the credit of the Benevolent Fund, and paying something less than 3 per cent., into a freehold ground rent property, which, allowing for all the expenses of purchase and law expenses, brought in to the Fund 4 per cent. net. He was sorry to say that during the last few years there were other people besides themselves looking after ground rents, and consequently they might not be so successful as they had been hitherto, but he hoped they would get an increase over the interest derived from Government stock.

Mr. Symes said he remembered the time when Mr. Carteighe was anxious to bring about the result to which he had referred. At that time there were some members of the Council who thought the proposed change of investment was not desirable. But now they had had some years' experience of getting larger dividends, and thereby being better able to relieve distress, he thought they should recognise the fact that it was owing to the past President's foresight in bringing about such a result.

The President remarked that it was also a matter of satisfaction that Mr. Carteighe was on the Committee.

The resolution was passed unanimously.

Library, Museum, School, and House Committee.

The report of this Committee stated that the report of the Librarian had been received, including the following particulars :—

	Attendance.	Total.	Highest.	Lowest.	Average.
July	Day	214	16	1	8
	Evening	67	7	1	3
August	Day	55	6	0	2
September	Day	95	12	1	7

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
July	136	63	73	10*s.* 4½*d.*
August	117	30	87	16*s.* 4*d.*
September	134	39	95	19*s.* 6*d.*

The Librarian reported that, at the annual revision, Owen's 'Materia Medica,' 1883, was missing.

Several donations had been received (*Ph. J.*, October 16, p. 350), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended the purchase of the undermentioned books for the Library in London :—

'Flora Capensis,' vols. 4, 5, and 6.
'Thoms, Die Arzneimittel der organischen Chemie,' 2. Aufl., 1897.

The Curator's report had also been received, and included the following particulars :—

	Attendance.	Total.	Highest.	Lowest.	Average.
July	Day	313	25	3	12
	Evening	38	5	1	2
August		71	7	0	0
September		127	20	0	0

Several donations had been received (*Ph. J.*, October 16, p. 350), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee recommended the re-appointment of Mr. Carteighe as Visitor to the School of Pharmacy. The report stated that Mr. J. Lloyd Williams had resigned the position of Demonstrator of Botany, and recommended, after consultation with Professor Green, the appointment of Mr. E. C. Horrell as Demonstrator. Mr. Thomas Hanbury had written offering to place at the disposal of the Society further copies of 'Science

Papers.' It was also recommended that a copy of the Journal be sent to the Director of the Missouri Botanical Gardens each week.

The PRESIDENT, in moving the adoption of the report, said there was nothing special that he need call attention to. He would refer to the fact that the Registrar reported that thirty-one students had entered for the elementary course, and twenty for the advanced course, exclusive of the Bell Scholars, but since the meeting of the Committee, there had been further additions to their official list, and he was able to say that the total number of students, according to the books in the office, was sixty-two. That he thought was very satisfactory.

The report and recommendations were unanimously adopted.

LAW AND PARLIAMENTARY COMMITTEE.

The PRESIDENT, replying to Mr. Corder, said the Law and Parliamentary Committee had met twice and debated for some time on a draft Bill which was submitted to them. He hoped by the next meeting of the Council they would have something to offer which would meet with the approval of the Council.

REPORT OF EXAMINATIONS.

October, 1897.

	Candidates.		
	Examined.	Passed.	Failed.
England and Wales :—			
Major	12	5	7
Minor	176	46	130
Scotland :—			
Minor	117	36	81
FIRST EXAMINATION	250	128	122

Twenty-eight certificates by approved examining bodies were received in lieu of the Society's examination.

EXAMINATIONS IN 1898.

It was resolved, on the motion of the President, that the Boards of Examiners meet to conduct the oral portion of the Major and Minor examinations in January, April, July, and October, 1898, or as near thereto as convenient.

It was also resolved on the recommendation of the Boards of Examiners, that the matriculation certificate of the University of Wales be added to the list of certificates which the Boards are empowered to receive in lieu of the Society's First examination.

REPORT OF THE GENERAL PURPOSES COMMITTEE.

Local Secretaries.

That portion of the report of the General Purposes Committee which dealt with the appointment of local secretaries was read. It recommended the appointments, a list of which appears at p. 416*d*. In the following districts, from which no nominations had been received, the Committee recommended that the nominations be deferred for a month in order that the Secretary might communicate with the present holders of the office with a view to elicit information for the guidance of the Council in dealing with such centres :—

List of Districts in England and Wales from which no Nominations for Local Secretaries have been Received.

Andover.
Ashford.
Brentford.
Burton-on-Trent.
Chertsey.
Coventry.
Dartford.
Darwen.
Devizes.
Dolgelly.
Epping.
Faversham.
Flint.
Hanley.
Houghton-le-Spring.
Ilfracombe.
Keighley.
King's Lynn.
Llandudno.
Llanrwst.
Longton.
Lowestoft.
Newmarket.
Pembroke Dock.
Pontefract.
Ramsey (Hunts).
Richmond (Yorks).
Romford.
Ross.
Rugby.
Runcorn.
Shipley.
Southend-on-Sea.
Stalybridge.
Stowmarket.
Stratford.
Stroud.
Sydenham.
Tamworth.
Taunton.
Uxbridge.
Walsall.
Wellington (Somt.).
Westbury.
West Ham.
Whitby.
Wokingham.
Wycombe.

The PRESIDENT, in moving the adoption of this portion of the report, said it would be noticed with regret that from a number of towns in England and Wales no nominations had been received, and the Committee, after a long discussion, made the recommendation which had been read. Twelve months ago he called attention to this matter, and expressed his regret that there should be such apathy in many parts of the country. He then said, and would repeat, that it did not necessarily follow because no nomination had been received that no interest was taken in the Society, because it was quite possible that the members and associates in the neighbourhood were so satisfied with the conduct of the present holder of the office that they might not think it worth while to vote, whilst the present secretary did not like to vote for himself. Still, it was probable that in many cases it was a sign of apathy. He must add that there were a large number of places from which only one nomination had been received, and others from which there were only two, all of which were included in the list of appointments now submitted. He, therefore, thought the Committee came to a wise decision in recommending that the appointments should be deferred in cases where no nomination had been received, in order that some information might be obtained as to the causes of this unfortunate condition of affairs. The Committee would then have to consider whether any appointment should be made in any or all of those centres. He had before him a list of the duties which local secretaries were asked to perform, and it was possible that some of them might be somewhat irksome, but it was open to the local secretaries to write to the Council about such matters, and to the latter to make any alterations which might appear desirable. They could not expect to find an ideal local secretary in every district, but he did think local secretaries might show an interest in at least one department of their duties. One might be particularly interested in the Benevolent Fund, and another more particularly in the political aspect of matters, but when a man showed no interest in any one branch of the work he was asked to do he confessed he thought it was time that someone else was found who would do the work more satisfactorily. At the same time the Council were deeply indebted to many gentlemen throughout the country who did take a great interest in the work of the Society.

Mr. CROSS referred to the fact that last year he was fortunate enough to carry a resolution referring this subject to the Committee. The work of the Council during the past year had been very heavy, and they had never been able to get the matter on a satisfactory footing to deal with it, but he was happy at the decision arrived at last night, by which the matter would be taken notice of in the office. There would have to be a number of letters written from the office to those places where the apathy was apparent, therefore no light task would fall on the office. If their list of local secretaries wanted revision, and they had down some small places which were hardly likely to send representatives to the Society, the thing would be very different, but in the list there were some towns of considerable importance, towns in which one would feel almost in despair if one thought that any legislative attempt on the part of the Council would be looked upon with mere apathy, and they had no representative to stir up local chemists to assist them in what was undertaken on their behalf in Parliament. Therefore he did hope that when their country friends read the proceedings of the Council that day they would feel themselves bound to at once set themselves to consider this matter, and that when they met again in December they would have a goodly correspondence to consider from all the centres. He could not but think that the step taken by the General Purposes Committee would be of great benefit.

Mr. YOUNG said the President had drawn attention to what was a growing and serious evil, and before long the attention of the Council would have to be given to the matter. Apart from the extraordinary apathy with reference to their own members, they had the fact that there was a great difficulty in getting anyone to accept the position of local secretary. They had always had occasion to complain of the extraordinary apathy of outsiders, but on this occasion it was with their own members that they had to find fault, but at the same time it was only part and parcel of the stupendous apathy that pervaded the pharmaceutical atmosphere. He was not prepared to suggest any scheme to remedy the evil, but before long they would have to consider whether it would not be advisable to appoint a paid official, whose business it should be to take up the work that was done by the local secretaries. For instance, a paid official appointed for the district of Lancashire, who could cover all the gigantic populous towns of that district, he was perfectly persuaded would do more than the voluntary efforts of their entire local secretaries together. He did think that the time had arrived when they would find that their scheme of local secretaries was a hopeless break-down, and they would have to go to paid officials.

Mr. Atkins hoped what was said on this matter would be carefully considered by all their friends in the country. Ever since he had been on the Council this matter had cropped up every two or three years, and he feared it was a growing difficulty. Again and again the question had been raised, but the burden had not been alleviated one iota. What the solution would be he did not know. Whether it would assume an absolute reversal of the present policy of appointment from headquarters, he would not attempt to foreshadow, but at present the work was not being properly done in many parts of the country. He was amazed last evening when he read the list to find the names of towns with large populations and large centres of political activity from which there was absolutely no nomination. He could understand that in a large place the amount of work to be done was rather appalling, and men might be afraid of it; on the other hand, there were numbers of smaller towns in which that reason could not apply. He thought probably a number of places where the members of the craft were few, and there was no activity existing, ought to be deleted from the list; but in some of the towns he trusted they would be able to arouse an interest which did not at present appear to exist. Sooner or later he believed the whole question would have to be taken up *de novo*.

Mr. Harrison said there appeared two views on this question. First, that in some places there was a difficulty in getting men to take office owing to the amount of work to be done; and secondly, that there were scattered districts in which there was hardly any work to be done. He was surprised to find that some towns of considerable importance had made no nomination, but, on the other hand, there were country districts where it might easily be accounted for. He would refer to one with which he was well acquainted, in the county of Durham, which might represent many others. As far as he could remember there were eight chemists' establishments, but six of them were owned by one man, so that there were only three individual chemists in the whole district. He was not surprised to find that the gentleman who owned the six shops had not been nominated, or that neither of the other two were. Possibly if the members in such a district were incorporated with the nearest large town it would be better. Isolated members in country places had great difficulty in meeting together, none of them being big enough to attract other men to him to discuss pharmaceutical matters, but if they were invited to the nearest large town, they might be inclined to come, and greater activity might be aroused. There would be less risk of those small jealousies arising which tended to keep people apart.

Mr. Hampson felt quite sure that the present scheme of local secretaries would have to be altered. It had suffered from weakness for many years, and it now appeared as if a collapse was imminent, at any rate, there were symptoms of a moribund state. Remembering what was required of these gentlemen, and the general condition of affairs, he thought scarcely any other result could be expected. It was a finely constructed scheme, initiated by Jacob Bell, and it was surprising to him that it had lasted so long. There was not sufficient cohesion in the particles to make it possible to carry out satisfactorily. He thought very likely the suggestions of Mr. Young might be the solution of the difficulty.

The Vice-President said he was glad of the discussion which had taken place. He did not agree with the gloomy view which the Treasurer took of the matter. He had always thought that the great fault of the system was the want of touch with headquarters. The local secretaries were too far away and were not constantly in touch with the London office, as they should be. Some time ago it was suggested that the local secretaries should be brought up to London once or twice a year, but that was too big an undertaking. He believed that during the next few months something would be done in the matter, and if they were to go into the thing properly they might devise some system which would work beneficially.

The President could not agree with the Treasurer in the gloomy view which he took. He hardly regarded it as a collapse, but it seemed to him that they were just pulling themselves up and taking stock of the present condition of things, and he hoped that possibly they would be able to restore a little more vitality to the system. He was rather surprised to hear from one or two of his friends that they had objections to the present system, which seemed to be in accord with the general feeling of the community in other matters, that there should be a process of decentralisation in all these matters, and that every encouragement should be given, as far as possible, to create interest in the different districts of the country. However, they were all desirous, if possible, to make this system a successful one. He (the President) much preferred to have unpaid work for the Society to any condition involving a paid peripatetic secretary or representative. He was sure they would all be in accord with the suggestion that had been made that they should find out a little more about the districts from which no names had been received, and he was certain by the end of the month they would know a little more than they did now.

The resolution was passed unanimously.

First Examination.

It was resolved, on the motion of the President, that superintendents of written examinations be appointed at the following centres, and that the appointments be offered to the local secretaries at those centres. The list of centres at which examinations had been held during the past three years, with the number of candidates at each centre, was ordered to be entered on the minutes.

List of Centres and Table of Attendances of Candidates at each Centre.

CENTRES.	1895. Jan., Apr., July, Oct.	1896. Jan., Apr., July, Oct.	1897. Jan., Apr., July, Oct.	Total number of attendances at each centre at 12 examinations.
ENGLAND AND WALES.				
Birmingham	67	85	65	217
Brighton	18	22	14	54
Bristol	26	29	23	78
Cambridge	13	27	12	52
Canterbury	6	10	15	31
Cardiff	40	32	19	91
Carlisle	40	41	54	135
Carmarthen	40	50	35	125
Carnarvon	15	20	15	50
Cheltenham	11	10	15	36
Darlington	26	18	25	69
Exeter	15	22	11	48
Hull	25	36	27	88
Lancaster	24	26	28	78
Leeds	69	84	78	231
Lincoln	17	20	32	69
Liverpool	76	72	80	228
London	154	121	109	384
Manchester	125	138	119	382
Newcastle	57	72	50	179
Northampton	14	13	12	39
Norwich	20	18	15	53
Nottingham	52	47	57	156
Oxford	20	17	7	44
Penzance	13	12	7	32
Peterborough	27	9	14	50
Plymouth	11	14	19	44
Sheffield	24	16	18	58
Shrewsbury	22	25	16	63
Southampton	39	31	26	96
York	29	18	15	62
SCOTLAND.				
Aberdeen	53	69	80	202
Dundee	31	42	47	120
Edinburgh	106	136	126	368
Glasgow	73	106	105	284
Inverness	16	18	12	46

Total number of attendances at 3 examinations.

Douglas, I. of Man	7
Guernsey	4
Jersey	3
Kirkwall	5

Medicine Stamp Duty.

Dr. Symes then moved, pursuant to notice—

"That the Law and Parliamentary Committee be requested to consider the bearing of the Medicine Stamp Act in the sale of mixed or compounded drugs unstamped, by persons other than those exempted by that Act, and to report to this Council thereon."

He said although the chief duty of the Society was the administration of the Pharmacy Act, still the Society existed before that

Act, and contemplated other work. For instance, one of the objects of the Society was to protect and further the interests of its members, and in so doing they no doubt benefited the whole trade. Different presidents of the Society had pointed out how desirable it was that all should join the Society, and more recently it had been impressed on the minds of all that it was the only Society which had any legal status. If he showed that this was a matter worth looking into, it would be evident that they were the only body who could do anything in the matter. Looking round at some of the difficulties with which they were beset in their calling, he always felt that the Medicine Duty Act had been rather a hardship to their craft, and he had an idea that sooner or later it ought to be repealed. On mentioning this to Dr. Paul, that gentleman had remarked that the repeal of the Act would not be altogether an unmixed blessing. The original Act, passed in 1783, contemplated merely attacks on quack medicines, and it specially exempted from the operation of the Act surgeons, apothecaries and chemists or druggists. It really taxed the sale of these quack medicines by others than those who were naturally supposed to sell them. There had been a number of Acts passed from time to time, and he had not had an opportunity of perusing them all. The first Act passed did not bring in anything like the revenue that was contemplated, and consequently its powers had been very much enlarged, so that it was very difficult always to keep outside the operation of the Act. It had become, in fact, a Drugs Act, and its provisions seemed to include all drugs that were recommended for the cure and relief of disease. The inference that it was so might be gained from the exemptions. After bringing very nearly all drugs within its scope it went on to quote certain exemptions; the one to which he wished particularly to call attention was the following:—

> "And also all mixtures, compositions, or preparations whatsoever mixed or compounded with or prepared from medicinal drugs, medicated or chemical preparations or compositions, or other ingredients bearing different denominations, or having different properties, qualities, virtues, or efficacies, which shall be uttered or vended by any such surgeon, apothecary, chemist, or druggist, as aforesaid."

It seemed that it only exempted from the operation of the Act ordinary mixtures of drugs, such as compound tincture of rhubarb, so long as they were sold by the persons mentioned, and if they were sold by any other person, that they should be stamped with the duty stamp. The sale of compound drugs should be more or less in the hands of qualified persons, and if the Act meant what he thought it said, then it did do a great deal towards bringing the sale of all compound drugs into the hands of qualified persons. Though they might not have appreciated the importance of that, he was sure that a vast number of their members throughout the country would feel that their business would be materially benefited, and not only so, but the public would get better served if the sale were conducted by the persons referred to.

Mr. Bateson, in seconding the resolution, said there had been a feeling on the part of some as to the wisdom of discussing this business in open Council. Some of them had a contempt for the "patent medicine" trade, but in many places it formed a very important part of the chemist's business, and he thought Dr. Symes was quite justified in the action he had taken in bringing the matter forward.

Mr. Carteighe suggested that the matter should be referred to the Committee without discussion. He should be only too glad if any useful result were attained. At any rate, it would be a good thing if the report presented showed their friends in the country that they did know what they were talking about. Mr. Bateson, perhaps, did not quite understand the question when he referred to a sort of contempt which some people felt for the "patent medicine" trade. There was nothing of that sort in his mind. The difficulty lay in the fact that this Stamp Act was passed for the purpose of raising revenue. The Legislature did not consider any particular class of the community. His conviction was that anomalous as the provisions of the Act were, and vexatious as they sometimes appeared, on the whole they were beneficial to the trade. He did not represent any particular branch of the community; he might be called a man of science, but at any rate he would never assist in doing an injury to his brethren in the trade. A large part of the difficulties felt by their brethren in connection with this subject arose from the unfortunate discussion of it in the *Pharmaceutical Journal* some thirty years ago. Chemists who lived in the country used to pay only small licence duty, but those who lived in towns paid more. They paid £2, whilst in the country it was only 10*s.*, and a series of letters appeared in the *Pharmaceutical Journal* calling attention to this as a great injustice. Now there were several ways of remedying an injustice. If he had a sovereign and one of his colleagues had not, the latter might think it an injustice, and one way of remedying it would be for him to take his sovereign, or half of it, and walk away with it. The other way was for some third person to take the sovereign from him, and then leave them both equal. He hoped Dr. Symes would see the application of that. The authority which had charge of these Acts very smartly accepted the suggestions of the writers in the *Pharmaceutical Journal*, and remedied the grievance complained of by reducing the licence to 5*s.* everywhere, and from that moment the chemist and druggist began to lose the sale of these articles. Anyone in a town could afford to pay 5*s.* for a licence, and from that moment commenced the great trade in proprietary articles by so-called stores. He did not want to see the same sort of thing repeated, and therefore he did not want any discussion to take place there, which would simply play into the hands of the officials of the Revenue Department. He therefore hoped the matter would be at once referred to the Committee, which would present a report, the effect of which would be to educate those who had not taken as much trouble as he had to master the subject. He hoped his position would not be misunderstood. No one would do more for the benefit of the trade than himself, but if a thing was impossible it was absurd to blame the Council for not doing it. This was a subject bristling with difficulties and risks, and he therefore deprecated any further public discussion until it had been thoroughly thrashed out and reported upon by the Committee.

Dr. Symes said that would quite accord with his wishes.

The President said he quite agreed with Mr. Carteighe so far as he understood the subject. He did not pretend to be an expert in the matter, though he had been trying to master these Acts since he had seen the notice of motion. He felt that there was some difference contemplated between the simple drug and the compounded drug, and that there was some difference contemplated between qualified and unqualified persons, but that was about as far as he could get. Whether the result of the reference would be of any practical advantage to the trade, time only would show, but he thought that it would be better not to discuss the matter further at present.

The resolution was then put and agreed to unanimously.

Correspondence.

The President said a communication had been received from Mr. Lionel Scott, clerk to the Salters' Company, saying that the Court of Assistants had met on August 5 and approved the appointment of Mr. Thomas Tickle as Salters' Fellow in the Research Laboratory of the Pharmaceutical Society for the ensuing year. He had also received a letter from Mr. Pater, on behalf of the Sheffield Pharmaceutical and Chemical Society, thanking him for his visit to Sheffield. He did not propose to read the letter, but he wished to express the great gratification he felt in having had the opportunity of visiting that great town. He found many who, contrary to what he had said that day about other districts, appeared to be thoroughly interested in the advancement of pharmaceutical interests in their widest sense, and was received with great kindness, consideration, and hospitality. It would be invidious to mention names, but he could not help referring to his excellent friend, the Vice-President, who was good enough to entertain him, to Mr. George Squire, the new President of the Society, a young man with plenty of energy and great interest in the advancement of their calling, and to Mr. Pater. There were many other gentlemen whose names he should like to mention, to one and all of whom his thanks were due, not only on his own behalf, but that of the Council, as of course he went in a representative capacity as their President.

The Council then went into Committee to consider the legal portion of the report of the General Purposes Committee, which included the usual letter from the Solicitors, and dealt with a number of cases of alleged infringement of the Pharmacy Acts. On resuming, the report and recommendations were adopted unanimously, and special resolutions were passed authorising the Registrar to take proceedings against the persons named.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

POTASSII BROMIDUM.—When bromine is added to caustic potash solution, bromide and hypobromite of potassium are first formed : —

$$6KHO + 6Br = 3KBr + 3KBrO + 3H_2O.$$

This mixture changes on heating into bromide and bromate :—

$$3KBr + 3KBrO = 5KBr + KBrO_3.$$

The bromate may be converted into bromide (compare action of heat on potassium chlorate) by evaporating the solution and heating the residue ; the reduction to bromide is effected more rapidly and at a lower temperature by ignition with excess of carbon—

$$KBrO_3 + 3C = KBr + 3CO.$$

In the official tests addition of tartaric acid solution precipitates potassium acid tartrate (compare potassii acetas)—

$$KBr + H_2C_4H_4O_6 = KHC_4H_4O_6 + HBr.$$

The solution of potassium bromide treated with chlorine yields free bromine—

$$KBr + Cl = KCl + Br.$$

Chloroform dissolves the bromine forming a red solution. Absence of iodide is proved by the non-production of blue iodide of starch when the solution is mixed with starch mucilage and bromine, or chlorine water, either of the latter elements setting free iodine from iodides. Production of only slight opacity when mixed with saccharated lime water shows absence of more than traces of carbonate of potassium which would precipitate calcium carbonate

$$Ca(OH)_2 + K_2CO_3 = CaCO_3 + 2KHO$$

as in making liquor potassæ. Carbonate of potassium might be present if insufficiency of bromine had been used in manufacture. In this case the excess of potassium hydrate would absorb carbonic anhydride during the subsequent operations, becoming thereby converted into carbonate. Presence of potassium bromate, through insufficient incineration of the mixture of bromide and bromate, produced in the first stage of manufacture, is indicated by a yellow coloration (due to the production of free bromine) when diluted sulphuric acid is added to an aqueous solution of the salt. If the potassium bromide be pure, the diluted sulphuric acid will merely liberate a certain amount of hydrobromic acid. In the case of *pure* potassium bro*mate*, also, no obvious change occurs on the addition of diluted sulphuric acid, colourless bromic acid being produced. But in a mixture of bromide and bromate the two corresponding acids, hydrobromic and bromic, react with production of water and free bromine—

i.) $KBr + H_2SO_4 = HBr + KHSO_4$ (no colour)
ii.) $KBrO_3 + H_2SO_4 = HBrO_3 + KHSO_4$ (no colour)

but

(iii.) $5HBr + HBrO_3 = 3H_2O + 6Br$ (yellow colour)

Note that the presence of *both* bromide and bromate is necessary for the production of free bromine by addition of *diluted* sulphuric acid. If *strong* acid be employed, free bromine may be obtained from pure bromide, but this is due to a secondary reaction between the hydrobromic and (strong) sulphuric acids. This furnishes an example of a reaction in which sulphuric acid acts as an oxidising agent, the hydrogen being removed from the hydrobromic acid, and the sulphur*ic* reduced to sulphur*ous* acid.

(i.) $2KBr + H_2SO_4 = 2HBr + K_2SO_4$
(ii.) $H_2SO_4 + 2HBr = H_2SO_3 + H_2O + 2Br$

Another impurity sometimes found in potassium bromide is lead, derived from lead pans in which the salt may have been crystallised. It may easily be detected by the formation of black lead sulphide in the usual way.

POTASSII CARBONAS.—The commercial salt contains traces of impurities besides 16 per cent. of water. The latter is expelled by heating to redness. Note the stability of the alkaline carbonates K_2CO_3 and Na_2CO_3 at a red heat. Nearly all other carbonates are easily decomposed, and yield a residue of oxide, *e.g.*,

$$CaCO_3 = CaO + CO_2$$
$$ZnCO_3 = ZnO + CO_2.$$

POTASSII CHLORAS.—When chlorine is passed into a solution of caustic potash a mixture of chloride and hypochlorite of potassium is obtained (compare calx chlorinata)—

$$6KHO + 3Cl_2 = 3KCl,KClO + 3H_2O,$$

and when the solution is boiled the hypochlorite is decomposed, forming chloride and chlorate—

$$3KCl,KClO = 5KCl + KClO_3.$$

The two salts may be separated by crystallisation, the chloride being much more soluble than the chlorate. It is more economically prepared by boiling a solution of chlorinated lime—which, like the corresponding potassium compound, forms chloride and chlorate of calcium—with the native potassium chloride when potassium chlorate is formed—

$$Ca2ClO_3 + 2KCl = 2KClO_3 + CaCl_2,$$

and crystallised out from the easily soluble by-product, calcium chloride. If potassium chlorate be heated only to about its fusing point, a portion only of the oxygen is evolved—

$$2KClO_3 = KClO_4 + KCl + O_2.$$

By submitting it to a higher temperature the whole of the oxygen is evolved, leaving potassium chloride. It may also be reduced to chloride in aqueous solution by the action of nascent hydrogen, obtained by adding sulphuric acid and zinc—

$$KClO_3 + 6H = KCl + 3H_2O.$$

WHAT IS A SALT?

The term "salt" was originally applied to the residue obtained by the evaporation of sea-water. It was later applied to designate substances of a similar nature which, like salt from sea-water, were capable of separation into two distinct parts—a basylous and an acidulous radical, and from this idea arose the definition that a salt was a substance obtained by the combination of an acid and a base. The acids and bases, therefore, were not, under this definition, considered to be salts, but placed in a separate category. As the chemical constitution of substances came to be better understood, however, it was seen that there was no essential difference between the constitution, *e.g.*, of hydrochloric acid and potassium chloride, especially when the solidification of hydrogen and the formation of alloys of hydrogen with metals like palladium furnished evidence of the metallic nature of the element hydrogen. Bases also exhibit, on consideration, the same kind of analogy to salts. For potassium hydroxide may be regarded as composed of the metal potassium combined with the radical hydroxyl. The term salt now includes both bases and acids, and its signification has been rendered much clearer by recent investigations on the condition of matter in solution. These tend to confirm the view that salts may be regarded as binary compounds of the general formula $MxRy$, in which M stands for any electro-positive group or metal and R for an electro-negative element or acidulous radical. When dissolved in water substances of this nature undergo more or less dissociation into their ions M and R, which carry electrical charges equal in quantity, but of opposite sign.

MOUNTING HERBARIUM SPECIMENS.

A matter of the first importance after drying herbarium specimens is to poison them to prevent the attacks of insects. This is done by brushing them over on both sides, using a camel's hair pencil, with a solution of 2 grains of corrosive sublimate to an ounce of methylated spirit. In tropical climates the solution is generally used of twice this strength. There are several methods of mounting them. Leaves with a waxy surface and coriaceous texture are best stitched through the middle after they have been fastened on with an adhesive mixture. Twigs of leguminous trees will often throw off their leaflets in drying. This may in some measure be prevented by dipping them in boiling water before drying, or if the leaves are not very rigid, by using strong pressure at first, without the use of hot water. If the specimens have to be frequently handled the most satisfactory preparation is Lepage's fish glue, but a mixture of glue and paste with carbolic acid added is used in some large herbaria. The disadvantage of using glue, gum, or paste, is that it is necessary to have some of the leaves turned over so as to show the under surface of the leaf, and some of the flowers and seeds placed loose in envelopes on the same sheet for purposes of comparison or microscopic examination. Another plan is to use narrow slips of gummed, stiff but thin, paper, such as very thin parchment paper. These strips are either gummed over the stems, etc., and pinched in round the stem with forceps, or passed through slits made in the sheet and fastened at the back. If the specimens are mounted on cards and protected in glass frames, stitching in the principal parts with grey thread produces a very satisfactory appearance.

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LONDON: SATURDAY, NOVEMBER 6, 1897.

THE COUNCIL MEETING.

At the opening of the meeting last Wednesday Mr. Bottle rose before the business on the agenda was entered upon, and said that, as the oldest member of Council, he had been requested by his colleagues to express to the President their joint congratulations that Her Majesty has been pleased to honour him by the presentation of a Jubilee medal. The Council felt that the honour conferred was not only well deserved by the President personally, but that it might also be regarded as a gratifying recognition of good service rendered by the Society during Her Majesty's reign.

The President, in thanking Mr. Bottle for the kind remarks in which he had conveyed the congratulations of the Council, said that he valued very much the honour which had come to him as happening to hold the office of President in this eventful year, and that he looked upon it as being a recognition from the very highest quarter of the service rendered to the public and to the State by the Pharmaceutical Society. In that sense he thought everyone connected with the Society might feel gratified that the award has been made.

The President then made a feeling reference to the mournful scene being enacted that morning in St. George's Chapel, Windsor, and after expressing the deep sorrow felt by himself and colleagues at the death of the Duchess of Teck, paid a graceful tribute to the amiable characteristics which caused her to be so generally beloved and lamented.

The death of Mr. Bower, pharmaceutical chemist, was announced by the President, who also mentioned that he had been a member of the Society since 1852, and had twice served the office of auditor.

The additions to the Society comprised twenty-one Associates.

It was arranged that the meeting of the Council in January should be deferred to the 14th, and that the June meeting should take place on the second Wednesday in the month.

The report of the Finance Committee gave the usual statement of receipts and payments, without referring to any special matter. In moving its adoption, the President mentioned that Mr. Chas. Maw had presented to the Benevolent Fund another donation of one hundred guineas, making the total sum given by him four hundred guineas.

The Glasgow Conference Committee had also given ten pounds to the general Benevolent Fund, and five pounds to the Orphan Fund.

On the recommendation of the Benevolent Fund Committee, seven grants, amounting in all to seventy-six pounds, were ordered to be paid.

On the motion of the President it was resolved that a freehold investment committee, consisting of the President, Vice-President, Treasurer, Messrs. Carteighe and Butt, should be appointed and empowered to deal with any opportunity arising for the investment of money now in hand on the Benevolent Fund account.

The report of the Library, etc., Committee gave the statistics of attendances in the Library and Museum during the month, and a list of the donations.

The President, in speaking of the School, stated that there are now sixty-two students in the laboratory, every available place being filled.

Mr. Carteighe was reappointed Visitor to the School of Pharmacy, and Mr. E. C. Horrell was appointed Demonstrator of Botany in place of Mr. J. Lloyd Williams, who has resigned the office.

In reply to an inquiry by Mr. Corder, the President said that the Law and Parliamentary Committee has met twice and discussed a draft Bill upon which he hoped to be able to have a report to present at the next meeting of Council.

It was resolved that the Boards of Examiners should meet in January, April, July, and October during 1898, to conduct the oral portion of the Major and Minor examinations.

It was also resolved that the Matriculation Certificate of the University of Wales should be accepted in lieu of the Society's First examinations.

On the recommendation of the General Purposes Committee, local secretaries were appointed for the towns named in the list at p. 416*d*. No nominations having been received from a large number of places (see p. 403), the Committee recommended that the appointment of local secretaries for those places should be deferred until information could be obtained for the guidance of the Council.

The President expressed regret that no nominations had been received from so many towns, and that there was such apparent apathy in many parts of the country. Referring to his previous expression of opinion, that the absence of nominations may be due to the satisfaction given by the present local secretaries, he thought the Committee had exercised a wise discretion in recommending inquiry into the matter. At the same time he expressed the great indebtedness of the Council to those local secretaries throughout the country who took great interest in the work of the Society.

Mr. Cross, Mr. Rymer Young, Mr. Atkins, Mr. Harrison and the Treasurer spoke to the same effect, urging the necessity of thorough investigation of the subject in order that suitable measures might be taken to provide for the efficient performance of a most important part of the Society's work.

The Vice-President suggested that the chief defect might be the want of sufficiently close relation between local secretaries and the London office of the Society.

The President, in reply to the remarks made, said he was

surprised to hear objections to the present system, which seemed to be in accord with the general feeling in favour of decentralisation, but he agreed that every encouragement should be given for creating interest in pharmaceutical affairs in all parts of the country.

A report was presented stating the centres at which examinations have been held during the past three years and the numbers of candidates at each centre. It was also resolved that superintendents of written examinations should be appointed at those centres, and that the office should be offered to the local secretaries at the places named.

Dr. SYMES then brought forward the motion, of which he had given notice, in reference to the Medicine Stamp Duty. He pointed out that apparently the intention of the Act had been to draw a distinction between ordinary vendors of compounded medicines, who were in all cases to be subject to the stamp duty, and those who—having served a regular apprenticeship to a surgeon, apothecary, chemist, or druggist—were to be exempted from the payment of stamp duty on such medicines as were known, admitted, and approved of in the prevention, cure, or relief of any disorder, malady, ailment, or complaint incident to or in anywise affecting the human body. Dr. SYMES urged that the sale of compounded drugs should be in the hands of qualified persons, and that if the Act meant what he thought it said, a great deal might be done to effect that object with benefit to many members of the craft, and with advantage to the public.

Mr. BATESON, seconded the motion, apparently under the impression that it related to the trade in what are called "patent medicines," adding that he approved of the action taken by Dr. SYMES in bringing the matter forward for discussion.

At the suggestion of Mr. CARTEIGHE, it was resolved that the subject should be referred to the Law and Parliamentary Committee for consideration. He also expressed his opinion that the provisions of the Medicine Stamp Act were, on the whole, beneficial to the trade. The difficulties felt in connection with it resulted mainly from the action taken some years ago with the object of reducing the licence duty. That, unfortunately, induced many to take out a licence for the sale of stamped medicines who would not otherwise have done so, the consequence being a very large increase in the sale of medicines liable to stamp duty, as well as a large increase in the number of persons selling them. From that moment the chemist and druggist began to lose the sale of these articles, and it was taken up by the so-called stores. He did not wish to see the same thing repeated, to the detriment of the craft. He hoped the report of the Committee might educate those who had not taken so much trouble to master the subject, which was surrounded with many difficulties and risks, and prove to their friends in the country that it was understood by the Council.

A communication has been received from the Clerk of the Salters' Company stating that the Court of Assistants approved the appointment of Mr. THOMAS TICKLE as Salters Fellow in the Research Laboratory. The PRESIDENT also mentioned that he had received a letter thanking him for his visit to Sheffield, and he expressed the great gratification he had experienced from his visit to that town.

After consideration of the legal portion of the report resolutions were passed authorising the Registrar to take proceedings in cases of alleged infringement of the Pharmacy Acts.

ANNOTATIONS.

THE PROPOSED PHARMACY BILL, to which the President of the Pharmaceutical Society recently referred at Sheffield, should shortly be the subject of serious consideration by local pharmaceutical associations. As Mr. Hills pointed out on the occasion mentioned, it is upon the action of those associations, much more than upon expressions of individuals, that the Council will have to rely in framing the Bill, and if meetings called to deal with the matter are thrown open to the whole of the craft in the respective districts, the resolutions passed will assume all the more importance. We understand that the proposed Bill is already under consideration in the Plymouth district (see p. 416*b*), and there is no reason to think that Birmingham, Manchester, Glasgow, Sheffield, Nottingham, and other centres, will be far behind in discussing the desirability of seeking to further amend the Pharmacy Act. The sooner the opinion of the chemists of Great Britain on this question is ascertained the better, and we would suggest that, as far as possible, the various meetings should be held during this month, and any resolutions on the subject be sent in to the Council not later than the first week in December.

A NON-CONTENTIOUS BILL, dealing more especially with the internal arrangements of the Pharmaceutical Society, is the object in view, the main idea being what may be termed the equalisation of membership, *i.e.*, it is proposed to make those who hold the Minor qualification eligible as members of the Society and, as such, eligible for election on the Council of the Society. It may be, however, that the craft as a body favours an attempt to ask the Legislature for more than this, and if any degree of unanimity should be apparent, the question would arise whether the Council ought not to assent to the wishes of the majority and place before Parliament the demands pressed on it by those whose interests it represents. But, to that end, it is above all necessary that the Council should be promptly notified concerning the desires of the country, and in formulating their demands chemists should have regard for what is practicable. Mr. Hills has had occasion to state that, since he spoke on the subject of the proposed Bill at the Annual Meeting in May last, he has seen no marked indication that the chemists of the country are particularly anxious to have such a Bill introduced. But there have been few opportunities since May for the matter to be discussed by the Associations, and now that the new session is fairly started we may hope that any cause for the implied reproach will soon be removed.

THE LOCAL SECRETARYSHIP DIFFICULTY was brought prominently before the Council on Wednesday, when it was shown that no nominations had been received from a number of towns where local secretaries may be appointed. This is far from satisfactory when we consider what the omission may imply in certain instances. Even if the electors are perfectly satisfied with the conduct of the present holder of the office, it would be just as well to signify that by filling up and returning the nomination papers. Possibly the decision arrived at by the Council—to defer the appointments in cases where no nominations have been sent in—may prove effectual in arousing at least a little more interest than has been manifested. Mr. Young's suggestion that it might be desirable to appoint paid local secretaries does not commend itself as the best possible remedy for what practically amounts to over-working the present voluntary officials. In large towns—such as Manchester, in which Mr. Young is directly interested—the duties imposed

upon a local secretary are now undoubtedly much too heavy, and the question arises whether the larger districts ought not to be sub-divided by the appointment of secretaries or assistant-secretaries for each parliamentary division. In fact, the parliamentary division suggests itself as much the best unit in any division of the country for the purpose of organisation for defence. But, in order to preserve the independence of the local secretaries, their services should continue to be voluntary, and perhaps, if they were relieved of what is to many the irksome duty of collecting the subscriptions of members and associates, the chief objection to occupy the post would be removed in many cases. On this and other points, however, it is desirable that past and present local secretaries should express an opinion.

The Principle of Local Organisation is spreading, the Newport (Mon.) and Southampton chemists being the latest to make a move in the direction of union. We learn that on Thursday evening, October 28, a meeting of chemists was held at the Westgate Hotel, Newport, with the object of forming a local association. Mr. Garrett, the local secretary of the Pharmaceutical Society, occupied the chair, and most of the leading chemists were present. It was resolved to establish an association to be called the Newport and Monmouthshire Chemists' Association. Mr. Garrett was elected President, Mr. Paine Vice-President, and Mr. Benson Harries, who convened the meeting, Secretary and Treasurer. Messrs. Phillips, Smith, Young, Grabbe, and Lloyd Jones were elected members of Committee. It is proposed to hold the first annual dinner of the Association about Christmas time, and a few Cardiff friends have already promised to join in the festive gathering. The Southampton chemists met on Tuesday last for a similar purpose to their Newport *confrères*, and arrived at a similar decision, *i.e.*, to form a pharmaceutical association for Southampton and district. Mr. G. H. Bishop, 20, Bridge Street, Southampton, was elected Honorary Secretary of the Association then formed, and a sub-committee was appointed to draw up rules, etc. We cordially wish both the new associations success, and specially commend to their attention the important subjects prominently before the pharmaceutical community at the present time.

The First Evening Meeting of the Pharmaceutical Society for the current session will be held on Tuesday, November 16, when the chair will be taken by the President, Mr. Walter Hills, at 8 p.m. The communications so far notified are a paper on "Pharmacy in Some American Universities," by Professor J. Reynolds Green, Sc.D., F.R.S., and one on "Suppositories," by Messrs. J. O. Braithwaite and Edmund White, B.Sc. Some objects of pharmaceutical interest will also be exhibited. Any further communications from members should be addressed to the Secretary of the Society, 17, Bloomsbury Square, W.C., as early as possible. It will be observed that the date of the meeting is a week later than usual, the postponement having been thought advisable on account of November 9 being Lord Mayor's Day and the anniversary of the birth of H.R.H. the Prince of Wales.

The Chemists' Ball will be held at the Portman Rooms, on Wednesday, January 19 next, and at a meeting held at 17, Bloomsbury Square, W.C., on Monday, November 1, the following were elected on the Committee to make the necessary arrangements:—Messrs. Attfield, Bowen, Bremridge, Carteighe, T. H. Francis, W. Hills, T. C. Martin, W. H. Mathews, A. J. Phillips, A. C. Preston, J. C. Umney, and W. Warren. At a subsequent Committee meeting Mr. Walter Hills, President of the Pharmaceutical Society, was elected Chairman of the Committee, and Mr. W. Warren, of 24, Russell Street, Covent Garden, W.C., was elected Honorary Secretary. A unanimous vote of thanks was passed to Mr. J. C. Umney for his very energetic and successful secretaryship, during which the balances available for the Benevolent Fund have been larger than usual. Mr. Warren asks us to state that he will be glad to receive the names of any persons who are willing to act as stewards, the liability of each steward being limited to one gentleman's ticket at 17*s.* 6*d.*, and one lady's ticket at 12*s.* 6*d.* We hope there will be a cordial response on this occasion, so that the success of this most enjoyable gathering may be assured.

The Executive of the North British Branch holds its annual dinner this month, the date fixed being Thursday, November 25, and the time 6.30 p.m., the Royal Hotel, Princes Street, Edinburgh, being the place of gathering. The dinner tickets are 6*s.* each, exclusive of wines, and may be had from the Assistant-Secretary of the Pharmaceutical Society, Mr. J. Rutherford Hill, 36, York Place, Edinburgh. Two days earlier, *i.e.*, on Tuesday, November 23, the students attending the School of Pharmacy, London, will hold their annual smoking concert at the Holborn Restaurant. Professor Norman Collie is expected to take the chair, and it is hoped that there will be a large gathering of past and present students and friends. Mr. T. Edward Lescher, 17, Bloomsbury Square, W.C., is the Honorary Secretary, and will be glad to receive applications for tickets, price 1*s.* 6*d.* each, as early as convenient.

The Abuse of Free Medical Treatment was considered at a conference held by the Hospital Reform Association at St. Martin's Town Hall on October 21. The Earl of Stamford, who presided, said he supposed few persons would deny that some reform was needed in hospital administration. In 1895 897,000 out-patients were treated in the twenty-two general hospitals of London, and 67,500 in the sixty-eight special hospitals. Then there were the non-provident dispensaries, and altogether it could safely be said that in London quite a million of the population were annually in receipt of medical relief from the out-patient departments in one form or another. It was scarcely possible to believe that all these were appropriate subjects for such relief, and there was a general feeling that a large proportion of them were able to provide for themselves, either by subscription to dispensaries or by going to general practitioners. Mr. T. Garrett Horder, Hon. Secretary to the Association, read a paper, in which he contended that the present system could not go on much longer, because the governing bodies of hospitals find it increasingly difficult to provide sufficient accommodation for the large number of out-patients who applied for treatment, the medical staffs find the work too onerous and exhaustive, and general practitioners find it more and more difficult to obtain a bare livelihood in consequence of the ever-increasing competition of hospitals. It appears urgent, he thinks, that in all large towns where there were several hospitals, there should be a hospital board to advise the public as to the conditions of medical relief, and to co-operate with the individual hospital boards. Subsequently a resolution was agreed to affirming that reform is urgently needed in the methods of administering out-patient and casualty relief in the hospitals and infirmaries of the United Kingdom, and referring to the Council of the Association the formation of a Committee to draw up a scheme for the better administration of such relief for the consideration of a future conference.

THE WORLD OF PHARMACY.

CHEMISTS' ASSISTANTS' ASSOCIATION.

At the meeting on Thursday, October 28, Mr. T. Morley-Taylor, the President of the Association, gave a very interesting address on the

Pharmacopœia Leech.

He commenced by describing the class *Hirudinea*, to which the two official species of leeches belong, *Hirudo medicinalis* and *Hirudo officinalis*, the latter being distinguished from the former by the absence of spots on the ventral surfacc, both, however, having three red bands down each side of the dorsal. The leech has had a place in medicine for many centuries, so Mr. Taylor next gave the names used by various nations. The Greek name was βδελλα, from βδελλω, that of the Romans being *Hirudo*, from *Haurio*, also *Sanguisuga*, from *Sanguis* and *Sugo*, while the French name is *Sangsue*. The fact that blood-letting is not so popular now as it was thirty years ago was then referred to, and the number of leeches used in London alone in 1863 was given as seven millions, these being mostly imported from Hungary, Poland, and Russia, *via* Hamburg. The various methods of keeping leeches, as suggested from time to time by different people, were described by Mr. Taylor, who thought that his own method was about as successful as could be hoped for, seeing that since February last out of a total number of twenty-eight he had only lost two by death. He went on to describe the habits of the leech in nature and the kind of ponds it inhabits, these being generally of fresh water with mud banks and bottoms, so that artificial ponds intended for breeding should have clay bottoms and peat sides. In regard to food, when kept in large quantities they are fed with blood not oftener than once every six months, because it requires several months for a full meal to digest. Speaking of the growth and habits of the leech, he remarked that it attains its full colour at two years, and is fit for use at the end of three years. In cold weather the leech keeps at the bottom of the pond, in stormy weather being very restless. Having observed the habits of leeches, Mr. Taylor then briefly described his method of keeping them. He finds that a bell-jar aquarium about two-thirds full of rain water (must not be hard water) and kept in the shade is the best thing to put them in. The bottom of the aquarium should be covered with white sand, pebbles being placed upon the sand, while a piece of coral rock is placed so that it rises above the surface of the water. With regard to change of water, he finds it best to take out a pint or so occasionally, throwing back a sufficient quantity of fresh water to make good the loss and also to counteract the effects of evaporation. The water is thrown in, not poured, in order to convey as much air as possible into the aquarium. The presence of a dead one in the water is apt to cause trouble and the loss of others, so that they should be sought for every other day or so. He had not found it necessary to feed his leeches, which he thought must live on the animalcules in the water. The mode of application was next referred to, Mr. Taylor remarking that after the leech has been wiped dry and "boxed" over the part, it would draw as a rule from two to four drachms of blood. If the leech is to be used a second time, it should be placed in vinegar and water for about an hour, to cause it to disgorge the blood. Mr. Taylor then described the external characteristics of the leech, which belongs to the same class of animals as the worm, and by means of diagrams gave an interesting description of the interior organs and their work, the parts illustrated being the jaw, ventral surface, nerve chain, alimentary canal, and a transverse section of the leech. He could not show the heart, on account of its not possessing one in the true sense of the word, the whole system pulsating more or less.—Several gentlemen then asked various questions, which were answered, and also made numerous remarks on the habits and uses of the leech.—Mr. G. Roe heartily congratulated Mr. Taylor on his instructive and, perhaps, heartless address. He thought it rather a pity that pharmacists did not take more interest in the study of biology and zoology.—Mr. Taylor, in reply, said he did not profess to have any great power as a lecturer; he had simply brought the subject before them as he thought it would be of some little interest. If it was the wish of the meeting he would kill and dissect a very fine specimen of a leech he had brought with him that evening.—Having killed the leech in chloroform, Mr. Taylor then opened the body, pointing out the difference between the natural blood of the leech and human blood, also showing the pouches of the alimentary canal and the nerve chain. He also called attention to the jaws and teeth, and exhibited the teeth mounted and placed under a microscope.

LIVERPOOL CHEMISTS' ASSOCIATION.

The first meeting of the winter session took place at the Royal Institution, Colquitt Street, on Thursday evening, October 28, the President, Mr. A. C. Abraham, F.I.C., F.C.S., in the chair. Various donations of books and magazines were announced by the Secretary as having been received from different societies and publishers, amongst others the 'Transactions of the Smithsonian Institute.' Two new members were elected on the proposition of Mr. Wardleworth, namely, Messrs. T. W. Ray and G. McLoughlin. Under miscellaneous communications Mr. Wardleworth mentioned that he had recently to examine a bale of quillaya bark, in the centre of which he discovered an adulteration in the form of a stone weighing between 14 and 20 lbs. Some Smyrna opium passing through his hands of late had been found weighted with bullets and pieces of lead, showing evidently that the Turks considered the interior of a ball of opium was as fit a billet for such warlike missiles as the vile body of a Grecian patriot. It was only by mentioning such frauds when discovered that buyers could be put on their guard against them, for when small collectors abroad found that their nefarious practices were known they soon discontinued them. As an instance of this it was remarked by Mr. Wardleworth that the almost total cessation of the Mogador wax trade was due to the gross adulteration of that article with paraffin wax, though how the producers, or rather, gatherers, obtained the adulterant remained for a long time a mystery until it was observed that the importation of paraffin candles was out of all proportion to the ordinary needs of the population. Further inquiry revealed the fact that these candles were in great demand by the wax dealers, and so the mystery became cleared up.—Messrs. Hornblower and Marsden related their experience of the adulteration of opium and musk, and the President gave it as his opinion that these sophistications came very rarely under the notice of the ordinary pharmacist buying in small quantities, for the experts who bought on the drug markets seemed to have a peculiar and unerring instinct in the discovery of suspicious parcels which was simply wonderful, so much so that a bad specimen rarely escaped their eye. This opinion of the President was supported by Dr. Symes, especially as regards Tonquin musk.—Mr. M. Conroy, F.C.S., a valued member of the Chemists' Association and an ex-president, has been suffering from a severe illness, and the President mentioned that he was sure the other members would be pleased to hear of his recovery so far as to permit of his going to Brighton for a much required rest and change of air.—Dr. Symes was then called on to read a note on

The Digestive Power of Pepsin in the Presence of Alcohol,

which is printed at p. 398.—A good discussion followed, in which Mr. Hornblower said he could answer for vinum pepsinæ made from the sherry of the Pharmacopœia, containing 17 per cent. of alcohol, being an active digestive. The amount of glycerin contained in many liquid preparations of pepsin of American origin, much in fashion at the present time, was considerable, as one could easily observe from their high specific gravity, yet patients did not seem to have any great objection to its presence there.—The President agreed that pepsine wine was a good method of administering pepsin even when glycerin was used in its compounding, as well as wine of full alcoholic strength. This note of Dr. Symes's was valuable from its helping to disprove a fallacious notion held by many advanced temperance advocates, who thought that alcohol even in small amount not only arrested digestion, but even destroyed the power of the peptic secretion. By the method adopted by Dr. Symes, it was once more demonstrated that the action of the digestive secretions in the body could not be properly imitated in a test tube.—In reply to a vote of thanks Dr. Symes said his object had been to bring up a subject in the form of a short note upon which a discussion might arise, for his experience was that those papers having a close and practical bearing on their every-day work as pharmacists were the most appreciated by the members, and were undoubtedly of the greatest use in creating a train of inquiry which might be followed up by others.—The election of the President for the next session was then announced to be the next business of importance. On the proposition of Mr. Joshua Hocken, seconded by Mr. T. Fell Abraham, Mr. John Bain was elected to the

office unanimously. The President-elect, as Messrs. T. Fell Abraham, J. Smith, T. S. Wokes, and the President, Mr. A. C. Abraham, remarked, has been an energetic and hard-working member of the Association for some time past. As a good organiser and financier, the arrangements made by Mr. Bain for the Conference visit last year will be remembered, and the manner in which he has performed the difficult duties of Treasurer to the Association shows that as President the Association will have in him one who will fill the office with dignity, and command respect from all branches.—Mr. A. C. Abraham then read a paper upon

Accuracy in Pharmaceutical Expression,

which appears at p. 398.—In the subsequent discussion Mr. Prosper H. Marsden said he could join with the President in the wish that the Pharmacopœia at any rate should be free from such inaccuracies as that in the directions for making fluid extract of bael fruit, where it was not stated whether the fruit was to be sliced, powdered or extracted whole. Again, aconite root according to the Pharmacopœia was that grown in Great Britain, but wholesale houses supplied German root, a grave inaccuracy on their part. The chief medicinal agent in the old tinctura ferri muriatis was perhaps the iron, but Mr. T. F. Abraham held with the reader of the paper, that the various chlorine compounds and ethereal bodies produced from the alcohol used were not by any means negligible quantities. As for spirits of nitre, the impurities other than the nitrous ether in the old form were undoubtedly the agents upon which its reputation rested. The use of broken cinchona bark for tincture-making could hardly be condemned, Mr. J. Hornblower thought, so long as the percentage of alkaloid was correct. The truth about concentrated infusions and decoctions was that they were demanded of the wholesale makers by pharmacists who should know better, but would have them, therefore the demand was satisfied. The disuse of many formerly popular medicines was traceable to the foolish manner in which successive Pharmacopœia editors had chopped and changed the formulæ, according to Mr. Wyatt, who instanced compound tincture of rhubarb (so popular when made with fresh liquorice root, as in the London Pharmacopœia, but now rarely asked for), spirit of nitre, and the tinctura ferri sesquichloridi. —Messrs. Cowley, J. Smith, and T. S. Wokes having made some remarks, and a vote of thanks having been accorded the President for his paper, the latter, in reply, expressed himself as pleased with the discussion. Without any doubt the alterations he spoke of had led to the disuse of tincture of rhubarb and other medicines, although the older forms of them were still prescribed by medical men who understood their action and possibilities. The chip cinchona barks do not contain the same proportion of the tannin bodies that bold fine specimens do, and therefore the tinctures made from them are deficient in their by no means least important principles.—The meeting then closed, the opinion of members freely expressed being that it had been of a very useful and improving character, and was of good augury for the success of the winter session.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The opening meeting of the twentieth session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, October 29, at 9.15, Mr. George Sinclair, President, in the chair.—The minutes of last meeting having been read and approved, the Secretary read the report of the Prize Committee, from which it appeared that the only essay handed in, reporting on the botanical excursions and summer meetings, had reached such a standard of excellence as to enable the Committee to highly commend it and award the prize to the author, Mr. David Bell Kidd, 139, Princes Street, Edinburgh.—Mr. John Bowman, President of the Edinburgh District Chemists' Trade Association, then presented the prize—a copy of Southall's 'Materia Medica'—to Mr. Kidd, and in doing so intimated that he would have much pleasure in giving a donation of £1 1*s.* as a prize to be awarded for botanical knowledge.—On the motion of the Chairman, who expressed the Association's appreciation of the generous announcement just made, a hearty vote of thanks was awarded to Mr. Bowman.—The Chairman then proceeded to deliver the inaugural address on

The Pharmacist in his Relation to the Medical Profession.

—Mr. Sinclair said that to any one who has studied even in the most superficial way the revolution which has taken place in the character of the pharmaceutical business during the past ten or twenty years, it must be quite apparent that pharmacists can never have the so-called "good old times" back again, and whilst it is no use sighing for them, it is just about as little use adopting P.A.T.A. anti-cutting movements or any such expedient for turning back the hands on the time dial. If they are to survive as a profession and not degenerate into mere advertising hucksters—for one of the two we must become, there is no middle course—we must draw closer the bonds which unite us to the great profession of medicine. Pharmacists sometimes fall into a sarcastic manner of talking about the ignorance of medical men regarding practical pharmacy, not realising that this is really to their own advantage if they would but rise to the opportunity. A doctor has neither the time to be a pharmacist nor has he any right to be one, and *vice versâ*. They are the complement of each other and ought to work into each other's hands, but that in too many cases they do not do so is quite evident, and the reasons are not far to seek. How to bring about and maintain a better condition of affairs ought to be a matter of serious endeavour to everyone, and the speaker thought it was essential first of all that the pharmacist should be thoroughly equipped educationally for his profession. In that connection he hailed with satisfaction the determination of the Pharmaceutical Council to extend the scope of the Preliminary examination and to raise the fees of the Minor examination. There could be little doubt that when those reforms had been carried into effect the general tone of the profession would be raised by the improved quality of the men who enter it. But not only should knowledge be full; it ought to be up to date within reasonable limits. The busy practitioner has little time and very often less inclination to read up and store in his memory all about the latest drugs and new remedies; but if there is in his neighbourhood an up-to-date pharmacist upon whom he can rely, it is undoubtedly to him he will come when he wishes for information regarding the nature, method of administration, and therapeutic effects of any new drug or chemical with which he wishes to experiment. Assuming then that the doctor and pharmacist have got into touch with each other, and are working into each other's hands, the question remains how are we to maintain the *status quo?* Absolute accuracy in carrying out the wishes of the profession in the dispensing of their prescriptions ought to be the pharmacist's ideal, and if he wishes to maintain cordial relationships he must exercise tact in his personal intercourse with doctors. Further, he ought to confine himself strictly to his own sphere and refuse, except in the case of what one might call simple domestic ailments, to enter the domain of the prescriber. Moreover, pharmacy is inseparably bound up with the medical profession, and can only make progress when it adapts its practical skill to the theoretical requirements of medicine. The pharmacist must keep himself posted up in the newer theories which are revolutionising the treatment of specific diseases and be able to talk intelligently with doctors regarding the action and composition of remedies which have been devised to meet the requirements of these theories. For example, every pharmacist ought to have some knowledge of "serumtherapy" and the "anti-toxin" theory, he ought also to know something of the "animal extract treatment." Lastly he must be prepared to carry out implicitly and intelligently the reasonable demands of the profession.—In conclusion, Mr. Sinclair said he could not sit down without saying a word or two about their lamented ex-president, the late Mr. Sutherland. What Scottish pharmacy lost by the death of Alex. Sutherland only those who knew him intimately adequately realise. What that Association had lost they all in some measure felt. Speaking for himself, he had lost a very dear friend. The gentlemanliness and transparency of Mr. Sutherland's nature endeared him to all who came in contact with him. He was a man of very strong convictions, and he never shrank from expressing them, yet he made few or no enemies; he had an innate courtesy, which defied you to be his enemy. The two most marked characteristics were his conscientiousness and his indomitable spirit. He died in the morning of his life, a life full of rich promise, apparently cut off prematurely. To all who had the privilege of knowing him his memory is fragrant.—A vote of thanks to Mr. Sinclair concluded the business of the evening.

SUNDERLAND CHEMISTS' ASSOCIATION.

The annual meeting of the above Association was held on Tuesday, October 26, at the Grand Hotel, Bridge Street, when the following were present:— Mr. C. Ranken, President; Mr. C. Hodgson, Treasurer; Mr. R. H. Bell, Secretary; Messrs. J. Harrison, J.P.; G. P. Fairman, M. J. Todd, E. R. Cherrett, R. Robinson, A. W. Golightly, J. Blyth, and H. J. Turnbull, jun.

The minutes having been read and confirmed, the SECRETARY read a report of the year which showed a fair amount of activity, and the Association to be in a good position. The Treasurer's balance-sheet showed the funds to be on the increase. Mr. C. Ranken was re-elected President, Mr. L. Thompson was elected Vice-President, Mr. C. Hodgson was re-elected Treasurer, and Mr. R. H. Bell re-elected Secretary, the Council consisting of Messrs. J. Harrison, G. P. Fairman, T. Walton, T. Nasbet, W. J. Blyth, E. R. Cherrett, and M. J. Todd. It was decided to hold the annual dinner on December 8 next, at the Grand Hotel, and the arrangements were left in the hands of Messrs. Robinson, Turnbull, jun., Golightly, Fairman, and Blyth. An invitation from the Newcastle Association to an evening meeting on November 17 was accepted and there is a good prospect of a large number attending. It was decided to call a special meeting to discuss propositions from the Federation of Local Pharmaceutical Associations.—Mr. CHERRETT, local secretary of the P.A.T.A., had brought circulars in reference to the Sanitas Co.'s question, and those were signed by all present, and will be duly forwarded to the Sanitas Co. After the meeting the members spent a social hour and dispersed at 11 o'clock, after a very pleasant evening.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

The first smoking concert of the above Association was held in the Hotel Métropole on Wednesday evening, October 27, at 8 o'clock. Mr. T. MALTBY CLAGUE, President, presided over about fifty members and a goodly number of their friends, including several commercial gentlemen at present on "Circuit" in the district. A splendid programme of music had been arranged, the following taking part:—Piano, Mr. W. Bloor, Violin, Messrs. Cormack and Swales, Songs, etc., Messrs. Frank Cook, Moncrieff, Thursfield, Cosgrove, Phillips, Errington, Seymour, Harwood, Brinson, Brand, Taylor, Patterson, Gibbon, and Sergeant-Major Harvey.—At a

COUNCIL MEETING

held earlier in the evening, the following resolution was submitted by Mr. J. D. ROSE, Jarrow, and approved by the Council:—

> "That this Council of the Newcastle-on-Tyne and District Chemists' Association desire to express their appreciation of the action taken by the Sanitas Company to ascertain the views of the trade with regard to their joining the P.A.T.A., and that in their opinion the Sanitas Company would by joining the P.A.T.A. and adding their articles to its protected list, ensure the goodwill and co-operation of the trade as distributors. This Council is also of the opinion that the trade cannot but adopt a hostile attitude towards proprietaries which show no profit, and that the most convenient method to secure that profit is in co-operation with the P.A.T.A."

Mr. KERSE, Treasurer, made an appeal to the meeting on behalf of the widow and children of a deceased employé in the wholesale trade, and the sum of £3 5*s.* 6*d.* was collected.—In the report of the annual meeting (*ante* p. 372), the name of the Hon. Secretary, Mr. George F. Merson, 55, Northumberland Street, was inadvertently omitted from the list of office bearers of this Association.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Monday evening, October 25, the annual meeting in connection with the opening of the schools of the Society was held at 67, Lower Mount Street, Dublin. The PRESIDENT, Mr. Downes, occupied the chair, and amongst those also present were the Vice-President, Mr. Beggs, Sir George Duffey, President of the Irish College of Physicians, Sir William Thomson, President of the College of Surgeons of Ireland, Sir Robert Jackson, C.B., Messrs. Grindley, Wells, Robinson, Professor Tichborne, Dr. Montgomery, Dr. Walsh, Mr. Simpson, Dr. Ninian Falkiner, Mr. Darcy, and also a number of ladies.—The PRESIDENT, in the course of an address, said the Society's schools had been at work since the 1st of the month. The Society had been in existence since 1875, but pharmacy had been conserved in Ireland since the Apothecaries Act of 1791. The Society appealed to its senior, the Apothecaries' Hall, not to place certificates of qualification to keep open shop in the hands of gentlemen who had had neither the training nor the experience necessary for the purpose. The Society's Chemical School, under the able guidance of Professor Tichborne and Mr. Kelly, had proved a boon to their students, and the botany and materia medica lectures had been ably delivered by Dr. Ninian Falkiner and his assistant. The examinations were reported on by the Visitor appointed by the Privy Council, whom they were glad to see amongst them. In the last year 60 candidates were examined, of whom 34 were rejected. Feeling that too many candidates had been satisfied with barely pulling through, the Council had this year decided to award a gold medal to those awarded 80 per cent. of marks, the minimum in each subject being 65, and a silver medal on 77 per cent., with a minimum of 60. The silver medal had been awarded to Mr. George Alfred Scott, who was only three marks short of what would have entitled him to the gold medal. At the last examination the first lady pharmaceutical chemist had been registered, her grand total of marks being 21 over the pass minimum. The President warned students against bad spelling, want of punctuation in their English composition, and inability to read Latin prescriptions. They should not be satisfied with knowing the external characteristics of drugs alone, but should be able to verify them. A short time since fatalities occurred through strychnine having been ignorantly given out. The only guarantee they could offer to the public was personal examination of everything. The nation, through Parliament, had made a contract that none but qualified licentiates of the Society should keep open shop for the sale or compounding of medicines, prescriptions and poisons, and the Society appealed to the nation to keep that contract, and not let the rights of members of the Society be filched from them under the besmirched cloak of the Companies Acts. The Society was required to prosecute for the illegal compounding of prescriptions and sale of poisons, and yet when they did so they were regarded as trades unionists and interlopers in the district where they prosecuted, and after they had won their case the convicted wrote "limited" after his name and metaphorically extended his fingers in front of his face in the direction of theirs. If that should continue their Acts would die, and the country would suffer from the want of qualified compounders.—Sir CHARLES CAMERON then delivered an address, in the course of which he said the establishments kept by members of the Society were as well equipped and manned as any similar ones in any cities of Her Majesty's dominions. It was worthy of note that the earliest incorporation of any class of persons having anything to do with the healing art took place not in London but in Dublin. The earliest incorporation of surgeons and apothecaries took place about 450 years ago in Dublin, or about sixteen years before the incorporation of the society of barber surgeons. The original charter of Henry IV. had vanished. Perhaps it was given up by the barber surgeons when they received that granted by Queen Elizabeth to the chirurgeons, barbers, and apothecaries of Dublin. This charter was remaining in Trinity College Dublin. It fell into abeyance in the reign of James II., and another was issued. But before that the apothecaries of Dublin had formed themselves into a kind of sub-company. He had satisfied himself that the apothecaries of those days exercised functions exactly the same as those performed at the present day by members of that Society. They were thorough pharmacists and did not practise medicine. They sprouted into medicine and surgery afterwards and were censured for it by the Irish patriot, Dr. Lucas, who was himself an apothecary, and now the Apothecaries' Hall, of Dublin, manufactured surgeons, physicians, and gynæcologists, as well as pharmacists. And as the Apothecaries' Company of London had long ceased to make up the prescriptions of others, so he supposed their friends in Dublin would do the same thing, and be completely out of the way of the pharmacists. He would now pay a tribute of admiration to the noble contributions which had been made to pure chemical and other science by apothecaries. In Sweden, in the last century, Scheele discovered chlorine, an element which had revolutionised some of our greatest industries. He discovered the valuable black oxide of manganese and the earth baryta. He discovered oxygen without any knowledge of its discovery a short time before by the great English chemist, Priestley. He remained during his short life an apothecary at Upsala, and carried on his investigations in his private laboratory. He rendered a great service to pharmaceutical and, indeed, industrial chemistry by isolating many of the more important vegetable acids, such as tartaric, citric, and malic. He also isolated the lactic acid of milk. Klaproth, the father of analytical chemistry, was an apothecary, so also was the French chemist, Vaquelin, the discoverer of chromium and other important bodies. Proust, who, in addition to his other works, nearly anticipated Dalton's discovery of the atomic laws, was a pharmacien. Almost, if not actually, the greatest of the French chemists, and Liebig, the greatest of the German chemists, began life as apothecaries, and no doubt acquired the love of chemistry in the pharmaceutical laboratory. Mohr did for volu-

metrical analysis what Stas, of Brussels, accomplished in determining exact atomic weights; both were pharmaceutists. Apothecaries had contributed largely to sciences other than chemistry. For example, Pettenkofer, the greatest of German hygienists and an eminent physiologist, kept, and perhaps still keeps, a pharmaceutical shop in Munich. In Ireland, Higgins, who almost anticipated the atomic theory, was chemist in the Apothecaries' Hall. The late Michael Donovan, of Clare, well known from his "solution," made many contributions to electrical and chemical science. He brought out in Dublin the 'Annals of Pharmacy,' which, however, died too soon from want of support. Sir Robert Kane, a distinguished Irish chemist, was an apothecary, and held only that diploma when he was first elected lecturer in a medical school. He published a volume on pharmacy and another on chemistry. Sir Charles Cameron, in continuation, mentioned that the Colleges of Physicians and Surgeons in Ireland were the first bodies of that class to open their ranks to lady students, and, going back 450 years, he found that the Irish barber surgeons admitted women to their guild, a liberality not shown in either England or Scotland. —Professor TICHBORNE, in moving a vote of thanks to Sir C. Cameron, stated that at the second meeting of the Council of the Irish Pharmaceutical Society after its establishment in 1875 he proposed that ladies should be admitted as licentiates, and with the help of the late Sir Dominic Corrigan, the first President of the Society, the proposal was shortly afterwards carried. The vote passed by acclamation. Thanks having been voted to the President for his address and for presiding, the proceedings terminated.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

The first general meeting of the winter session was held on October 29, at 67, Lower Mount Street, Dublin, the PRESIDENT, Mr. W. J. Hardy, in the chair. A number of new members were elected, and the President delivered the annual address, which dealt with the affairs of the Association from its inception to the present. Its progress had been helped by the assistance given by eminent medical and scientific gentlemen, whose lectures had done much to bring about the existing prosperity in regard to numbers and finances. He advanced cogent reasons why every employé should become a member of the Association. The position of pharmaceutical chemists had undergone a great change during recent years, and as very few of the craft were able nowadays to take out medical degrees, owing to the closing of the night schools of medicine, there was nothing left but for the assistants to band themselves together into one large body if they wanted to improve their status. He referred to a number of present-day public men who had served their time to pharmacy, and said they were examples that his hearers should follow. The Association brought the members into more friendly touch with one another, and tended to promote good feeling between employers and their assistants. One of the objects of the Association was the formation of an employment agency, and this would be put into operation at once. Subscriptions of country members would be reduced by 25 per cent., and there would be a strong syllabus for the ensuing session, with due allowance for social reunions. A cordial invitation to the employers to become honorary vice-presidents of the Association was given, and it was hoped to establish a research laboratory at an early date. The policy of the Association was filial allegiance to the Society, whose members were thanked collectively for their repeated acts of kindness to the Association.—Mr. Hardy having been thanked for his address, it was resolved to offer book prizes for the best essays read by the members, two prizes, value 10*s.* and 5*s.* respectively, in the event of not less than three essays being read at each of the two occasions during the session, the subjects to be confined to pharmacy, botany, chemistry, and materia medica, and not to exceed ten minutes in the reading.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

The above Association held one of their always popular social evenings on Wednesday, October 27, at which there was a big muster of members and friends. Mr. W. H. GIBSON was in the chair, and an excellent programme having been arranged by Messrs. W. J. Davies and W. H. Andrews, a most enjoyable time was experienced by all. The eighth annual dinner of the Association will be held on Wednesday next, November 10, at the Café Royal, East Street, Brighton. Tickets are obtainable of any member of the Committee, or of the Hon. Sec., W. H. Andrews, 74, Queen's Park Road, Brighton.

LEEDS CHEMISTS' ASSOCIATION.

The twenty-ninth annual meeting of this Society was held in the Library, Church Institute, on Friday, October 29, Mr. E. YEWDALL, Vice-President, in the chair. There was only a small attendance. —The Hon. Sec., Mr. POLLITT, read the report, in which the Council regretted it was not able to record greater activity and more substantial progress. During the year a circular was issued to the trade setting forth the advantages to be gained by being connected with the Association, the facilities for consulting an up-to-date library and materia medica cabinet, and this was followed by a personal canvass by some members of the Council, which resulted in a little numerical increase of members and associates. The Council hope that the new Bye-laws passed by the Pharmaceutical Society will exercise a favourable influence on the future of the trade, and that the alterations in the examinations will induce many of the associates to avail themselves more freely of the advantages offered by a comfortable room in which to sit and study, having the latest and most suitable books at hand and materia medica specimens always accessible. The financial statement showed a balance of 6*s.* 10*d.* in hand.—Mr. F. W. BRANSON, F.C.S., F.I.C, in moving the adoption of the report and balance sheet, thought there should be a meeting of the members once, if not more, during the year.—Mr. HOBBS seconded the motion, which was carried.—Mr. YEWDALL moved "That the best thanks of the Association be given to the Pharmaceutical Society for the Journal, to the President and Committee of the Pharmaceutical Conference for the 'Year-Book,'" which was seconded by Mr. POLLITT and carried. The following were elected officers for the ensuing year:—President, Mr. E. Yewdall; Vice-President, Mr. Geo. Ward, F.I.C.; Treasurer, Mr. P. Jefferson; Hon. Sec., Mr. W. D. Pollitt; Committee, Messrs. J. J. Anning, F. W. Branson, F.I.C., J. W. Hardman, R. Reynolds, F.I.C., S. Taylor, and G. W. Worfolk; Auditor, Mr. Edward Brown. On the motion of Mr. MUNDELL, seconded by Mr. HOBBS, the best thanks of the meeting were accorded to the retiring officers.

PHARMACEUTICAL SOCIETY.

"FIRST" EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held on Tuesday, November 2.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination:—

Barlow, Franklin; Bedford.
Flick, William Stanley; Leicester.
McMillan, Arthur Niel; Kilburn.
Morgan, Ernest Harper; Wem.
Naylor, Richard Edwin; Chesterfield.
Smart, Frederick; Steyning.
Stokoe, Thomas Joseph; Hay.
Yates, Arthur G.; Sheffield.

The report of the College of Preceptors on the examination held on October 12 was received. 250 candidates had presented themselves for examination, of whom 122 had failed.

The following 128 passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students:—

Ailsby, John William; Louth.
Ambler, Arthur; Keighley.
Anderson, Morag; Montrose.
Atkin, Louis William; Sheffield.
Bagrie, George; Insch.
Barker, Donald W. Elsom; Cambridge.
Baxter, Adela Mary; Cheltenham.
Beard, Francis Joseph; Southampton.
Black, William John; Tweedmouth.
Brittain, Richard Harold; Grantham.
Brown, Gilbert; Bolton.
Butterfield, Walter; Southport.
Cardno, John Alexander; Peterhead.
Chatburn, Percy; Keighley.
Clark, Harry Whyte; Edinburgh.
Clarke, Andrew McLean; Leith.
Course, Arthur Hattatt; Cambridge.
Craven, Arthur; Leeds.
Crookall, Lawrence; Blackpool.
Crosbie, Andrew; Galashiels.
Cross, Edith Emily; Redhill.
Davies, Edward Owen; Carmarthen.
Dean, William, Black; Edinburgh
Dunlop, Margaret Kayes; Glasgow.
Edmonds, Frederick Charles; Penzance.
Edwards, Herbert; Hastings.
Etchells, Herbert Hutchins; Chepstow.
Evans, Walter; St. Helens.

Fawthrop, William Dawes; Portslade.
Garrow, Robert Whitelaw; Keith.
Gibson, John; Ripponden.
Giles, Edwin Harold; Etwall.
Gordon, Allan; Montrose.
Gordon, Colin; Liverpool.
Griffiths, Robert Lloyd; Anglesea.
Hannah, John; Glasgow.
Harkness, George Beck; Wigton.
Harris, William Plampin; Plymouth.
Harrison, Joseph; Redcar.
Hay, Mary; Aberdeen.
Hendry, Stuart Mill; Aberdeen.
Henney, Christopher; Maryport.
Hindle, Fred; Preston.
Hopkins, Thomas Hollis; Ealing.
Horton, John Joseph; Birmingham.
Iredale, Tom; Workington.
Irving, Isaac Nicholson; Appleby.
Izdebski, Stanislas; Ross-on-Wye.
Jeans, Arthur T. W.; Southsea.
Johnstone, Thomas Stout; Lerwick.
Jones, Harry William; Liverpool.
Kelsey, James William; Blackhill.
Kendrick, John; Birmingham.
Kennedy, William Hay; Dumfries.
Lemmon, George Urquhart; Aberdeen.
Lennox, Sydney Marshall; Bristol.
Lomax, Fred Westby; Leyland.
Loten, Reginald Arthur; Hornsea.
Lyon, James Johnston; Greenock.
McGavin, Frederick; Preston.
MacGregor, Alexander; Leith.
McGregor, James John; Elgin.
M'Innes, John; Crieff.
Melville, William Lawrie; Glasgow.
Michie, John Boyd; Alva.
Morgan, David; Llanelly.
Mulvenna, John; Broxburn.
Murray, William Hamilton; Kendal.
Neal, Joseph Lloyd; Liverpool.
Nelson, Charles Tindall; York.
Nicholas, George; St. Dogmaels.
Nimmo, William; Sunderland.
Parry, John; Ystrad Meurig.
Payne, Glynton G. J.; Haverfordwest.
Pickering, William; Royston.
Poole, Edwin; Sandbach.
Privett, John Warren; London.
Punch, Herbert Seddon; Sedbergh.
Purvis, David H.; Barrow-in-Furness.
Rayner, Walter; Lincoln.
Rees, Harding M.; South Norwood.
Riddle, William; Bellingham.
Rioch, John; Stonehaven.
Robertson, Alexander Dodds; Dalreoch.
Rodway, Ernest Henry; Erdington.
Russell, Thomas; East Wemyss.
Salari, Charles Theodore; Herne Bay.
Senior, William Ernest; Ripon.
Sieger, William Herman; Greenock.
Sim, Henry James; Aberdeen.
Sinclair, William Walker; Glasgow.
Skelton, George Arthur; Sileby.
Slayter, Harry George; Northampton.
Smithurst, Albert Wagg; Buxton.
Sowden, William; Eccleshill.
Steel, George Augustus; Alford.
Steel, Joseph Andrew; Haswell.
Sterling, Joseph W.; Annfield Plain.
Stevenson, R. H. S.; Tunbridge Wells.
Stockwin, Gideon Augustus W.; York.
Stubbs, Harry Lancaster P.; Carlisle.
Summerfield, Alfred W.; Middlewich.
Sutherland, William Joseph P.; Wick.
Sykes, James Kirton; Luddendenfoot.
Talbot, Philip; Bolton.
Thomas, William John; Loughor.
Thompson, George H.; Nottingham.
Thomson, Harry; New Deer.
Tocher, George Alexander; Peterhead.
Todd, James William; Sunderland.
Tolmie, John; Inverness.
Vaughan, John; Audlem.
Walker, George Turton; Birmingham.
Walker, John; Stirling.
Walton, John Borrows; Birtley.
Walton, Leonard Gratrix; Manchester.
Walton, Samuel Hinchliffe; Southport.
Wardrop, Peter; Leith.
Weatherill, Charles Henry; Manchester.
Whitham, Harry Browett; Ulverston.
Whyte, Alfred Adolphus; Friockheim.
Wicks, Lewin; Bath.
Wigginton, Harold A.; Warrington.
Williams, F. J.; Weston-super-Mare.
Williams, John Hancock; Cardiff.
Wilson, Stewart; Glasgow.
Wood, Andrew; Kildrummy.
Young, Francis Joseph; Leicester.

The questions set at this examination were published in the *Pharmaceutical Journal* for October 16, p. 350.

The following is a list of the centres at which the examination was held, showing the number of candidates at each centre, and the result:—

	Candidates.				Candidates.		
	Examined.	Passed.	Failed.		Examined.	Passed.	Failed.
Aberdeen	15	12	3	Inverness	1	1	0
irmingham	11	4	7	Lancaster	8	6	2
righton	3	1	2	Leeds	15	9	6
ristol	3	3	0	Lincoln	7	3	4
ambridge	2	2	0	Liverpool	15	6	9
anterbury	4	3	1	London	14	4	10
ardiff	5	2	3	Manchester	27	10	17
arlisle	13	6	7	Newcastle-on-Tyne	9	7	2
armarthen	7	6	1	Northampton	4	2	2
Carnarvon	3	1	2	Norwich	3	0	3
Cheltenham	3	2	1	Nottingham	8	4	4
Darlington	4	1	3	Penzance	1	1	0
Dundee	6	3	3	Plymouth	4	1	3
Edinburgh	18	13	5	Sheffield	2	0	2
Exeter	1	0	1	Shrewsbury	4	1	3
Glasgow	18	9	9	Southampton	5	2	3
Hull	4	1	3	York	3	2	1

LETTERS TO THE EDITOR.

Elementary Pharmaceutical Education.

Sir,—Any one at all interested in provincial pharmaceutical education cannot fail to be grateful at the attention the matter has had in recent times, and more particularly during the past few weeks. You, sir, have brought it to the front in the Journal, and made some remarks regarding Sheffield in your issue of October 23. We in Sheffield have every reason to be grateful; for many years at the opening of each session it has been our pleasure to have some distinguished member of the craft to give an inaugural address. At the opening of the present session, we were favoured with a visit from the President of the Pharmaceutical Society, who delivered an address full of thought, and one which is sure to be of great value to students generally. In his remarks the same day, he referred to the fact that in his opinion it was desirable to take advantage of our new University College; this I consider a very strong point, and I thoroughly believe that here lies the strength of provincial education in the future. Although for many years we have been very successful in having gentlemen as lecturers, who have volunteered their services for a very small consideration, and have been quite capable of teaching their subjects, yet, as you say, there has been a lack of permanency about the appointments. The time must come, in my opinion, when we must avail ourselves to the full of the facilities afforded at the College for teaching chemistry, botany, and physics, and I fully agree with what you say, "that the knowledge of these three subjects required by pharmaceutical students is not primarily different from that required by other students," so that it is all the more desirable that students should avail themselves of such university colleges wherever practicable. I am not certain that the suggestion you make as to employing a peripatetic lecturer is a good one, as I believe that in most cities or towns there are good pharmacists who are capable of teaching dispensing, pharmacy, and materia medica. There is not the least doubt as to who are the best trained men in the latter branch of science. You draw particular attention to the system carried out at Nottingham, which appears to be an almost ideal one. I have reason for saying that ere long this subject will occupy the attention of our local Council, and on the lines of the Nottingham and Sheffield systems provincial education may possibly be established on a firmer basis.

Sheffield, November 2, 1897. Geo.. Squire.

Local Organisation in Pharmacy.

Sir,—I have been much interested in the suggestions that have been made on the above subject during the past few weeks, and particularly with the sketch as to the development of the idea given by Mr. Newsholme at Nottingham. It is a matter of common knowledge that during the past decade the British pharmacist has been travelling over a very rocky road, and that many a good man has come to grief. Now, however, I think it may be considered that we know the worst, and are accordingly in a position to gauge the difficulties which confront us, and if we consider the satisfactory results abounding on all sides from combination—whether it be in the form of "the Army and Navy Stores," the co-operative society of the artizan, or the numerous gigantic commercial trusts daily being reared in our midst—there cannot possibly be two questions as to the path we ought to travel if the position, both material and social, of the British pharmacist is to be established on anything like a proper basis. At present local organisation is in little more than an elementary stage, speaking of the country as a whole, so that to realise the full force of combination nothing less than a comprehensive national scheme of provincial associations is required. There should be an association for each county or county division, and I would venture to suggest that the Council should issue instructions for a circular letter to be sent to all local secretaries throughout the kingdom where such associations do not at present exist, requesting them to confer together and take the initiative in forming such bodies. It is an old story about the shortcomings of the Pharmaceutical Society on the one hand and the apathy of provincial chemists on the other, and as in most cases where *tu quoque* arguments are indulged in, the result is most unsatisfactory to both parties. If, however, a regular system of county associations could be developed, I am sanguine enough to believe that these mutual recriminations would very soon belong to past history, as the Society would then, through the Council, voice the opinions of the trade as a whole.

and not of a section. Consequently, it would be in a position to take action with a reasonable chance of success, while the apathy of the provincial chemist would give place to interest, as he would be brought into direct touch with the Society through the delegates who should be sent from his association to represent his views at the annual meeting of the Pharmaceutical Society. At the present time there is certainly no lack of subjects for such associations to discuss and vote upon. Among others may be mentioned the scope of pharmaceutical education, the responsibility and labour in connection with which at present devolves upon comparatively a few; then there is the question of the extension of pharmaceutical suffrage in connection with the Society and the desirability of fixing a minimum scale of charges for dispensing, applicable to the whole kingdom. Finally, I believe that not by any means the least of the benefits to be derived from a complete and successful scheme of local organisation would be the creation of an *esprit de corps* that would go far to inflict a decided check upon company pharmacy. For it seems scarcely credible to me that qualified men should, with their eyes open, offer their services to the enemies of their order for such transient advantages as more agreeable hours and rather better pay; so that if this question were more constantly and freely discussed wherever and whenever chemists were assembled, such companies would find considerably more difficulty than they do at present of keeping within the four corners of the Act. The initiation of such a scheme of course depends mainly, as pointed out by Mr. Newsholme in connection with this subject, upon the zeal and energy of the local secretaries, and I am sure that all who are really desirous for a condition of things more in harmony with a pharmaceutical millennium than at present exists, will hope that they may rise to the occasion.

Ashby-de-la-Zouch, November 2, 1897. G. W. Bullen.

Sir,—It is now only a few weeks since the various colleges and schools of pharmacy re-opened their portals for the new session, and the leading theme throughout the inaugural addresses was that of education. Education is no doubt necessary for the pharmacist; they should be educated, yes, and well educated, both scholastically and technically. But what prospect is there for the man who has successfully passed his examinations? I think that this can be well answered by reference to the advertisements of your paper. Last week there was one for dispensers in H.M. naval hospitals. I applied for particulars; briefly, they are as follow:—Salary, 5*s.* per diem (£91 per annum), with an increase of 6*d.* a day after five years' service, with quarters. After twenty-two years' service, *i.e.*, when a man is at least forty-three years old, he will receive £182 a year. There is extra pay if in charge of stores. Surely, sir, it is monstrous that qualified men should be expected to give their services for so small a salary. A few weeks ago there was some correspondence about the small salaries offered by the Poor Law, so on that I will say nothing. Not only do the public bodies pay us inadequately, however, but the terms offered are, I think in some cases, almost insulting. One body, a short time ago, offered a uniform among other inducements. Evidently we are looked upon as superior porters, but, alas, not with their salaries. "*O tempora, O mores.*" Our local body pays its porter the equivalent of £150. Let us turn now from the business to the scientific side. Are we treated by other scientific bodies (for I maintain that ours is one) as we should be? No, we are not. One well-known society, or at least a section of it, is known to blackball pharmacists (*vide Ph. J.*, September 14, 1895). Why should we be treated thus? But I am afraid we must frankly admit that a large proportion of our grievances is due to ourselves. There is not that bond of union among chemists that there should be. The members of the legal and medical professions cling to one another through thick and thin. Workers in various trades are united together by their unions. Why should there not be this mutual co-operation amongst us? It is the lack of this which is the cause of so much discontent with us. There are too many chemists "who will not work with anyone or join anything." Let each chemist follow the advice of our Vice-President as given in last week's Journal. Let each one take an interest in the election of the Council, so that men may be elected who will do all they can to raise the status of our calling—as I think the present Council wishes to do. Do not let us vote for men to represent "store chemists, grocer-chemists, etc.," as a correspondent advocated last week; it is those men who lower our position. But although chemists individually are to blame, is our Society doing all it can to raise our position? It is true that all chemists are not connected with the Society, but about 30 per cent. of them are. We can see what has been the result of pressure being brought to bear upon public bodies by representatives of the medical profession. The increased salary which they now obtain is a proof of their success, and I feel convinced that if our Society were to act in a similar manner, a like result would follow.

November 2, 1897. Expectans (114/31).

Study During Apprenticeship.

Sir,—The subject of Mr. E. M. Holmes' address delivered before the Plymouth, Devonport, Stonehouse and District Chemists' Association, is an important one. For "Study during Apprenticeship" is a subject which should have the careful attention and consideration of all who have the welfare of the trade at heart. But the question we have to consider is How are we to enable our apprentices to study? It is all very well to tell a young fellow to study hard during his apprenticeship and not give him the time and opportunity to do it. One can very well imagine the picture of a professor patting a pharmaceutical apprentice on the shoulder, a youth who probably has to work seventy-four hours per week behind a counter, together with night and Sunday duty, and saying to him "Study hard, my boy, study hard during your apprenticeship." One can further imagine how the youth would look up into the professor's eyes with a sickly smile. I wonder if Mr. Holmes took the trouble to inquire into the hours of business or the time and opportunities which the apprentices of Plymouth and district have for study and recreation. It is absurd to tell a man to study hard and to work well when you do not give him the time to do it, for no young fellow can be expected to study hard when he is chained to a chemist's counter for twelve hours a day. Do not let me be misunderstood, however, for I know there are many shops where the apprentices have time for study and recreation (never too much, though). I am writing more on behalf of those apprentices who never have an hour for study, and there are scores of them. For there are many shops conducted by a master with one apprentice, and by a master with two apprentices, and so on, and it is in these shops and in some drug stores that an apprentice rarely gets any time for systematic study. A chemist a short time ago advertised for an apprentice, and put in the advertisement, "Time for study and recreation." On inquiry I found this to consist of one hour off per day, the hour to be taken either in the morning before 11 o'clock or in the afternoon from 3 to 4 o'clock. No young fellow could do systematic study with such hours as these. I am afraid masters look upon apprentices as a profitable investment, and undoubtedly they are one. If we wish to give our apprentices a chance, and to see a larger percentage of passes in the examinations, we must let our young men enter the trade more as pupils than as hard-working, struggling apprentices. I maintain that the Council of the Pharmaceutical Society should control the apprenticeships of this country, that all indentures between masters and apprentices should be registered at Bloomsbury Square, and that the powers that be should see that sufficient time is given to the apprentice for study during his apprenticeship. I am quite aware that you cannot make a man study, but the least one can do is to give him time to do it. If only an agreement such as I have described could be entered into, what a difference we should have in the examination results! There would then be no crying out for an intermediate or easier examination.

Doncaster, November 2, 1897. W. E. Plant.

Medical Men and Prescriptions.

Sir.—Your correspondent "H. R." draws attention to a growing fault amongst members of my profession, viz., that of ordering proprietary medicines in prescriptions. This practice is, in my opinion, the direct outcome of the insufficient training in the art of prescribing that the modern medical student receives. The cause of this defect in medical education is not difficult of detection. At our teaching hospitals the art of prescribing must be mainly taught in the out-patient departments, and the reason for its too frequent neglect there is the overcrowding of such departments with an excessive number of patients, thereby rendering the work so heavy as to frequently necessitate the ordering of stock medicines, both to save the time of the physician or surgeon and to save labour to the dispensers. Although it makes a severe addition to my hospital work, yet I have always made it a rule, since I have been a physician to a teaching hospital, to constantly make the students who act

as my medical clerks prescribe, under my directions, for the patients, and write out the prescriptions in full. I am afraid that this attention on my part to an important duty has not always been received with approbation by the excellent but hard-worked dispensers at my hospital. The remedy for the evil that I have referred to is the prevention of the abuse of hospital out-patient departments by those well qualified to pay for medical advice, as there would then be time to properly teach the art of prescribing. I am thankful to say that there appears to be a prospect in the not very remote future of an amelioration of this hospital abuse.

ARTHUR P. LUFF, M.D., F.R.C.P.

31, Weymouth Street, W., October 30, 1897.

A CODE OF PHARMACEUTICAL ETHICS.

MR. HERMANN C. T. GARDNER (London) writes at length to emphasise the view that if a code of pharmaceutical ethics were included in the ordinary curriculum, the pharmacist, having a higher ideal placed before him at the commencement of his career, would have his first impressions maintained, and pharmacy would be raised to a higher standard, whilst the pharmacist himself would reap the benefit of the improvement so effected.

PROPRIETARY VERSUS OFFICAL PREPARATIONS.

MR. H. CUFF (New Southgate) complains that by the omission of a parenthesis from his letter last week his meaning was very much obscured, but we fail to see that the omission of the words he refers to affected the matter, except that the argument was rendered somewhat clearer.

ANSWERS TO QUERIES.

USE OF THE TERM "SALT."—An explanation of the matter appears in the "Students' Page" this week. [*Reply to* W. F.—112/33.]

MOUNTING DRIED PLANTS.—See note on page 406. Apply to the Secretary of the Pharmaceutical Society for a copy of the Examination Syllabus. [*Reply to* STUDENT.—111/30.]

GRIPE WATER FOR INFANTS.—Take of sodium bicarbonate, 10 grains; magnesium carbonate, 20 grains; oil of aniseed, 8 minims; mucilage of acacia, ½ fl. oz.; and add peppermint water to 2 fl. ozs. [*Reply to* F. W. J.—113/25.]

INCANDESCENT OIL LAMPS.—As we informed a correspondent a fortnight ago (see p. 376), the lamps referred to were exhibited by the Incandescent Gas Light Company, York Street, Westminster. [*Reply to* W. F. W.—113/14, and J. R. FORTROSE.—114/11.]

NAME OF HERB.—It appears to be a species of *Scabious*, and is not likely to have been the cause of death. It is much more probable that the cats have been poisoned, and followed their usual practice of eating green stuff to induce vomiting and so procure relief. [*Reply to* J. J. B.—114/8.]

LURE FOR RABBITS.—Perhaps if you could get us some of the "white powder" we could tell you what it is. Rabbits are very fond of salt; is it that? Anise seed oil is also used as a lure. As, doubtless, you know, many of these things used in the West are of little or no real good. [*Reply to* C. T. W.—113/24.]

CHEMICAL APPARATUS.—For ready made chemical apparatus of all kinds write to Gallenkamp and Co., Sun Street, Finsbury, for their list. For finer glass work and any blown glass apparatus, C. Muller, 148, High Holborn, will make anything you require. [*Reply to* S. E. M. V.—112/24.]

MISCIBLE TAR OIL DISINFECTANT.—Crude carbolic acid, heavy tar oils, and similar bodies may be combined with an alkaline resin soap, and thus made miscible with water. The soap basis is made from resin, 10 parts; caustic soda, 4 parts; water, 24 parts; soft soap, 8 parts. Boil the resin in the solution of soda until it is dissolved, add the soft soap, and evaporate the mixture to 26 parts; while still warm add gradually 40 parts of the phenol, and, continuing the heat, gradually stir in more phenol until the total weight of the mixture is 100. Mix well and remove from the heat, covering the vessel while the mixture cools to prevent loss by evaporation. [*Reply to* DISPENSER —111/38.]

TONIC FOR PHEASANTS.—The liquid you sent was quite putrid; it appears to be nothing but a very weak infusion of some bitter drug, probably chiretta. It only contained 0·12 per cent. of solid matter, which was all vegetable extractive. It contained no iron or added inorganic salts. [*Reply to* G. M.—111/31.]

WATERPROOFING AND PRESERVING CANVAS.—You will probably obtain a good deal of useful information from back numbers of the *Journal of the Society of Chemical Industry*. Spon's 'Workshop Receipts' and Ures's 'Dictionary of Arts and Manufactures' also contain articles on the subject. [*Reply to* R. L.—113/20.]

THICKENING AND PRESERVING CREAM.—You cannot legitimately add anything to cream to thicken it. The thick cream that is so largely sold in London is mostly made by the centrifugal separator. Much of this is very poor in flavour and tastes more like butter than cream. The delicious clotted cream of the West of England is made by heating the milk after the cream has risen and allowing it to cool again before removing the thick crust thus formed. Formalin is the best substance to use for the preservation of cream; in the small quantity required for that purpose it is probably harmless. Boric acid is largely used, but this is considered to be objectionable. [*Reply to* EMULSION.—111/6.]

BAKING POWDER.—We should not recommend you to use any of the substitutes for tartaric acid or cream of tartar in this preparation. If you do you must materially increase the quantity of inorganic matter in the flour, which is not desirable, and may get you into trouble. As you will find by referring to some answers recently given, there are several "acid substitutes" on the market, in which the acidity is due to superphosphate of lime. We should recommend you to use either one of the following:—(*a*) Sodium bicarbonate, 14 ounces; tartaric acid, 11 ounces; ground rice, 6 ounces. (*b*) Cream of tartar, 8 ounces; soda bicarbonate, 4 ounces; corn flour, 4 ounces. [*Reply to* CONFECTIONIS.—112/5.]

OXYGENATED WATER.—The water obtained by aërating with oxygen is not likely to have the same agreeable acid flavour that is obtained with carbonic acid gas. In the first place the solubility of oxygen in water is not great, even at a pressure of 200 atmospheres, and, secondly, the taste of oxygen (if it can be said to taste at all) is not to be compared with the distinct acid flavour of CO_2. However, we should not call it flat. If you will compare the taste of your oxygenated water with that of well-boiled, distilled water you will note the difference. We should recommend you to improve the flavour of the oxygenated water by aërating it with CO_2 and O together. [*Reply to* EDINA.—111/36.]

CERATUM PLUMBI.—There were two lead cerates in the P.L., 1851—ceratum plumbi acetatis and ceratum plumbi compositum. The former consisted of powdered lead acetate, 5 drachms; white wax, 5 ounces; olive oil, 20 fluid ounces. The wax was dissolved in 18 fluid ounces of oil, the lead rubbed down with the rest, and mixed with the melted basis. The latter, which is probably what you require, was made from solution of subacetate of lead, 11 fl. ozs.; wax, 8 ozs.; olive oil, 20 fl. ozs.; camphor, 1 oz. The wax was melted in 16 ozs. of oil, then removed from the heat, and when it began to thicken the lead subacetate solution was added, and the whole well stirred until cool, then the camphor dissolved with the rest of the oil was stirred in. [*Reply to* G. W. D.—112/32.]

OBITUARY.

CURTIS.—On October 26, Albert Augustus Curtis, Chemist and Druggist, Gloucester. Aged 57.

HOW.—On October 26, Randel Edward How, Chemist and Druggist, Oxford. Aged 53.

JOHNSON.—On October 26, George Percy Johnson, Chemist and Druggist, New Cross, S.E. Aged 28.

BOLTON.—On October 28, Joseph Bolton, Chemist and Druggist, Dover. Aged 88.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Austen, Bell, Bullen, Cracknell, Cuff, Curtis, Gabe'l, Gaul, Gross, Haig Harries, Harris, Hill, Johnson, Keiller, Lescher, Luff, Marshall, Miller, Mumbray, Plant, Pollitt, Robertson, Smellie, Squire, Wallace, Wills, Wright, Wyatt.

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THE CONSTITUENTS OF ROSE OIL AND OTHER VOLATILE OILS RELATED TO IT.

Within the last few years the investigation of rose oil (otto) and some other kinds of essential oil related to it has furnished many interesting results as to the chemical nature of their constituents, but some confusion has been caused by the application of various names to the products obtained, which have not been in all instances completely separated from admixtures. The examination of Turkish rose oil by Markownikoff* led him to conclude that the liquid portion consisted almost entirely of two oils, having respectively the composition $C_{10}H_{20}O$ and $C_{10}H_{18}O$, only one of them being an alcohol, but Poleck† and Eckart‡ were of opinion that only the latter compound was present in rose oil, and they gave it the name of rhodinol. Shortly afterwards Monnet and Barbier§ obtained from French geranium oil (*Pelargonium odoratissimum*) an alcohol of the same composition, which they regarded as identical with the chief constituent of rose oil. Then Bertram and Gildemeister‖ investigated the subject in the laboratory of Messrs. Schimmel and Co.; they obtained from rose oil and also from geranium oil an alcohol having the composition $C_{10}H_{18}O$, but they found its physical characters different from those assigned by previous observers to the product named rhodinol, and they further showed that the same alcohol probably existed in palmarosa oil (from *Andropogon schœnanthus*, L.), in citronella oil, and in linaloe oil (from *Licari kanali*). Hence they concluded that the alcohol constituting the chief part of rose oil and of geranium oil was identical with the alcohol obtained by Jacobsen¶ from the oil of *Andropogon schœnanthus*, and further investigated by Semmler** and Barbier,†† to which the name geraniol had been given.

About the same time Markownikoff and Reformatzky‡‡ published a more detailed account of the experiments, which led them to the conclusion that the chief constituent of rose oil was an alcohol having a composition represented by the formula $C_{10}H_{20}O$, and they named it roseol.

Bertram and Gildemeister maintained that the products named rhodinol and roseol were mixtures consisting chiefly of the alcohol $C_{10}H_{18}O$ above referred to, and from that time the question as to the chief constituent of rose oil and geranium oil was apparently whether it should be named rhodinol or geraniol.

The chemical individuality of the product named rhodinol was also disputed by Hesse,§§ who held that it was a mixture of two alcohols—geraniol, $C_{10}H_{18}O$, the principal constituent of Indian geranium oil; and a terpene alcohol (probably $C_{10}H_{20}O$), to which Hesse gave the name of reuniol, as he had obtained it from geranium oil from the island of Réunion. These names have also been applied to different commercial products by other chemists.

The investigation of this subject was then taken up by Erdmann and Huth,‖‖ who showed that a readily crystallisable characteristic compound of the alcohol $C_{10}H_{17}OH$, belonging to the class of urethanes, could be obtained from rose oil and the different kinds of geranium oil, as well as from palmarosa and citronella oil, thus apparently establishing the chemical identity of this alcoholic constituent of all these different oils. They preferred to retain for this alcohol the name of rhodinol rather than any of the other names (roseol or licarhodol) suggestive of its occurrence in rose oil or the older name geraniol, because the product to which that name had been originally applied was not obtained from geranium oil, but from the material used for its adulteration.

The conclusions arrived at by Erdmann and Huth, as to the alcohol $C_{10}H_{17}OH$, existing in rose oil, geranium oil, palmarosa, and citronella oils, were quite in accord with the observations of Bertram and Gildemeister, except in regard to the name to be applied to it; but it was argued by the latter* that the differences in the behaviour of those oils did not admit of the inference that the alcohol $C_{10}H_{18}O$ was the only or even the chief constituent of them. They showed that while the product obtained from palmarosa or citronella oil or the liquid portion of rose oil became turbid when treated with hydrochloric acid gas, and evolved heat with separation of water, the product from Réunion geranium oil did not give those results until heat was applied. Analogous differences were shown on treating with dry calcium chloride and as the result of oxidation. Hence they inferred that the products from different sources, though assumed to have chemical individuality, really contained other constituents besides the alcohol, $C_{10}H_{17}OH$, which yielded the diphenyl urethane, and they contended that the older name geraniol was more appropriate than rhodinol.

Hesse† also objected to the name rhodinol being applied to the alcohol $C_{10}H_{17}OH$ in place of the name geraniol originally given to it by Jacobsen, partly because the products obtained from rose oil and geranium oil appeared to be mixtures of that alcohol with a terpene alcohol, $C_{10}H_{19}OH$, which he had obtained from the geranium oil of Réunion and named reuniol. The individuality of this product was disputed by Erdmann as well as by Schimmel and Co., and from the results obtained by Barbier and Bouveault‡ on treating it with benzoyl chloride and on oxidation, Tiemann and Schmidt§ concluded that the alcohol $C_{10}H_{20}O$ was citronellol. They succeeded in isolating this alcohol from rose oil and geranium oil, and ascertained that Turkish rose oil contains about 25 per cent. of citronellol, and 75 per cent. of the alcohol $C_{10}H_{17}OH$. The citronellol obtained was different from that produced hy reduction of citronellal, in being lævo-rotatory (4° 20′), and as it had a pleasant rose odour, Tiemann and Schmidt proposed to distinguish it by the name of rhodinol. They pointed out, however, that the specific odour of the rose is not due to this alcohol, or to any single substance—as the odour of bitter almond oil is due to benzaldehyde, that of Tonka bean to coumarine, or of heliotrope to piperonal—but that it is the result of a mixture of several odoriferous substances, as in the case of lavender, lemon, or bergamot oil. Besides the two alcohols which constitute the chief part of rose oil, it contains fat esters of those alcohols, and minute quantities of aldehydes or ketones, etc.

The citronellol obtained from the different kinds of geranium oil was a mixture of the dextro- and lævo-rotatory modifications, the latter preponderating sufficiently to give a rotation of $-1°\,12'$ to $-1°\,20'$, and in the case of Réunion geranium oil citronellol was accompanied by a minute quantity of another alcohol. These oils contained about the same amount of non-alcoholic constituents as Turkish rose oil, and the amount of citronellol in the Réunion oil was much larger than in the African or Spanish oil.

In a long memoir recently published on the subject by Erdmann,‖ he points out that all who have studied rose oil have noticed that the alcohol, $C_{10}H_{17}OH$, is associated with another very similar alcohol, $C_{10}H_{19}OH$. Markownikoff¶ was the first to show that the greater

* 1890 *Berichte*, xxiii., 3191, and *Ph. Journ.* [3], xxi., 664.
† 1890 *Ibid.*, xxiii., 3554.
‡ 1891 *Archiv der Pharm.*, ccxxix., 355, and *Ph. Journ.*, xxii., 328, 894.
§ 1893 *Compt. rend.*, cxvii., 1092.
‖ 1894 *Journ. Prakt. Chem.* [2], xlix., 185.
¶ 1871 *Annalen*, clvii, 232.
** 1890 *Berichte*, xxii., 1098, 2965, 3556; xxiv., 201; and *Ph. Journ.* [3], xxi., 940; xxiii., 67.
†† 1893 *Compt. rend.*, cxvii., 120.
‡‡ 1893 *Journ. Prakt. Chem.* [2], xlviii., 293.
§§ 1894 *Journ. Prakt. Chem.*, l., 472.
‖‖ 1896 *Journ. prakt. Chem.* [2], liii., 42, and *Ph. J.*, lvi., 173.

* 1896 *Journ. prakt. Chem.* [2], liii., 233.
† 1896, *Journ. prakt. Chem.* [2], liii., 238.
‡ 1895 *Compt. rend.*, cxxii., 530, 673.
§ 1896 *Ibid.*, xxix., 921.
‖ 1897 *Journ. Prakt. Chem.* [2], lvi., 44.
¶ 1890 *Berichte*, xxiii., 3191.

portion of Bulgarian rose oil boiling within narrow limits was a mixture, and more recently Tiemann and Schmidt have shown that this second alcohol is citronellol. While agreeing with Tiemann and Schmidt that the odour of rose oil may be due to more than one substance, Erdmann contends that the alcohol $C_{10}H_{17}OH$ is the most important, both in regard to its proportion and the quality of its odour, but that citronellol—whether it be prepared by reduction of citronellal or separated from commercial rhodinol as the urethane compound—has not the character of a perfume, being in that respect as much inferior to the alcohol $C_{10}H_{17}OH$ as citronellal, $C_9H_{17}\cdot CHO$, is inferior to citral, $C_9H_{15}\cdot CHO$.

He also considers that the citronellol present in rose oil and in commercial rhodinol has no other importance than as preserving the more readily alterable alcohol from resinification, as shown by R. Pfister.* Another reason for retaining the name rhodinol for the alcohol $C_{10}H_{17}OH$ first recognised as the principal constituent of rose oil by Poleck and Eckart is that the name was selected by them, and although the product they obtained may have contained some admixture of citronellol, it was free from the heavy and evil-smelling admixtures present in what is known in trade as geraniol, while the products to which Jacobsen and Gintl applied the name geraniol were certainly mixtures.

Erdmann refers to the production of a crystalline diphenyl urethane compound of the alcohol, $C_{10}H_{17}\cdot OH$, from rose oil, geranium oil (from *Pelargonium odoratissimum* or *P. roseum*), palmarosa oil, and citronella oil, described some months ago by him and Huth† as having removed all question as to the chemical identity of the alcohol $C_{10}H_{17}OH$ in the products obtained from those oils by different operators in greater or less degree of purity. At the same time he suggested that the name rhodinol should be retained.

In the paper‡ now published he describes the further study of some characteristic derivatives of this alcohol.

Though the alcohol $C_{10}H_{17}OH$ resembles in many respects the aliphatic alcohols and combines with calcium chloride, like ethyl alcohol, its behaviour with other reagents is peculiar, as, for instance, by reaction with phenyl-isocyanate, it does not yield a phenyl carbamic ester (urethane), as in the case of other alcohols, but diphenyl-urea, $CO<^{NHPh}_{NHPh}$, and an ether, $C_{10}H_{17}\cdot O\cdot C_{10}H_{17}$. But with diphenyl-carbamic chloride, $CO<^{NPh_2}_{Cl}$—which is so little acted upon by ethyl alcohol that it may be recrystallised from that liquid at a boiling temperature—the alcohol $C_{10}H_{17}OH$ readily reacts and yields a diphenyl-urethane, which $CO<^{NPh_2}_{OC_{10}H_{17}}$ is readily crystallisable and melts at 82°C.

The reagent for this purpose is best prepared by dissolving 250 grammes of diphenylamine in 700 C.c. chloroform, adding 120 C.c. anhydrous pyridine, and passing into the mixture, cooled to 0° C., 140 grammes of phosgene gas. After 5 or 6 hours the chloroform is distilled off, and the residue, recrystallised from 1500 C.c. of alcohol, yields 300 grammes of the crystallised carbamic chloride: pyridine hydrochloride remains in the liquor.

To obtain the urethane compound of $C_{10}H_{17}OH$ 1 gramme of the pure alcohol is mixed with 1·5 gramme of the carbamic chloride and 1·35 gramme pyridine, and heated on a water bath for two and a half hours. The solution becomes deep red and then brownish, finally separating in two layers, and on cooling it solidifies. On steaming, no oil should distil over, but only some diphenylamine resulting from the excess of carbamic chloride. The residue forms hard crystals melting about 80°, and by recrystallisation from alcohol the urethane is obtained in long crystals melting at 82°·2 C.: the yield amounts to 1·5 gramme from 1 gramme of the pure alcohol—

$$CO<^{NPh_2}_{Cl} + C_{10}H_{17}OH = CO<^{NPh_2}_{OC_{10}H_{17}} + HCl,$$

the hydrochloric acid produced being taken up by the pyridine, forming pyridine hydrochloride.

For the preparation of the urethane compound partially purified commercial rhodinol containing citronellol was used, and it was obtained from geranium oil by Monnet's method.*

The diphenyl urethane compound is insoluble in water, very sparingly soluble in ice cold alcohol, but readily soluble in most other organic solvents. Strong sulphuric acid dissolves it with yellow colour, and in the presence of some nitrous acid a deep blue colour is developed. A solution of bromine in carbon disulphide is immediately decolorised, and four atomic proportions of bromine are consumed in this reaction, but the end of the reaction is not sharply defined. By heating with alkaline solutions under pressure the urethane compound is decomposed with formation of diphenylamine and the alcohol.

Another compound studied by Erdmann is the phthalic acid derivative—$C_6H_4<^{CO_2H}_{CO_2C_{10}H_{17}}$. It is obtained by heating the alcohol with phthalic anhydride, and is a colourless thick oil without smell; it has a peculiar sharp bitter taste, and is almost insoluble in water. The silver salt is readily crystallisable; it melts at 133° C., is very soluble in benzene, but only sparingly soluble in methyl alcohol.

In order to obtain the alcohol chemically pure for analysis, the authors saponified the diphenyl urethane compound with alcoholic potash, and the fragrant product of the reaction was found to be

$$\left.\begin{matrix} CO<^{NPh_2}_{OC_{10}H_{17}} \\ H_2O \end{matrix}\right\} = C_{10}H_{17}\cdot OH + CO_2 + N<^{Ph_2}_{H}$$

quite free from citronellol, but the separation of diphenylamine was so difficult that another method was adopted by decomposing the silver salt of rhodinol phthalic acid with sodium chloride, adding to the solution of sodium salt caustic alkali to liberate the alcohol and distilling this over with a current of steam. The pure alcohol is described as having a very pleasant rose odour, the specific gravity is 0·8812 at 16° C., under a pressure of 16 M.m. it distils over between 110°·5 and 111°, but when distilled under normal pressure the odour is deteriorated.

With the aid of heat the alcohol $C_{10}H_{17}OH$ dissolves anhydrous lithium chloride or calcium chloride, forming compounds in which the alcohol apparently takes the place of water of hydration. The calcium chloride compound, described by Jacobsen in 1871, is readily obtainable in a crystalline form, and it serves for the determination of the alcohol in essential oils. By decomposition with water the alcohol is liberated, but the authors state that the product so obtained contains some admixture of chlorinated compounds, in consequence of subsidiary reactions. An ether solution of rhodinol cooled to a low temperature absorbs hydrochloric acid gas copiously, becoming yellow and then dark red. This coloration by mineral acids may be applied as a preliminary test for the detection of the alcohol in essential oils or in perfumes. For that purpose a drop of the oil to be examined should be mixed with 5 C.c. alcohol in a porcelain basin and 10 drops of concentrated sulphuric acid added without stirring. The acid lying at the bottom becomes intense orange yellow and, on gently moving the basin, reddish violet at the edges, this colour disappearing when the acid is completely mixed with the alcoholic solution. On further cautious addition of sulphuric acid the same play of colour may be produced. Linalool gives a similar colour

* *Chemiker Zeitung*, xxi., 38.
† *Journ. prakt. Chem.* [2], liii., 42.
‡ *Ibid.*, lvi., 1.

* 1892 *Compt. rend.*, cxvii., 109

reaction, but it is less permanent, and rapidly passes into brown. Citronellol ($C_{10}H_{20}O$) reacts more feebly, and the colour at the zone of contact approaches more to blue.

The authors have applied the results of their investigation in the examination of various essential oils for detecting the presence of the alcohol $C_{10}H_{18}O$ and determining its amount. Their mode of procedure was as follows :—

A mixture of the oil to be examined (1 gramme) with 1·5 gramme diphenyl carbamic chloride and 1·35 pyridine was heated for two hours to 100° C., and then treated with a current of steam until about one litre of water had distilled over. The solid portion of the cooled residue was then recrystallised from alcohol (30 parts) and weighed.

In order to test the accuracy of this method a mixture of linalool with 10 per cent. rhodinol was operated upon. In the steaming a quantity of diphenylamine passed over in white crystals, and the fixed residue which solidified on cooling was washed with water. It crystallised from alcohol in long colourless needles which, after drying, weighed 0·065 gramme and melted between 80° and 82° C.

In presence of much citronellol the separation of the alcohol by this method is more difficult ; a more fusible crystalline residue is obtained which may be a molecular compound of the two urethanes, melting between 40° and 50°, and several recrystallisations from alcohol at a temperature of —20° C. are requisite for obtaining the rhodinol compound.

For the determination of the alcohol $C_{10}H_{17}OH$ in crude materials containing only small amounts of it, previous fractional distillation under reduced pressure is desirable, and the portion distilling at the proper boiling point is then to be operated upon. In the absence of the alcohol, steam carries over diphenylamine as an oil, which soon solidifies. In no instance was the residue found to contain unaltered diphenyl carbamic chloride, and the recrystallised urethane product was always free from chlorine. The oils so examined and found to contain the alcohol were Turkish rose oil, German rose oil, French geranium oil, geranium oil from Bourbon, Syrian geranium oil, gingergrass oil, citronella oil, Turkish palmarosa oil, neroli oil (bigarade) and Portuguese neroli oil.

The different kinds of rose oil have a peculiar behaviour when operated upon without previous fractionation. In the steaming of the reaction product very little oil passed over, showing that most of it has reacted with the diphenylcarbamine chloride, but the residual urethane compound had a very low melting-point and was very soluble. These characters were most marked in the product from French rose oil, and though it certainly contains the alcohol $C_{10}H_{17}OH$, the presence of this constituent cannot be directly ascertained by the urethane test. Thus, for instance, 5 C.c. rose oil from Grasse gave 7·8 grammes urethane that dissolved in 7 C.c. hot alcohol and yielded only 1·1 gramme crystals, melting at 40°-42° C. The citronellol in this oil can scarcely be the cause of this behaviour, since geranium oil, which also contains citronellol, does not show it in an equal degree, but it may be due to the presence in rose oil of a third alcohol which forms a crystalline diphenyl urethane.

In operating upon geranium oil distilled in Grasse from *Pelargonium odoratum* and upon the cheaper oil from Bourbon, said to be obtained chiefly from a variety of *Pelargonium roseum*, 120 C.c. of each gave the following fractions by distillation under a pressure of 17–18 M.m. :—

	Grammes.	First Fraction.	120°–130° C. Grammes.	Residue. Grammes.
Grasse	18	20 C.c.	66	25
Réunion		15 ,,	80	slight

The portions distilling over between 120°-130° C. were heated to 140° with acetic anhydride in closed tubes for eight hours, exactly as Monnet directs, the acetyl ester washed with alkali and water until quite free from acetic acid, and then distilled *in vacuo*. The acetyl ester of the alcohol passing over between 127°-132° C. was mixed with an equal volume of alcohol and rather more than one molecular proportion of finely powdered potash added. After saponification the alcohol was distilled off under reduced pressure in a water bath, the residue washed with water, and the oil distilled under a pressure of 17-18 M.m. The alcohol thus obtained had a fine rose odour. The last runnings had a less pleasant odour, suggestive of citronellol.

	120°-130° C. Grammes.	Acetyl ester. Grammes.	Alcohol. 120°-125 C. Grammes.
I.	66	62	42
II.	75	86	40

The specific gravity of the alcohol from No. I. was 0·8817 at 21° C., that of No. II. was 0·8749 at 16° C., a difference indicating that the product from Réunion oil contained more citronellol than that from the French geranium oil. The urethane test gave results which supported that view, the liquid citronellol urethane preventing crystallisation.

Alcohol.	Taken.	Oil distilled off.	Crystalline urethane.
I.	5 C.c.	2·5 C.c.	2·4 grammes.
II.	5 C.c.	2·0 C.c.	0·7 gramme.

The preliminary purification of the alcohol by converting it into acetyl ester is very easily carried out, and Monnet's method is preferable to those of Haller* and Dodge,† inasmuch as it is free from the complications resulting from the ready decomposition to which the acid esters of succinic acid or camphoric acid and other dibasic acids are liable, and from the difficulty of saponifying them without injury to the quality of the product.

The authors have extended their investigation to a variety of commercial articles containing the alcohol, and endeavoured to ascertain the nature and amounts of the admixtures affecting the value of those articles for purposes of perfumery.

"Essence de roses" of the Société Anglo-Française de Parfume perfectionnés, at Courbevoie near Paris. This oil boiled at 219°-222° C. under ordinary pressure, and *in vacuo* (10 M.m.) at 110°-113° C. One gramme yielded 0·95 gramme recrystallised urethane, and a further quantity of ·09 gramme was separated from the mother liquor.

"Geraniol" (Schimmel and Co.). In steaming the reaction product some bad smelling oil distilled over, and the residual urethane after recrystallisation from alcohol weighed 0·86 gramme, a further quantity of 0·11 gramme was separated from the mother liquor.

The examination of various commercial samples of geraniol, described as "chemically pure," has led the authors to the conclusion that this article is of varying quality, and rarely has a constant boiling point. All these samples were found to have a peculiar heavy odour, becoming especially disagreeable when small quantities of the oil were kept for a time in partially-filled vessels, and the authors attribute this character to the presence of a chlorinated impurity, the nature of which they have ascertained, and they point out that the difference between geraniol and pure rhodinol is, like that between artificial bitter almond oil and the natural oil, referable to the presence of a chlorinated impurity.

The specific gravity of commercial geraniol is variable, and sometimes much higher than that of the pure alcohol, but it does not serve to indicate the purity of the material, which contains citronellol as well as chlorinated impurities, and while the former decreases the specific gravity, the latter raise it.

* *Compt. rend.* (1889), ciii., 1308.
† *Amer. Chem. Journ.* (1890), xii., 563.

"Commercial rhodinol," of the Société chimique des Usines du Rhône, formerly Gillard P. Monnet and Cartier at Lyons. A mixture of 100 C c. of this material with 130 grammes diphenyl. carbamic chloride and 70 C.c. pyridine gave, after steaming, 19 C.c. oil and 176 grammes residue of soft crystalline urethane After being three times recrystallised from alcohol (150 C.c.) it had a melting point of 82°·2 C., but the quantity was considerably reduced in consequence of the presence of a liquid bye-product, which proved on further investigation to be a derivative of the citronellol, which appears to be invariably present.

The alcohol obtained by saponification of this bye-product distilled over between 124°-127° C., under a pressure of 27 M.m. ; it had a feeble sweetish odour, and its composition agreed with the formula $C_{10}H_{19}\cdot OH$. For comparison the alcohol was also prepared from citronellal according to the method described by Dodge,* and its characters agreed with the account given by Tiemann.†

With phthalic anhydride citronellol reacts in the same manner as the alcohol $C_{10}H_{17}OH$, but citronellol phthalic acid, $C_6H_4<^{CO_2H}_{CO_2C_{10}H_{19}}$, is more stable than the corresponding rhodinol compound, and its silver salt has a lower melting-point—118° C. The benzyl ester also differs in requiring only two atomic proportions of bromine for titration.

By the reaction of citronellol with diphenyl carbamic chloride and pyridine, citronellol diphenyl urethane $(C_6H_5)_2>N\cdot COOC_{10}H_{19}$, is formed as a non-volatile oil insoluble in water, the yield being in the proportion of 1·3 for each part of citronellol, and the product thus obtained proved to be identical with that prepared from the citronellol of Dodge.

In the report recently issued by Schimmel and Co., some of the statements in Erdmann's paper are disputed. Thus, for instance, the alleged presence of chlorinated compounds in the alcohol prepared by decomposition of its compound with calcium chloride is attributed to the use of calcium chloride containing free acid, and the applicability of the calcium chloride method is held to be greater than that of the method adopted by Erdmann. The reference made by Erdmann to the commercial products of different manufacturers is especially objected to, and the presence of chlorine in Schimmel's "geraniol" is denied, while the statements that it varies in specific gravity and has a bad smell are described as exaggerated.

As a general result of the work carried out by different experimenters on this subject, up to the present time it appears evident that an alcohol having the formula $C_{10}H_{17}OH$ is a common constituent of rose oil, of geranium oil, and of the various essential oils obtained from species of andropogon. When pure this alcohol has no rotatory power, but it is very difficult to separate it so completely from other constituents of the oils, in which it occurs naturally as to be quite inactive optically. That circumstance appears to account for the discrepant results obtained by different experiments, and to explain in great measure the conclusions arrived at by them. As to the name to be given to this alcohol, the argument in favour of its being called geraniol appears to be much more entitled to consideration than that adduced in favour of others, for if this alcoholic constituent of rose oil is really identical with that obtained by Jacobsen from andropogon oil, and named geraniol by him in 1871, the fact of its being also a constituent of rose oil—ascertained much later—does not warrant the adoption of a different chemical name. Consequently the names rhodinol, roseol, réuniol, etc., can only be regarded as applicable in the sense of trade marks to the products of particular manufacturers.

* 1889 *Amer. Chem. Journ.*, xi., 456.
† *Berichte*, 1896, xxix., 903.

THE RELATION OF THE PHARMACIST TO PHARMACY LAW.*

BY J. H. BEAL.

In reading the papers presented at the various pharmaceutical meetings one is impressed by the apparent prevalence among pharmacists of the idea that the intent and purpose of a pharmacy law is to protect the druggist from competition in his business. Nor is this mistake confined only to the rank and file of the profession. It is no uncommon thing to note in the pages of the best informed pharmaceutical journals such careless expressions as "encroachment of the Legislature upon the privileges of pharmacists," "protection of the pharmacist's rights," etc. This habit of speaking is probably the outgrowth of the fact that it was largely due to the agitation of pharmaceutical associations that the various enactments have been secured, and also that the burden of enforcing them has universally been left to the pharmacist, so that the latter has gradually come to feel a sort of proprietorship in the laws intended for the regulation of his calling.

If this matter were merely an abstract question of propriety or impropriety, it might well be passed over in silence, but unfortunately this belief that the pharmacy law is for the private interest of the pharmacist has extended to the public mind, already prejudiced against the pharmacist as a monopolist and extortioner. Nor is this wholly false and unjust opinion confined to the general public. Within the year we have seen it advanced by govenors as the reason for vetoing wise and necessary pharmacy legislation, assigned by Supreme courts as the reason for holding such laws to be in conflict with constitutional limitations, while it is invariably used as a stock argument to juries in prosecutions under the law for violation of its provisions. In truth, it may be said that it is this single idea of the monopolistic purpose of the pharmacy law, developed in various forms, which is at the bottom of all opposition to pharmacy legislation, whether it is the opposition of legislatures, courts, governors or juries. It is especially unfortunate, therefore, that druggists should by a careless way of speaking help to extend and perpetuate an opinion incorrect in itself and prejudicial to the efforts which are being made for the reformation of the law relating to pharmacy.

The only foundation for the legal regulation of pharmacy is the public good. If the laws are passed for the special protection and benefit of the pharmacist, then they are class legislation, and void under every constitution in the Union. It is undoubtedly true that where there is an efficient pharmacy law efficiently enforced, the properly qualified pharmacist will not be subjected to competition by unqualified men, and his chances of winning a livelihood correspondingly increased, but he must rid himself of the idea that the purpose of the pharmacy law is to secure even in the slightest degree his private benefit. Any personal good he may derive from its existence is a mere incident to the good which it is intended to secure to society, and he must be content with the benefit which he receives as a member of that society.

Pharmacy is not a protected, but a restricted calling, restricted by an exercise of the State's police power, on the ground that it is a business dangerous to the public welfare if improperly conducted, or if conducted by unqualified persons. Such a law cannot by any reasonable sort of construction be considered monopolistic in the American constitutional sense. If the statute limited the number of pharmacists in a given district, or if it fixed the amount of

* Read at the forty-fifth annual meeting of the American Pharmaceutical Association.

capital which must be possessed in order to be a pharmacist, then it would be a monopoly, for the reason that it would enforce an artificial restriction which might operate to prevent worthy persons from entering the calling. But as long as the law does no more than fix a reasonable standard of education for those who desire to enter pharmacy, then it is perfectly constitutional. It does not make a monopoly because anyone is at liberty to acquire the necessary education and to exercise that calling.

Still another way in which druggists help along the public sentiment that the pharmacy law is merely a scheme to protect the pharmacist is by their common disregard of the poison law, and of the provision requiring the pharmacist to keep a registered clerk. It would not be impossible to find druggists who heartily agree with the proposition that the law should prevent any but qualified persons from owning or conducting a drug store or to engage in the sale of poisons, but who are themselves extremely remiss in their observance of the very provisions which justify the limitation of the sale of drugs and medicines to a particular class of persons. We have known of druggists who would regard it as the height of impropriety that a dealer in general merchandise should be permitted to sell Paris green, or that a department store should include a drug stock among its other departments, but who within their own stores permit the poison and label law to remain a dead letter, and never hire a registered clerk as long as they can get along with a cheap boy. The evil of such a policy is probably greater than the average pharmacist would imagine. The ease with which the American public can be fooled is proverbial, but there is a limit to this foolishness, and that limit is reached when we try to make the public believe that the mere placing of the words drug store over a door will render the sale of poisons therein by an unqualified clerk any safer than if sold by an unqualified clerk in a place called a grocery. Nor will they believe that an unregistered clerk in a drug store is a safer man to put up medicines or compound prescriptions than a registered pharmacist in a department store. This disregard of the pharmacist of the pharmacy law is wholly without excuse, and not only wrong in the abstract, but injurious to the interests of pharmacy by helping to strengthen the contemptuous opinion which the public already entertains of him and his calling.

The real and serious truth of this matter is that it is greatly to the interest of the druggist that his observance of the poison and label law, and of the provision requiring the employment of properly qualified men, should be so accurate and rigid as to be a constant reminder to his customers of the fact that of all known occupations that of the pharmacist is most dangerous to the public welfare if improperly exercised, or if exercised by men not fully competent and alive to the necessity of eternal vigilance. As may be noted from the foregoing, the writer places strong emphasis upon the importance of cultivating a proper public sentiment with respect to pharmacy. The trouble has been in the past that, however careful the average pharmacist may have been of his personal reputation, he has been very careless of the reputation of his craft as a whole. Pharmacist Jones has cared very little what the public might think of pharmacist Brown; the latter has entertained a similar regard for Jones, and the public has compromised by holding them both in equal contempt. The reformation of pharmacy is a problem which embraces many factors, and of these one of the most important is what we commonly mean to express by the name, public opinion. When the pharmacist shall have attained the respect of general public opinion, and deserves it, the pharmaceutical millennium may not have arrived, perhaps, but it will have made a measurable approach, and we shall be able to obtain any reasonable modification of legislation that we may choose to ask for.

NOVEL APPLIANCES.

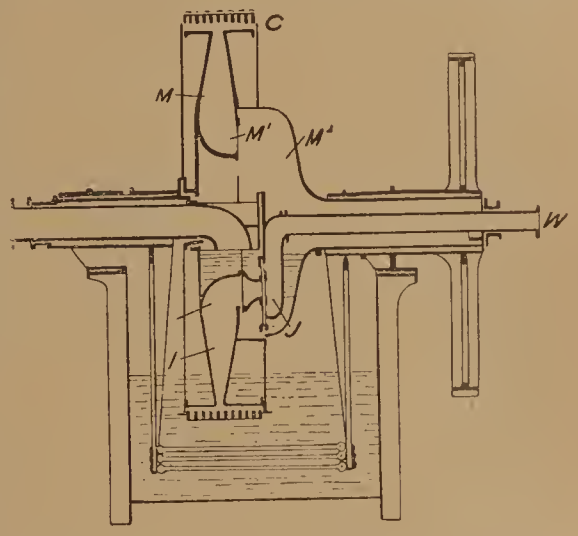
PHARMACEUTICAL AND CHEMICAL.

A Bottle which cannot be Refilled.

The numerous frauds which are perpetrated by filling inferior liquids into bottles of a known brand have induced Neri and Guzzetti to invent a pneumatic bottle, which can only be filled once. This can be made of any size or shape. It obviates the employment of corks or capsules, the connection being hermetically sealed until the bottle is opened, and thus preserves its contents perfectly. To fill the bottle a tube is attached to C, and the liquid is forced into it by a pressure pump. When the bottle is full the glass tube C is fused off at E in the blowpipe. To open the bottle a sharp blow is given to the head A, which breaks it off at F, and the contents are then poured out.

Filtering Drum.

The rotary horizontal drum is divided into several radial compartments, M. The openings, M^1, are usually turned towards the vacuum chamber, M^2, and filtration consequently takes place in the usual manner through the filtering layer, C. The openings, M^1, only meet the opening of tube, J, at the very lowest points, and on the latter being connected with the air or subjected to pressure the filtrates of each department, when reaching the lowest position, are pressed through the filter from the outside, and thus the latter is cleansed.



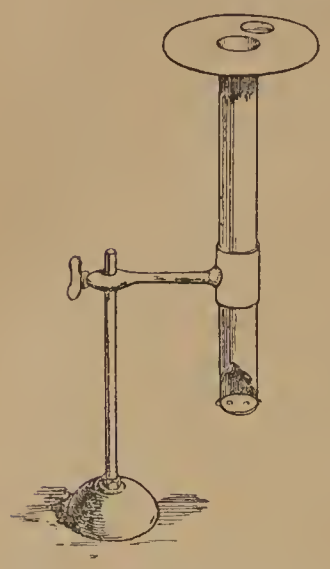
D. R. P., 91,790, March 3, 1896. Solvay and Co., Brussels. —*Chemiker Zeit.*, xxi., 545.

Madeuf's Auto-Doucher.

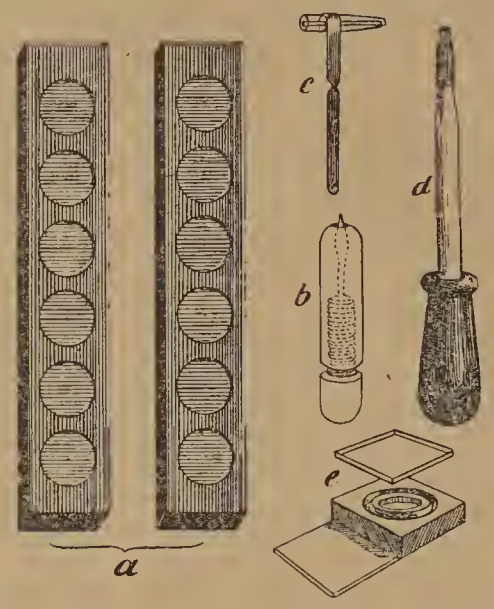
The cut below explains itself, illustrating a simple and inexpensive portable shower bath. It consists merely of a form of

bailer, the upper part of which is furnished with a rose, and also a funnel. It is filled, and then reversed for use.

Dr. Oliver's New Hæmoglobinometer.

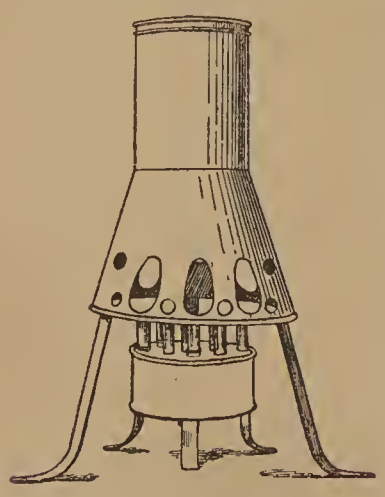


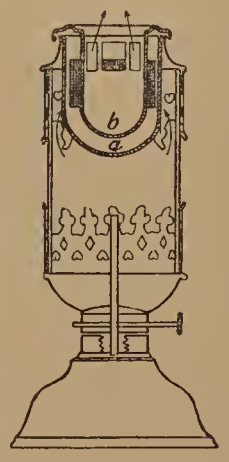
The following apparatus for the more exact determination for hæmoglobin in blood has recently been devised by Dr. Oliver, and was shown by him in his Croonian lecture to the Royal College of Physicians in 1896, "On the Study of the Blood and Circulation." The apparatus consists of (1) an automatic capillary blood measurer, (2) a mixing pipettc, (3) the blood cell and cover-glass, (4) the sets of standard gradations, (5) the riders, (6) the camera tube, (7) the light, (8) a bottle of accessories, antiseptic fluid, lancet, needles, and thread. The automatic blood-measurer (*c*) has a capacity of 5 M.m., and is made of stout glass. The end presented to the blood-drop is well polished, so that any superfluous fluid may be easily wiped off with the finger. The bore is dried before use by passing a needle threaded with darning cotton through it. The mixing pipette (*d*) is fitted with a rubber nozzle, which fits to the end of the blood-mcasurer. The blood cell (*e*) yields a blood solution of rather less than 1 per cent. when filled to the rim. It is accurately made to serve in itself as a measure of the amount of water to be added. The standard gradations (*a*) are arranged in circular discs in two slabs, from 10 to 120 respectively. "Riders" or small squares of tinted glass are provided for reading the tint between any two numbers on the scale. These are provided in two sets, one for finer physiological work, reading each to one degree of colour, the other less delicate, reading to two degrees for ordinary clinical work. In ordinary work the rider, which is equivalent to five degrees in the colour scheme, is sufficient. The source of light is a small candle known as Christmas candle. The apparatus is made by Messrs. Baird and Tatlock, London.



Formalin Disinfecting Asparatus.

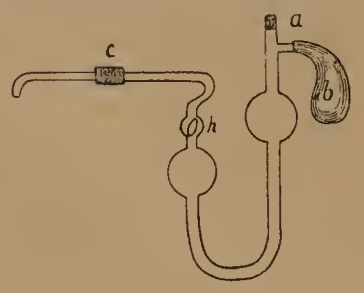
The construction of the apparatus is at once apparent from the illustrations. The smaller apparatus is intended for home use. The formaldehyde is used in the shape of pastilles, which are consumed by a spirit lamp. For a medium-sized room 40-50 pastilles are sufficient. The room is kept elosely shut during the fumigation, and for 12 to 24 hours afterwards, and then well aired. For deodorising apartments 1 to 2 pastillcs are sufficient, and the lamp can be regulated so that one pastille will fume from 1 to 3 hours. This mild fumigation is very serviceable in a sick room, as the patient docs not notice the formaldehyde vapours. In provision store-rooms the apparatus may be used for preserving perishable articles of food.—*Therap. Monats.*, xi., 403.





Modification of Orsat's Apparatus.

Bleier has modified Orsat's apparatus, which enables it to be used for many purposes. The very breakable and expensive double Hemple pipettes the author replaces by a modified simple pipette (see figure). The glass tube A, which is used for filling, and which is usually stoppered, is furnished with a projection at the side, on which a rubber ball (*b*) is placed. The small tube (*c*), fitted with a glass tap (*h*), is connected with a rubber tube (*c*) with another small bore tube at right angles. The narrow tube is filled with the fluid by pressing the rubber ball, and connects with the glass vessel. In this way the filling of the tube by sucking with a pipette is avoided, but the chief advantage in the original apparatus, that air is excluded from contact with the entering fluid, is not retained in this modification.—*Chemiker Zeit.*, xxi., 554.

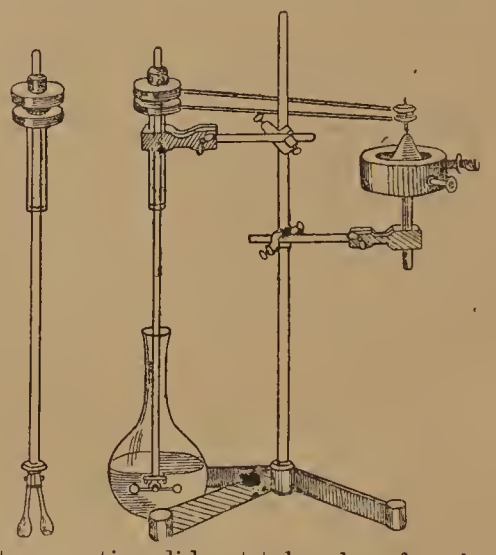


Safety Dropping-Tube.

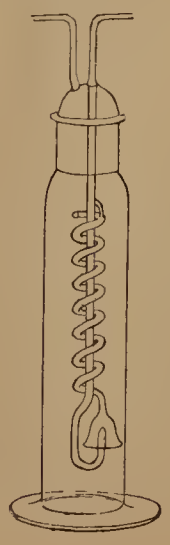
This modification of the ordinary dropping-tube is a German device to prevent injury to the eyes by the accidental contact of the unprotected glass tip, a danger which may often arise from sudden involuntary movement on the part of the patient when liquids are being dropped into the eyes. In the instrument under notice the tip is composed of soft rubber, and the pipette is graduated so that the exact number of drops to be employed can be easily measured.—*Pharm. Cent.*, xxxviii., 492.

Stirring Apparatus.

A new mechanical stirrer devised by Schultze and made by Gerhardt, of Bonn, may be useful in certain technical laboratories. It eonsists of a glass rod, to the lower extremity of which two hollow glass balls are fastened on a hinge by platinum iridium wire. When not in use these hang vertically, but on immersion in a liquid they rise to a horizontal position. This allows the instrument to be insertcd into any apparatus, round flasks being specially suitable for the purpose. Using it with a water turbine, working at a pressure of 3 atmospheres, 1·5 litre of water and 200 grms. of benzene were so thoroughly emulsified that separation did not take place for six hours.



A New Gas Wash Bottle.



The ingenious gas-washing apparatus figured below has been devised by J. Walter. The gas delivery tube, which rcaches to the bottom of the vessel, is constricted at the end and turned up into a small inverted glass bell, forming the end of a spiral coil, which is wound round the gas tube. The fluid in which the gas is to be washed may be filled to the level of the top of this spiral or not, as may be desired. The gas bubbles collected under the bell rise into the spiral and each one chases a column of liquid in front of it as it rises in the spiral, so that, as it gradually travels upwards, it comes in contact with a large area of the fluid. As both gas and fluid pass out at the top of the spiral the liquid is kept constantly circulating from top to bottom of the vessel.—*Chem. Zeit.*, xlii., 533.

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 401.)

Tommasi (Carbolic Acid).—A fine shaving is coloured blue if dipped first into a liquid containing carbolic acid, and then into a mixture of 50 Gm. of hydrochloric acid, 50 Gm. of water, and 0·2 Gm. of potassium chlorate. Compare Hoppe-Seyler's reaction.

Topping (Solution for Microscopical Preparations).—Mix 1 part of absolute alcohol with 5 parts of water, or 4 parts of water and 1 part of aluminium acetate. Add an equal volume of glycerin before use.

Tourneux-Hermann (Silver Staining Method).—The tissues are left in a silver nitrate bath (3 : 1000) for 1 hour, then washed out with alcohol of 30° strength.

Trapp (Veratrine).—A dark-red to violet or purple colour is produced on heating cautiously with hydrochloric acid.

Traub or **Traube** (Hydrogen Peroxide).—A blue colour is produced on adding to 6 C.c. of the liquid a little sulphuric acid and zinc iodide starch paste, then 2 drops of 2 per cent. copper sulphate solution, and finally a little 0·5 per cent. ferrous sulphate solution.

Trenkmann (Staining Flagella).—Mordant for 2 to 12 hours, at the normal temperature, in a 1 per cent. solution of tannin in 0·5 per cent. hydrochloric acid. Then wash in water, stain for 2 to 4 hours with a mixture of 2 drops of saturated alcoholic solution of fuchsine and 20 drops of 1 per cent. carbolic acid, and again wash.

Treumann (Theobromine).—A purple colour is produced on evaporating to dryness a mixture of theobromine and chlorine water, then adding ammonia.

Trommer (Glucose).—On adding 1 or 2 drops of copper sulphate solution and 4 or 5 C.c. of caustic soda (or sodium carbonate) solution to a dilute solution of glucose, the precipitate formed is dissolved and yellow cuprous oxide separates out on heating. Compare Fehling's solution. In examining urine, it should be rendered alkaline with caustic soda solution, and the copper sulphate solution is then added, drop by drop, until a permanent precipitate forms. To remove other reducing agents that may be present, boil 10 C.c. of urine with 5 C.c. of copper sulphate solution (1 : 10), add 2 C.c. of sodium carbonate solution (1 : 10), filter the solution after standing, and test as above. Compare Johnson's reaction.

Trommsdorff (Nitrous Acid).—A blue colour is produced with sulphuric acid and potassium iodide starch paste.

Trotarelli (Alkaloids).—Characteristic colour reactions are produced upon evaporating with concentrated nitric acid, and subsequently treating the residue with alcoholic potash solution. Compare Vitali's reaction.

Trotarelli (Ptomaines).—Characteristic colour reactions are produced on adding sodium nitro-ferricyanide and palladium nitrate to sulphuric acid salts of ptomaines. Compare Vitali's reaction for alkaloids.

Tscheppe (Alcohol).—On pouring a layer of 70 per cent. nitric acid upon the liquid to be tested, a green colour appears at the line of contact, and after some time bubbles of ethyl nitrite are formed.

Tuchen (Ethereal Oils).—Many ethereal oils fulminate on bringing 4 to 6 drops in contact with 0·1 Gm. of iodine.

Tullberg (Narcotisation Method).—For Actiniæ, slowly add to the water containing the expanded animal a 33 per cent. solution of magnesium chloride, until the vessel contains 1 per cent. of the salt, *i.e.*, add 33 C.c. of the solution for each litre of sea-water. The operation should be finished within half an hour, and the animal may be fixed half an hour later. For terrestrial and fresh-water Invertebrates, use rather stronger solutions.

Turner (Borax).—A green colour is produced on heating before the blowpipe with 9 parts of potassium bisulphate and 1 part of fluorspar.

Tyson (Hetero-Albumose in Urine).—A little of the urine is acidulated with acetic acid, one-sixth its volume of saturated solution of sodium chloride is added, and the mixture then boiled and filtered. Albumin and globulin are precipitated, whilst if the filtrate on cooling gives a precipitate on adding more brine albumose is present.

Udransky-Baumann (Glycerin, Carbohydrates, etc.).—This test depends upon Baumann's reaction with benzoyl chloride and sodium hydroxide. Since diamines give the same result the presence of the polyatomic alcohols must be confirmed by means of the furfurol reaction. See Molisch's reaction.

Uffelmann (Nitric Acid).—A blue colour is produced on adding 3 or 4 drops of the liquid to be tested to 1·5 C.c. of sulphuric acid which has been coloured pale pink by adding to it a small piece of diphenylamine.

Uffelmann (Reagent).—A mixture of 1 drop of ferric chloride solution, 0·4 Gm. of alcohol, and 100 Gm. of water is decolorised by hydrochloric acid and coloured yellow by lactic acid, while the addition of butyric acid causes a milky turbidity.

Ultzmann (Biliary Colouring Matter).—Shake 10 C.c. of the suspected urine with 3 or 4 C.c. of potassium hydroxide solution (1 : 3), and add an excess of pure hydrochloric acid. A beautiful emerald-green colour results if biliary pigments be present.

Underwood (Gold Staining Process).—Sections of decalcified teeth are washed in sodium bicarbonate solution, then treated for half an hour to an hour with 1 per cent. neutral solution of gold chloride, washed in water, and reduced in 1 per cent. formic acid, kept fairly hot on a water bath in the dark. They will turn crimson in about an hour, and should then be washed for half an hour in cold water and mounted in glycerin jelly.

Unna (Bleaching Chromic Objects).—The brownish-green colour is removed by treating them with hydrogen peroxide.

Unna (Hæmatoxylin Stain).—The "over-ripening" of hæmatoxylin stains, brought about by excessive oxidation, is prevented by adding a reducing agent, such as sulphur. Dissolve 1 part of hæmatoxylin in 100 parts of alcohol, and add to a solution of 10 parts of alum in 200 parts of water. In two or three days' time, when the solution has become somewhat strongly blue, add 2 parts of sublimed sulphur. The effect of this addition is to fix the stage of oxidation attained by the solution, and the latter may be used for staining at once. It does not give so energetic a stain as solutions totally and instantaneously ripened with hydrogen peroxide, and does not keep so well as solutions containing glycerin. See Mayer's glychæmalum.

Unna (Stain for Smooth Muscle).—Stain sections for 10 minutes in polychromatic methylene blue solution, rinse in water and place for 10 minutes in 1 per cent. solution of potassium ferricyanide, which fixes the colour. Next differentiate with alcohol containing 1 per cent. of hydrochloric acid, and after the collagen ground comes out white (about 10 minutes), pass the sections into absolute alcohol, prior to clearing and mounting in balsam.

Upson (Gold and Iron Method).—Material that has been hardened in the dark in potassium bichromate solution (1 per cent. gradually increased to 2 or 2·5 per cent.) for 4 to 6 months, is washed with water, treated for 2 or 3 days with 50 per cent. alcohol, which is changed as often as necessary, and then left in 95 per cent. until they show a decidedly green coloration (2 to 4 weeks), the alcohol being changed as often as precipitates occur. Cut sections under water or by the celloidin process, and in the former case place them in alcohol immediately, and leave them there for 2 or 3 days. Next, immerse for 1 or 2 hours in a 1 per cent. solution of gold chloride, acidified with 2 per cent. of hydrochloric acid, rinse in water, and treat for half a minute with a solution of about 0·2 Gm. of potassium ferricyanide in 5 C.c. of 10 per cent. potash solution. Then wash for half a minute more in simple potash solution, and afterwards for some time in distilled water. The reducing solution is freshly prepared when required by mixing 5 C.c. of sulphurous acid and 10 to 15 drops of 3 per cent. tincture of iodine, and adding 1 drop of solution of ferric chloride. A section is placed on a piece of filter paper in a watch-glass, the reducing mixture quickly poured over it, and, as soon as a rose-red colour appears, the section is removed into distilled water. After changing the water once, place the section on a slide and immerse in absolute alcohol for 5 to 15 minutes, then clear with clove oil and mount in balsam. As the treatment with potassium ferricyanide may cause the formation of Prussian blue in the tissues subsequently, it is sometimes omitted. The sections must be kept in the dark.

Upson (Gold and Vanadium Method).—Sections prepared as for Upson's gold and iron method are placed for 2 hours in a mixture

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

of 5 C.c. of 1 per cent. gold chloride solution, 10 drops of saturated solution of ammonium vanadate, and 3 drops of hydrochloric acid. Then wash with distilled water and place for half a minute or so in a mixture of 5 C.c. of 10 per cent. caustic potash solution, 10 drops of 10 per cent. potassium permanganate solution, and a trace of ammonium vanadate. Next rinse in distilled water and treat until they become red with the reducing fluid. This is prepared by mixing 15 drops of 3 per cent. tincture of iodine to which tin chloride has been added until it becomes white or yellowish, 3 C.c. of distilled water, and 3 to 5 drops of a saturated aqueous solution of iron phosphate. At the moment of using add 3 C.c. of sulphurous acid, pour the mixture over the section as in Upson's gold and iron method, and finish in accordance with that method.

Valenta (Fats and Fixed Oils).—Mix intimately equal volumes of the fat and glacial acetic acid (sp. gr. 1·0562), and apply heat if necessary to effect solution. Fats and oils are distinguished according as they dissolve (1) at ordinary temperatures, (2) at temperatures up to the boiling point of the acid, or (3) only partially even then. In the case of oils dissolving upon the application of heat, the temperature is observed at which turbidity first appears upon cooling. According to Bach, good results are given when the same observations are made with David's alcohol-acetic acid, and the free fatty acids are separated from the fats.

Valentine (Fuchsine).—Ether shaken with a solution containing fuchsine is coloured violet after adding ferrous iodide, but not before.

Valser (Alkaloids).—A solution of potassium and mercuric iodides throws down precipitates.

Van Beneden-Neyt (Acetic Alcohol).—Mix equal volumes of glacial acetic acid and absolute alcohol.

Van Beneden (Sublimate Solution).—A saturated solution of mercuric chloride in 25 per cent. acetic acid.

Van Deen (Blood).—A blue colour results on adding to a highly diluted solution containing blood a few drops of freshly prepared tincture of guaiacum and a little ozonised turpentine oil.

Van Ermengem (Staining Flagella).—Treat cover-glass preparations for 5 to 30 minutes with a mordant composed of 1 part of 2 per cent. solution of osmic acid, 2 parts of 10 to 25 per cent. solution of tannin, and 4 or 5 drops of acetic acid to every 100 C.c. of the mixture. Then wash in water and alcohol, place in a solution of silver nitrate, and transfer for a few seconds to a solution consisting of gallic acid, 5 Gm.; tannin, 3 Gm.; sodium acetate, 10 Gm.; and distilled water, 330 Gm. After again placing in the silver nitrate solution, wash, and mount in balsam.

Van Gieson (Formalin for Hardening Brain).—Solutions of formalin, of 4, 6, and 10 per cent. are used and followed by 95 per cent. alcohol.

Van Heurck (Mounting Medium).—This is naphthalin monobromide which has a refractive index of 1·658.

Van Walsem (Paraffin Mass).—For imbedding large objects, add to the paraffin 5 per cent. of yellow wax.

Verworn (Narcotisation).—On placing *Cristatella* for a few minutes in 10 per cent. solution of chloral hydrate, they are killed and sooner or later become extended.

Vetere, Di (Castor Oil).—See Di Vetere.

Viallanes (Celloidin Imbedding).—The celloidin is hardened by immersing the imbedded mass in chloroform for a few hours.

Viallanes (Gold Method).—Tissues are treated with 1 per cent. osmic acid until they begin to turn brown, then with 25 per cent. formic acid for 10 minutes. Next place in gold chloride solution (1 : 5000 or weaker) for 24 hours, in the dark, and afterwards reduce in the light with 25 per cent. formic acid.

Vidan (Sugar).—A pink colour results on heating to boiling point equal volumes of sesame oil and hydrochloric acid, and adding the suspected liquid.

Vignal-Ranvier (Osmium Mixture).—This fixing solution is prepared by mixing equal volumes of 1 per cent. osmic acid and 90 per cent. alcohol. Objects are afterwards washed out in 80 per cent. alcohol, then washed with water and stained for 48 hours in picro-carmine or hæmatoxylin. This method has been applied by Viallanes to the histology of insects.

Vignal-Ranvier (Picro-Carmine).—See Ranvier.

Villavecchia-Fabri (Sesame Oil).—In this modification of Baudouin's test the reagent is prepared by dissolving 2 Gm. of furfurol in 100 C.c. of alcohol. On shaking 10 C.c. of the suspected oil for half a minute with 0·1 C.c. of the furfurol solution and 10 C.c. of hydrochloric acid (sp. gr. 1·19) a red colour results if sesame oil be present.

Ville (Carmine Injection Mass).—The mass is prepared exactly the same as Ranvier's, except that it is more carefully neutralised, dichroic litmus paper being employed as an indicator.

Villier-Tayolle (Chlorine and Hydrochloric Acid).—Brownish to black precipitates are thrown down by traces of chlorine in a mixture of 400 C.c. of saturated aqueous solution of aniline and 100 C.c. of glacial acetic acid, and a blue coloration is produced by chlorine in a mixture of 100 C.c. of saturated aniline solution, 200 C.c. of saturated ortho-toluidine solution, and 30 C.c. of glacial acetic acid. Bromine and iodine cause no such colour reactions, though bromine throws down white precipitates. To apply the test to acids the halogens must be liberated by heating with dilute sulphuric acid and potassium permanganate.

Villiers and Fayolle (Aldehydes and Ketones).—This reagent is prepared by adding just enough sulphurous acid to a solution of magenta to decolorise it on long standing.

Violette (Glucose).—The same as Fehling's reaction.

Virchow (Chromic Objects).—The precipitate formed on the surface of preparations that have been treated with chromic acid or a chromate and placed in alcohol for hardening or preservation, is entirely prevented by keeping the preparations in the dark. The alcohol should be changed as it becomes yellow.

Vitali (Alkaloids).—Colour reactions are produced (1) on evaporating to dryness with fuming nitric acid, and adding 1 drop of alcoholic potash solution, (2) on treating with sulphuric acid, with or without potassium chlorate, and adding an alkaline sulphide. Atropine causes a violet colour, changing to a fine red, when treated by the first method. Morphine dissolved in sulphuric acid and treated cautiously after adding 2 drops of sodium sulphide solution produces a flesh colour, changing to violet and then to dark green.

Vitali (Biliary Colouring Matter).—A violet colour results on adding to the urine a solution of quinine bisulphate, neutralising with ammonia, taking up with sulphuric acid, and adding a crystal of sugar with a little alcohol. See Gmelin's reaction.

Vitali (Blood).—Extract the suspected stain with caustic potash solution, acidulate the solution with acetic acid, and add tincture of guaiacum. If no blue colour appears within 2 hours, the addition of turpentine or eucalyptus oil will immediately bring out the colour if blood be present.

Vitali (Chloroform).—Pass a current of hydrogen through water and ignite as it escapes through a jet tipped with platinum. (1) The colourless flame becomes blue or green when a fine copper wire is introduced into it, if a liquid containing chloroform or any other volatile chlorine compound be poured into the water. (2) A red colour is produced on passing the gas as above into a mixture of thymol and potash solution.

Vitali (Fusel Oil).—Red to green colours are produced on pouring a layer of a liquid containing fusel oil upon sulphuric acid.

Vitali (Thymol).—A red colour is produced on distillation and passing the vapours into a mixture of chloroform and potash solution.

Vitali (Naphthol Yellow).—(1) The residue is coloured red on evaporating an ethereal extract of the urine or other suspected liquid to dryness and adding potassium cyanide solution. On shaking the ethereal solution with caustic potash solution and then acidulating the latter, woollen fibres mordanted with alum will be tinged yellow if dipped into the acid solution, even if not more than 0·000001 Gm. of naphthol yellow be present; (2) solutions of naphthol yellow produce a green lake with cobaltous chloride and caustic potash; (3) the same solution yields a white precipitate when treated with stannous chloride and afterwards with ammonia, the precipitate turning red upon adding more ammonia.

Vohl (Sulphur).—A black colour is produced on heating the substance with the clear liquid decanted from a mixture of glycerin and water (2 : 1), that has been saturated with slaked lime and freshly prepared lead hydroxide.

Vogl (Alcohol).—A blue colour is produced on shaking chloroform containing alcohol with potash, and applying to a piece of moistened red litmus paper.

(To be continued.)

NOTICES OF BOOKS.

THE 'YEAR-BOOK OF PHARMACY' for 1897 has come duly to hand, with its usual stock of useful information collected in a convenient form. It contains nearly eighty pages more than last year, and bears a more prosperous look accordingly. A portrait of Dr. Symes, President of the British Pharmaceutical Conference, faces the title-page, and the volume contains the usual abstracts of work done in chemistry, materia medica, and pharmacy during the year, as well as a useful collection of notes and formulæ and what is practically a reprint of the *Pharmaceutical Journal* report of the Glasgow Conference. The members of the B.P.C. certainly get good value for their money when they receive the handy volumes, twenty-eight of which now adorn our shelves, and they are to be congratulated on having their interests so well cared for by the Honorary Secretaries and the Editor of the 'Year-Book,' that they are enabled to reap so much where they have sown so comparatively little.

'THE MYSTERY AND ROMANCE OF ALCHEMY AND PHARMACY,' by C. J. S. Thompson (London: The Scientific Press, Limited, 5*s.*), is in great measure a reprint of articles that have appeared in these pages. At the same time the subject-matter has not suffered by republication in book form, and the additions are so extensive that those who read and were interested in the articles in the Journal will find much more to attract them in the present volume, which is a useful summary of the subjects of which it treats, written in simple language. The work is produced in excellent style, printing and paper being greatly superior to much that is current at the present time.

'AIR, FOOD, AND EXERCISES,' by Dr. A. Rabagliati (London: Baillière, Tindall, and Cox, 5*s.* net), is an essay on the predisposing causes of disease, based on a series of papers published in the *Scalpel* during 1896. The author attempts to show that air, food, and exercises are the three predisposing causes of health, and that improper relations between the human organism and those "predisposing causes" result in disease. Food is regarded as being of chief importance in this connection, and it is allowed that heredity counts for a little as a predisposing cause of disease, though only a very little.

'SICKROOM COOKERY AND HOSPITAL DIET,' by Maude Earle (London: Spottiswoode and Company, 3*s.* 6*d.*), is a work that has been compiled more especially for the use of persons professionally or otherwise engaged in nursing. It includes chapters on food values, the effects of cooking, diet scales, etc., but is mostly devoted to special recipes for convalescent and diabetic patients, many of which are adapted from those in use at the National School of Cookery. In addition there are notes on the feeding of infants, by Mr. F. C. Madden, which add much to the value of this useful little book.

'THE COMMERCIAL USES OF COAL GAS,' by Thos. Fletcher (Warrington: Fletcher, Russell and Co., Ltd.), is a supplement to the author's work on 'Coal Gas as a Fuel,' which has been found very useful by many readers. The purpose of the present work is to show the advantages that accrue from the use of coal gas as a fuel in various industries, and it includes a useful chapter on the use of the blowpipe, which should interest many of our readers. The price of the book is not stated.

'AN ACCOUNT OF THE HERBARIUM OF THE UNIVERSITY OF OXFORD' has been compiled by the Curator of the Fielding Herbarium, Mr. G. C. Druce, Hon. M.A., pharmaceutical chemist. It is published at the Clarendon Press, and gives interesting particulars concerning the various special collections, the general collection, the British Herbarium and the Cryptogamic Herbarium.

'CHEMISTRY FOR PHOTOGRAPHERS,' by C. F. Townsend (London: Dawbarn and Ward, Limited, 1*s.* net), represents a slight attempt to deal with the fringe of a very large subject, and should be of good service if it induces any proportion of the vast army of amateur photographers to approach their particular hobby from the scientific side. It deals with the chemistry of silver salts, and of the photographic image, developers, reversal, reduction, intensification, printing in silver, iron, platinum, and bichromate, orthochromatism, impurities in air, recovery of residues, and various other matters of direct interest to photographers, concluding with a useful cyclopædic index of solubilities, etc. The publishers direct attention to the fact that some gross typographical inaccuracies appear in the earlier copies sent out, and offer to replace those by corrected copies, free of expense to purchasers.

'THE OXYGEN TREATMENT,' by George Stoker, M.R.C.P.I., etc. (London: Baillière, Tindall and Cox, 2*s.*), is a reprint of articles published by the author, dealing with the local treatment of wounds, ulcers, and other surgical cases by oxygen gas, together with particulars of cases successfully treated.

'ON CERTAIN POINTS IN THE PATHOLOGY AND TREATMENT OF NEPHRITIS,' by Dr. D. Campbell Black (Glasgow: Hugh Hopkins, 17, West Regent Street), is another reprint, which will doubtless interest many who have occasion to deal with cases of Bright's disease. In the preface, the author remarks that "during the past quarter of a century amid the rush of Continental synthetic 'remedies,' 'organic injections,' and kindred therapeutic abominations, the result of a regrettable commercialism in medicine, and of the many fallacies in the observation of the late Pasteur, the 'Institutes of Medicine' have been temporarily overshadowed, and by one fell somersault the 'superior persons' of the profession are revelling in the empiricism and the inane fancies of the fourteenth and fifteenth centuries." He also observes that the teaching function (in medicine) is committed to "a class of subservient Levites, to whom true science and its claims are either secondary or positively unappreciable, and political intrigue of primary importance."

'DEPRESSION IN ENGLISH AGRICULTURE AND ITS PRACTICAL REMEDY,' by Persimmmon (London: W. Cave and Co., 17, Farringdon Street, E.C., 2*s.* 6*d.* net), is somewhat outside the scope of a journal of pharmacy, wide as that doubtless is. It is interesting, however, to note that the author is of opinion that farms ought to be treated as manufactories.

'THE GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE CALENDAR' for the session 1897–98 contains particulars of several day and evening classes which should be taken advantage of by pharmaceutical students in the district, and there would seem no reason why those students should not pass through such a curriculum as was sketched in the *Pharmaceutical Journal* of October 23 last without difficulty. Similar advantages are offered at University College, Bristol, the new 'Calendar' of which has also been received.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Potassii Citras.—Calcium citrate, produced by adding solution of calcium chloride to the aqueous solution of potassium citrate, is not precipitated except in strong solutions until the mixture is boiled—

$$2K_3C_6H_5O_7 + 3CaCl_2 = Ca_32C_6H_5O_7 + 6KCl.$$

This distinguishes the citrate from tartrate, since calcium tartrate is precipitated without boiling. A further point of distinction between tartrates and citrates is provided by the solubility of calcium tartrate in caustic potash solution and its sparing solubility in presence of ammonium salts, the behaviour of calcium citrate being just the reverse. The purity of the salt is determined by heating a weighed quantity to redness until it is entirely charred, when the black residue will consist of carbon mixed with an amount of potassium carbonate equivalent to the weight of potassium contained in the salt taken. Thus 306 grammes of potassium citrate ($K_3C_6H_5O_7$ = M.Wt.306) will leave a carbonaceous residue containing 207 grammes of potassium carbonate, this being the quantity corresponding to the three atoms of potassium, *i.e.*, $1\frac{1}{2}$ times $K_2CO_3 = \frac{138 \times 3}{2}$. The K_2CO_3 in the residue is washed out by water to separate it from the carbon and titrated with volumetric solution of oxalic acid. $1\frac{1}{2}K_2CO_3 = 1\frac{1}{2}(H_2C_2O_4 \cdot 2H_2O)$, from which it follows that the potassium carbonate produced by heating 306 grammes of potassium tartrate should neutralise 189 grammes ($1\frac{1}{2}$ M.Wts.) of oxalic acid, or 103 grammes $\left(\frac{K_3C_6H_5O_7}{3}\right)$ are equivalent to 63 grammes $\left(\frac{H_2C_2O_42H_2O}{2}\right)$ of oxalic acid. This method is applicable to the other organic salts of potassium or sodium. In performing the test, note that the filtrate from the carbonaceous residue should be quite colourless; if it be brownish the ignition has been insufficiently performed, and all the potassium or sodium will not have been converted into carbonate.

Potassii Cyanidum.—Potassium cyanide has no odour. In contact with air, containing moisture and carbon dioxide, it is continually, though slowly, evolving hydrocyanic acid—

$$2KCN + H_2O + CO_2 = K_2CO_3 + 2HCN.$$

Complete solubility in alcohol excludes the presence of carbonate. The tests with ferrocyanide of potassium and barium chloride have the usual significance, but the latter is useless when applied to the alcoholic solution, because all inorganic sulphates, except ferric sulphate, are insoluble in alcohol, and would not therefore be present in an alcoholic solution. Note carefully the nature of the reaction upon which the end-reaction of the volumetric analysis is based—

$$\underbrace{2KCN}_{130} + \underbrace{AgNO_3}_{170} = KAg(CN)_2 + KNO_3.$$

The addition of silver nitrate in excess of the proportion indicated by the above equation causes the formation of a precipitate of silver cyanide by reaction with the soluble double cyanide.

$$KAg(CN)_2 + AgNO_3 = 2AgCN + KNO_3,$$

since there is no longer any free cyanide of potassium with which the AgCN can combine. Cyanide of potassium is much used in metallurgical operations on account of the facility with which it reduces oxides and sulphides to metal, potassium cyanate, KCNO, or its sulphur analogue, thiocyanate, KCNS, being formed.

Potassii Ferrocyanidum.—This salt is the source from which we obtain practically all other cyanogen compounds. Other methods of formation, *e.g.*, of hydrocyanic acid by passing electric sparks through a mixture of acetylene and nitrogen ($C_2H_2 + N_2 = 2HCN$), or by the action of ammonia on chloroform under pressure ($CHCl_3 + NH_3 = HCN + 3HCl$) possess scientific interest only. Carbon and nitrogen do not combine with one another directly to form cyanogen, but when organic substances containing these elements are heated with metallic sodium or potassium they unite with the metal to form sodium or potassium cyanide. The method described in the Pharmacopœia for the manufacture of potassium ferrocyanide realises these conditions, for all the animal substances mentioned contain nitrogen and carbon, and the latter when heated with the carbonate of potassium yields metallic potassium. (Compare method of manufacture of sodium and potassium in your text books.) Metallic iron decomposes a part of the potassium cyanide, forming cyanide of iron, which combines with more KCN to form the ferrocyanide. Although the latter contains the elements of potassium and iron cyanides, $4KCN, Fe(CN)_2$, it is not an ordinary double cyanide, *e.g.*, like the silver potassium cyanide, $AgK(CN)_2$. The iron is combined in some complex manner with the carbon and nitrogen to form an acidulous radicle in which the iron no longer responds to the ordinary tests. If, however, a ferrocyanide be heated with *strong* sulphuric acid the molecule is broken up, and the iron will be found as ordinary sulphate. Some other metals of the iron group, notably cobalt, possess this property of forming compounds analogous to the ferro- and ferri-cyanides. Potassium ferrocyanide is not poisonous. This is due to the fact that alkalies and very dilute acids do not decompose the ferrocyanic radicle. In the human body, therefore, no cyanide or hydrocyanic acid is produced. When boiled with moderately dilute sulphuric acid it is, however, decomposed, yielding hydrocyanic acid—

$$K_4Fe(CN)_6 + 3H_2SO_4 = 2K_2SO_4 + FeSO_4 + 6HCN.$$

The ferrous sulphate shown in the above equation reacts as fast as it is formed with more potassium ferrocyanide, producing an insoluble ferrocyanide of potassium and iron, which is not decomposed by the dilute sulphuric acid and constitutes the insoluble bluish precipitate left in the still when making hydrocyanic acid by the B.P. process (q.v.)—

$$K_4Fe(CN)_6 + FeSO_4 = (FeK_2)Fe(CN)_6 + K_2SO_4.$$

Putting these two equations together we get—

$$2K_4Fe(CN)_6 + 3H_2SO_4 = 3K_2SO_4 + (FeK_2)Fe(CN)_6 + 6HCN.$$

Only half of the cyanogen of the ferrocyanide is therefore obtained in the distillate as hydrocyanic acid. When ferrocyanide of potassium is heated to a higher temperature with concentrated sulphuric acid, carbon monoxide is evolved, the nitrogen appearing as ammonia—

$$K_4Fe(CN)_6 + 6H_2SO_4 + 6H_2O = 2K_2SO_4 + FeSO_4 + 3(NH_4)_2SO_4 + 6CO.$$

The water shown in the above equation is derived from the water of crystallisation in the ferrocyanide $[K_4Fe(CN)_6, 3H_2O]$, and the small quantity contained in the sulphuric acid. It is difficult to explain this decomposition in a simple manner, but a consideration of the behaviour of hydrocyanic acid to water and its relation to formic acid is of great assistance in the matter. Hydrocyanic acid is decomposed in presence of water under certain circumstances, forming the ammonium salt of formic acid—

$$HCN + 2H_2O = H{\cdot}COO(H{\cdot}NH_3),$$

and formic acid heated with strong sulphuric acid yields carbon monoxide and water—

$$H{\cdot}CO(OH) = CO + H_2O.$$

When the ferrocyanide is heated with strong sulphuric acid the hydrocyanic acid which would be produced with dilute sulphuric acid—

$$K_4Fe(CN)_6 + 3H_2SO_4 = 2K_2SO_4 + FeSO_4 + 6HCN,$$

under the altered conditions probably undergoes a further reaction—

$$CNH + H_2O = NH_3 + CO.$$

The ammonia being produced in presence of sulphuric acid combines with an equivalent quantity of the latter, forming ammonium sulphate.

Potassii Iodidum.—The remarks made under "Potassii Bromidum" apply equally well here. In testing for iodate, tartaric acid is used in place of mineral acids, owing to the danger of liberating iodine by action of these latter on iodide alone. The test with silver nitrate and ammonia is to detect any chloride present as impurity. If this impurity be present silver chloride will be present in the precipitate, as well as silver iodide. The former being readily soluble in ammonia will be detected in the ammoniacal filtrate by super-saturating it with nitric acid, white silver chloride being reprecipitated when the ammonia is converted into ammonium nitrate.

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ELEMENTARY PHARMACEUTICAL EDUCATION.

It is gratifying to find that the subject of elementary pharmaceutical education in provincial districts, as referred to in our issues of October 23 and 30 last, is being taken up in several quarters, and by those who have struggled in the past to improve facilities in this direction, no less than by a newer generation of enthusiasts in the cause of education, Mr. Thomas Barclay's letter serves as a timely reminder of the thorough and practical manner in which—eleven years ago—he attempted to bring home the importance of placing provincial pharmaceutical education upon a systematic basis, and those who are now taking an interest in the same question may turn back with advantage to the paper Mr. Barclay read before the Midland Counties Chemists' Association, and referred to in his letter published this week. The scheme drawn up by Mr. Barclay proved to be premature, but none the less some such scheme was and is an imperative necessity, and it is to be hoped that the present time may be more propitious than eleven years ago. As we remarked at that time, it is essential that pharmaceutical students should, from the outset of their career, not merely know what is necessary for their successful progress, but also see before them a distinct and clearly marked course of procedure to be followed in order to obtain the training and acquire the knowledge demanded of them. Failing a compulsory curriculum, a voluntary one should be encouraged, and that in two ways—first, by arranging a systematic course of instruction extending over a period of three years; secondly, by affording the necessary facilities to pupils to attend classes and impressing upon them the desirability of working slowly but steadily through the arranged course. It is absurd to establish a local school of pharmacy or a pharmaceutical section in a local college if pupils are not relieved from their shop duties during the hours the classes are conducted; it is equally futile to grant the necessary time off, or tell apprentices what they ought to do to improve themselves, if no suitable classes are available. Opportunities should be provided in both directions, and not one only. What is required in addition is that all who are interested in this matter should unite their forces, agree upon a common programme, and endeavour to establish pharmaceutical education on a uniform basis throughout the length and breadth of Great Britain.

In order to bring this about, we recently suggested the advisability of holding a conference which should be attended by representatives of all existing teaching centres. That idea appears to have taken root, and our enterprising Plymouth friends have found time, while dealing with other important, though not more important, matters to draft a proposal to the effect "that with a view to placing elementary pharmaceutical education on a uniform and satisfactory basis throughout Great Britain, it is desirable that a conference should be called to deal with the matter, in accordance with the views expressed in the *Pharmaceutical Journal* of October 23 last, and that the President of the Pharmaceutical Society should be requested to preside at the conference." This proposition, which has not yet been discussed, is happily worded, and the suggested choice of a chairman to preside at the proposed conference is an excellent one. Mr. Hills takes a deep interest in educational questions, especially those connected with pharmacy, and it would afford much gratification to all who advocate improved pharmaceutical education if he would consent to occupy the position indicated. We understand that steps are being taken to bring a similar proposition before other pharmaceutical associations, and if they, or a majority of them, agree as to the desirability of taking the step indicated, there ought not to be much difficulty in giving practical effect to their desires.

It may be thought in some districts where the educational arrangements are now quite satisfactory that there is no need for chemists in those districts to concern themselves further in this matter, but that would be a purely selfish view to adopt. For, if a conference should be held, it is above all important that those districts should be represented, so that the causes of their success may be fully explained to the delegates from less fortunate centres. Nottingham, for example, is now regarded, and we believe rightly so, as having solved the educational difficulty in a more satisfactory manner than any other provincial centre. But it would ill accord with what we know of Nottingham men and Nottingham ways, if the chemists of that town refrained from sending a duly accredited representative to such a conference as is suggested, on the ground that they are quite satisfied with the arrangements they have made. No, we should rather expect to see Nottingham in the van, ready and anxious to show the chemists of other towns what can be done. And the same with other centres—Liverpool, Manchester, Sheffield, Plymouth—all have stories to relate, and whether of complete or only partial success matters not, so long as they are related and the accompanying morals driven home. The national scheme that we hope to see adopted may be based on the existing arrangements in some one district rather than others, but it may be opined that certain points will be adopted from all. And, of course, agreement upon a general scheme for a voluntary three years' curriculum would not prevent variation in the details of that scheme according to the requirements and possibilities of each district. What is to be sought for is a common ground upon which all may meet; the rest may be left to those who are most immediately concerned, *i.e.*, the chemists and apprentices in the different districts.

ANNOTATIONS.

The Rectification of the Register of Chemists and Druggists is now being effected in view of the publication of the printed Register for 1898, and the Registrar of the Pharmaceutical Society has furnished a list (see p. 436*a*) of persons whose names will be erased unless they communicate with him not later than December 30 next. In each case the necessary formalities have been carried out, and it is now requested that local secretaries or other readers who may know the present addresses of any persons whose names appear upon the list will promptly direct the attention of those persons to the risk they incur of having their names removed from the Register. The process of restoration is not free from trouble, but it is very easy to avoid that trouble if the persons directly interested, or their friends, will notify their present whereabouts to the Registrar, 17, Bloomsbury Square, London, W.C.

The Plymouth Draft Resolutions published in last week's Journal have naturally attracted much attention in different parts of the country, and some expressions of opinion that have been received thereon are not unworthy of consideration. As regards the recommendations embodied in the first and second clauses, and the latter part of the third, there is practically no difference of opinion. A strong desire exists to simplify the classification of supporters of the Pharmaceutical Society, and nothing simpler could be conceived than a division into "Associates" who have not passed the qualifying examination, and "Members" who hold the full legal qualification. Again, it is felt that, by insisting that pharmaceutical students shall register as such not less than three years prior to presentation for the qualifying examination, the supply of unsuitable raw material and the "cram" difficulty would both be more effectually checked than they could otherwise be, even by the action of the proposed new Bye-Law dealing with the Preliminary examination. Moreover, the name "Minor," applied to the qualifying examination, is protested against by many as a misnomer.

In the Matter of Titles there is not such general agreement, though it seems to be pretty generally recognised that everyone legally qualified to practise pharmacy should also be entitled to describe himself as a "Pharmacist." But, though pharmaceutical chemists as a class do not appear averse to extending the application of their title, a fear is expressed in some quarters lest it should be made too cheap, as it might be under the proposed new rule if that were retrospective in its effects. More than that, it has been suggested that the Legislature might resent an attempt to remove several thousand names from the jury lists by a side wind, as it were. Finally, there is a strong feeling that some more distinctive title should be conferred upon Major men, but whether that should be general or limited to those who are connected with the Society is a moot point. The Plymouth proposals favour the latter alternative, and though the title of "Fellow" is far from being universally favoured, it is none too easy to suggest a better one for the purpose.

The Consideration of these Points at Plymouth is cause for congratulation, the more especially as we understand that meetings will be held at other centres during the month to deal with the same questions. This is as it should be, for the more widely affairs of such general importance are discussed, the more sure will the Council of the Society feel that there is a firm basis upon which to build. The more resolutions there are sent up to headquarters from local associations, the greater satisfaction will there be at the interest evinced in the Council's labours, and though much more may be asked in some cases than the Council may feel justified in seeking to secure, great good cannot fail to result if a general agreement should be manifested with regard to matters of principle. The principles evolved in the draft resolutions are, we believe, of the very soundest, and so long as those are generally accepted, the details may be left to adjust themselves as expediency may direct.

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e General Index to the Journal, which has been repeatedly asked for by readers, appears to be wanted by a comparatively small number of persons, so far as can be judged from the lack of interest taken in the announcement that such an index would be published if a sufficient number of orders were received. Several officers of public institutions have expressed their desire to possess copies of the proposed index, which, as one remarks, would be "a valuable means of reference to the vast store of information contained in the Journal." But even some of those who have been most persistent in asking that the index should be prepared have not taken the trouble to say they are willing to subscribe for a copy. It must be clearly understood that there is no prospect of publication unless satisfactory evidence is forthcoming that the heavy expenses necessarily incurred in connection with the production of such a work will be met. One correspondent states that several pharmacists of his acquaintance have expressed the opinion that the general index would be "a great comfort and convenience," but that the price suggested is too high. If that be the general opinion, it is possible that those who have occasion to refer frequently to our back volumes must remain content to consult seventeen indexes rather than one. If printers and others lived to work they might be content to produce the general index free of cost; as it is, however, they work to live, as a rule, and so the index must be paid for if it is to exist. It may be stated, however, that the cost per copy of such a work depends entirely upon the number printed, and that five hundred subscribers at half a guinea would be better than two hundred at a guinea. If, therefore, a sufficient number of readers send orders conditional on the price not exceeding half a guinea, it is quite within the bounds of possibility that the index may be produced at that price or less. But the orders, conditional or otherwise, must be sent in without delay if any further steps are to be taken in the matter.

The Virtues of a New Nostrum, or rather, the claims of its proprietors, are the subject of criticism in an amusing note in the "Finance" column of the *Star*. The writer remarks that the virtues of the preparation appear to be so manifold that he is surprised he never heard of it before, and appears sceptical regarding the statement in a circular published by the proprietors, that after deducting all expenses, a profit of not less than 20 per cent. will remain for distribution amongst the shareholders who may be induced to risk their money in this venture. He notes that the company omits entirely to give any details of past business on which that calculation might equitably be founded, and takes objection to the statement that "in Great Britain alone there are about 18,000 chemists and patent medicine vendors who should stock our preparations." The point is, he remarks, do chemists stock "our preparations"? That they should do so he cannot doubt, but he pertinently remarks that chemists are notoriously blind to solemn moral obligations of that nature. The circular fails to enlighten him on the point, merely proceeding thus: "Assuming that each vendor only sold three dozen bottles per annum, the profits of a year's trading would be over £15,000." The fact is, proceeds the critic, there is a great deal too much

assumption about the company. "Assuming that the heavens should fall, we should all be crushed. Assuming that the public buy those shares, the company will get its capital."

Pharmaceutical Licence Examinations in the United States are not the same as here, and it is very doubtful whether they are worth nearly so much as tests of qualification. Judging from the particulars sent by a San Francisco correspondent who has recently passed the examination held by the State Board, the California examination for licentiates is mainly a written one, with dispensing added. The chemistry paper includes ten questions, the answer to any of which will constitute a short essay on the source, preparation and properties of a given elementary substance and its chief compounds. Then there are ten equally comprehensive questions in toxicology, ten more in materia medica, and ten in pharmacy. Botany, apparently, is not a subject of examination. In dispensing, the candidates were required to prepare an emulsion, an ointment, powders, pills and suppositories, but no pill machine was provided, nor was a suppository mould forthcoming. Probably, as our correspondent suggests, the examiners think that any one who can turn out satisfactory pills and suppositories without moulds can do much better with such luxurious accessories. According to our English notions, however, it would be cleanlier to use a pill machine rather than depend upon the fingures, whilst better results would be obtained with a proper suppository mould than with minature paper cones. Whether in consequence of this laek of appliances or not, more than 50 per cent. of the candidates failed to satisfy the examiners on the occasion in quc̈stion.

The Western Chemists' Association (of London) will hold its annual dinner at the Café Royal, Regent Street, W., on Wednesday next, November 17, at 6.30 p.m. In order to facilitate the arrangements, the Committee will feel obliged if members can conveniently signify their intention of being present, and make application for tickets not later than Monday, the 15th inst. Members can obtain tickets, 7*s.* 6*d.* each, for themselves and friends, from the President and Hon. Treasurer, Mr. J. H. Mathews, 68, Queen's Gardens, W., or from either of the Hon. Secretaries, Mr. Herbert Cracknell, 17, Craven Road, Westbourne Terrace, W., and Mr. J. F. Harrington, 45, High Street, Kensington, W.

University College, Nottingham, is well-known as a centre of pharmaceutical education, and it is interesting to note that the authorities of the College record the successes of their students at the Pharmaceutical Society's Examinations in the "Honour List" for the session 1896-97, four students having their names published in that list.

The March of the Advertiser was the subject of a powerful indictment of disguised journalistic puffs by Mr. H. J. Palmer, editor of the *Yorkshire Post*, in an article published in the *Nineteenth Century* last January, and commented on in these pages at the time (see last volume, p. 51). He now returns to the charge in the *Times*, with the object of showing that metropolitan newspapers sin in this matter no less than provincial organs. Without attempting to set up any sort of insidious analysis of the comparative morality of the two classes, he points out that the main difference between the two is one of geographical position, and there is not the least foundation for the suggestion that the publication of disguised puffs is confined to provincial prints. In fact, he says his attention was first directed to the matter by the systematic appearance of these masked advertisements in a metropolitan journal of some pretensions, and the truth is that this kind of advertising forces itself in where it can, and only succeeds in getting into the more worthless of prints.

At the Evening Meeting of the Pharmaceutical Society to be held at 17, Bloomsbury Square, W.C., on Tuesday next, November 16, the chair will be taken at eight o'clock precisely by the President, and the following papers will be read :—"Pharmacy at some of the American Universities," by Professor J. Reynolds Green, F.R.S.; "Suppositories," by Edmund White, B.Sc., F.I.C., and J. O. Braithwaite. A series of emetine salts and other products will be exhibited at this meeting.

The Linnean Society commenced operations for the session last week, when a most interesting meeting was held. A collection of zoological and botanical exhibits collected by the Jackson-Harmsworth expedition was shown by Mr. F. G. Jackson, the leader, and Mr. Fisher, the botanist of the expedition, the former also exhibiting upon a screen a number of photographs of animals and birds which inhabit the Arctic regions. Some lantern slides of marsh birds and their nests from photographs recently taken in Spain and Holland were shown by Mr. Reginald Lodge. In addition, Sir John Lubbock read a paper on "The Attraction of Flowers for Insects," which was intended as a reply to three memoirs recently published by Professor Plateau, who has attempted to show that the colours of flowers do not serve to attract insects, but, on the contrary, that the desired result is effected entirely by the sense of smell. Sir John Lubbock, like Sprengel and Darwin, is firmly of opinion that we owe to insects the beauty of our gardens and the sweetness of our fields, flowers being indebted to them both for their scent and colour. He contends that not only have the present shapes and outlines, brilliant colours, sweet scent and nectar of flowers been gradually developed through the unconscious selection exercised by insects, but that this applies even to minor points, such as the arrangement of lines on petals, etc., and the different shades of colour.

Professor Plateau has recorded a series of experiments on the dahlia, in which he shows that bees come to those flowers even when the ray florets have been removed, but, discussing this point, Sir John Lubbock said it was somewhat singular that he should have selected as proving that insects are entirely attracted by scent a flower which, so far as we know, possesses no scent at all. He also gave several reasons for disputing the conclusions drawn by Professor Plateau from his experiments, and recorded various experiments conducted by himself to refute them. He has experimented upon species in which the scent is in one part of the flower and the coloured leaves in another, as, for instance, the *Eryngium amethystinum*. The flower is surrounded by brilliant blue bracts, and he finds that if the two parts are separated the bees come much more often to the bracts than they do to the flowers themselves. He maintains, therefore, that the observations of Professor Plateau do not in any degree weaken the conclusions which have been drawn by Sprengel, Darwin, and others, and that it is still correct to assume that the colours of flowers serve to guide insects to the honey and so secure cross-fertilisation.

The College of Physicians has followed the example of the College of Surgeons, observes the *Daily Chronicle*, in refusing to consent to the banishment of medical men associated with medical Aid Societies to a kind of professional Coventry, because those societies canvass for support. Such canvassing is held by those who object to it to be equivalent to advertising, which, of course, is the cardinal offence in the eyes of the profession. However, the College of Physicians, like the sister college, has frankly confessed, in a formal resolution, that the question is outside its pale

THE WORLD OF PHARMACY.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, November 10, the Librarian presented the following report of donations :—

To the Library (London).

Royal College of Surgeons of England :—Calendar, 1897.

Mason College, Birmingham :—Calendar, 1897.

University of London :—Calendar, 1897.

University College, Nottingham :—Calendar, 1897.

City of London College :—Calendar, 1897.

Royal Medical and Chirurgical Society, London :—Medico-Chirurgical Transactions, vol. 80.

Saint Bartholomew's Hospital, London :—Statistical Tables of Patients, 1896.

Professor H. Trimble, Philadelphia :—Some N. American Coniferæ, 1897.

Professor E. Schaer, Strassburg :—Arzneipflanzen als Fisch gifte, 1897.

Mr. F. Harwood Lescher, London :—Recent Materia Medica, 5th ed., 1897.

Mr. R. Bremridge :—Year-Book of Pharmacy, 1897.

British Pharmaceutical Conference :—Year-Book of Pharmacy, 1897, two copies.

To the Library (Edinburgh)

British Pharmaceutical Conference :—Year-Book of Pharmacy, 1897.

Mr. J. R. Young, Jun., Edinburgh :—*Pharmaceutical Journal* [4], vols. 2–4, 1896–7.

Mr. D. McGlashan, Edinburgh :—*Pharmaceutical Journal* [4], vols. 3–4, 1896–7.

To the Museum (London).

Messrs. Grindley and Co., London :—Specimens of crude Rosin Oil, bright Pine Oil, sweet Rosin Oil, pale sweet Rosin Oil, crude Rosin Spirit, rectified Rosin Spirit ; specimens of the Rosin from which the above are distilled, and two other grades of Rosin.

Mr. W. Mitten, A.L.S., Hurstpierpoint :—Specimen of a Leech Cocoon and two young Leeches.

To the Herbarium.

Mr. E. H. Farr :—Twenty specimens of rare British *Rubi* and other plants.

Mr. G. H. Hawtayne, C.M.G., F.R.G.S., Administrator-General, British Guiana :—Two Photographs of an *Opuntia* in flower.

Mr. H. N. Ridley, M.A., Director Botanic Gardens, Singapore :—A List of Medicinal Plants of the Malays ; a List of Malay Plant Names and their Identifications.

BRITISH PHARMACEUTICAL CONFERENCE.

A meeting of the Executive Committee was held at 16, Bloomsbury Square, on Wednesday November 3, at 4.30 p.m.—Present : Dr. Symes (President), Messrs. Atkins, Hills, and C. Umney (Vice-Presidents), Mr. Moss (Hon. Treasures), Professor Greenish, Messrs. Collier, Farr, J. C. Umney, and White, Messrs. Naylor and Ransom (Hon. General Secretaries), and Mr. Nightingale (Assistant Secretary).—Letters regretting the inability to be present were read from Messrs. Ewing, Guiler, Martin, McKnight, Payne, Wells, and Bird.—The minutes of the previous meeting were read and confirmed.—A letter was read from the Local Committee at Belfast, suggesting that the business of the next annual meeting should commence on Tuesday, August 9, 1898. It was also proposed that the conversazione should be held on the Tuesday evening instead of on the Monday as heretofore. These recommendations were unanimously adopted.—A letter was read from Mr. E. Beynon resigning his position as Hon. Colonial Secretary for the Presidency of Bombay, and suggesting that Mr. I. Stanley Smith be invited to succeed him. This suggestion was put to the meeting and accepted. The Secretaries were instructed to write to Mr. Beynon on behalf of the Executive, thanking him for his services in the past, and regretting that he found it necessary to resign.—A letter was also read from Mr. D. Hooper, of Calcutta, thanking the Committee for their proposal to elect him as Hon. Colonial Secretary for the Presidency of Bengal, but regretting his inability to accept the post. He recommended that Mr. J. G. Prebble be elected. A motion to this effect was put to the meeting and carried.—The Secretaries announced that they had received from the Treasurer of the Local Committee at Glasgow the sum of £20, being a portion of the balance which remained from the fund which was raised to meet the local expenses of the Glasgow meeting.—Mr. Moss moved, and Dr. Symes seconded, that Mr. Secretary Naylor be requested to write to the Treasurer of the Glasgow Local Committee conveying the hearty thanks of the Executive for the generous donation.—Eight gentlemen having been duly nominated, were elected to membership.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

There was a good attendance of the members of this Society on Thursday evening, November 4, at the University College, presided over by Mr. Peirson, the attraction being a lecture by Dr. Nevins on the

Introduction of the Cinchona Plant into India.

Previous to the lecture, Messrs. Ashcroft, F. B. Hurst, and J. G. Dowie were elected members. The President passed round for inspection an illegible prescription of German origin, and Mr. F. Walker asked for the opinion of the meeting as to the custom generally followed when making up pessaries in which oleum theobromæ *q.s.* was ordered. Did medical men intend 60 grain or 120-grain pessaries to be sent? In the neighbourhood of Manchester the rule seemed to be to dispense the 120-grain size. The general opinion of the members was in favour of the 60-grain pessary, and Mr. Marsden said that in the Royal Infirmary gynæcological wards this was the most usual size employed.—Dr. Nevins thought that it depended upon the medicament incorporated in the pessary, if an opiate or an astringent he should advise the 2-drachm size, if cocaine or other local anæsthetic, he should prescribe or dispense the 60-grain pessary. Proceeding with the lecture of the evening, Dr. Nevins pointed out the causes which led to the Indian Government determining to attempt the cultivation of the cinchona plant in India, where the climatic conditions in various districts seemed eminently suitable to the plant's requirements. The growing scarcity of good barks was chiefly due to the short-sighted policy of the Spaniards during their period of power over the cinchona-producing countries of South America in allowing the trees to be cut down at the rate of 28,000 or 30,000 trees a year, and in not making even a faint effort at replacing them by trees reared from cuttings or seed. It is true the Jesuits did what they could in the way of cultivation and planting, but this naturally was on so small a scale that it had no practical influence on the scarcity. The conditions generally demanded by cinchona for satisfactory growth are an altitude of at least 7000 to 8000 feet above sea level, a tropical moist heat for three months of the year, and rain for the other nine months. The highest heat bearable by the plants is not much superior to that of an English summer, but it must be regular and continuous. The parts selected for the experimental cultivation of the plants were the Neilgherry Hills, on the south-west of India, and the Ghauts, on the south-east. The lecturer then gave an outline of the history of the various attempts made to obtain living cinchona plants. In 1743 Condamine visited the district of Loxa or Loja in Ecuador, obtaining living plants of *Cinchona officinalis*, but these were lost by his boat being upset on the Amazon by the "bore," or immense tidal wave which is of regular occurrence on that river. A Spaniard in 1770 also managed to procure specimens, but he and his whole party were massacred by the Indians. The Spanish Government sent out Hipolito Ruiz and José Pavon to Peru for the purpose of getting information on these plants in 1776, and they collected some fifty boxes of specimens, which were lost on the return to Europe by a shipwreck off the coast of Portugal. A second attempt was made later on, but a fire destroyed their collection. The French botanist Jussien spent at least fifteen years in attempts to procure plants, at the end of which time his servant decamped with the result of his master's labours. The British Government in 1859 organised an expedition to South America under the direction of Clements Markham, in order to obtain the necessary living cinchona plants with which to begin cultivation in India. The adventures of this expedition were related by the lecturer to the great interest of his audience, who were further treated to an able exposition of the first attempts at propagating cuttings from a single plant raised in the Kew Gardens and sent out to Mr. Graham McIvor, Director of the Neilgherry plantations, who succeeded in striking innumerable buds and rearing healthy trees from this single living specimen. The plants, when spaced out, were found to grow more rapidly and better than when crowded together, but it was discovered later on that the yield of quinine from plants grown in this manner was less than from plants more protected from light. This was remedied by covering the trunks with moss and so excluding the action of the

sunlight, by which means the amount of oxygen exhaled by the trees was lessened and the cinchonine oxidised to quinine, or at any rate a larger amount of quinine was given by the bark than of cinchonine. The efforts of Charles Ledger in 1865, who managed to get seeds of a superior calisaya plant from Bolivia, were then mentioned, and it was stated that from these seeds the greater part of the best Javanese barks grown by the Dutch Government were derivcd. After giving the history of the derivation of the name "cinchona" and the changes and mispronunciation to which it has been and was subjected since the time of the Countess of Chinchon, the lecturer mentioned the steps in the introduction of the plant into medical use in Europe, and finally showed the blessing it and its alkaloids were to people living in malaria-stricken countries such as India, notwithstanding which it was said that the Peruvian Indians possessed no knowledge of its virtues, and according to Baron Humboldt and others were positively averse to taking it in any form whatever. The British Indian Government manufactured not so much the quinine alkaloid itself as a mixture of the entire alkaloids of the bark, which was known as "febrifuge," and was sold at a very low price so as to be obtainable by the poorest natives. The results of this philanthropy on the part of the authorities was that whilst fifty years ago 3 per cent. of the Indian Army died of fever, at the present time the death rate was only about 3 per 1000. The lecture was profusely illustrated by means of diagrams and paintings drawn by Dr. Nevins, who also showed Howard's 'Quinologia' and other literature on the subject. A complete series of the various cinchona barks were exhibited by Mr. Prosper H. Marsden and specimens of cuprea bark by Mr. Wardleworth.—In proposing a vote of thanks to Dr. Nevins, Mr. WARDLEWORTH mentioned the extent to which Indian barks were imported into England, their low price and the consequently low rate of quinine at present. The seeds which Charles Ledger obtained were, he believed, offered to the English Government, and subsequently to the Dutch. This latter government had rccently granted to Charles Ledger, who was alive in Australia, a pension for his services, mainly owing to the persistent advocacy of his claims on their gratitude made by one of the pharmaceutical papers. The cuprea barks which Dr. Nevins had not mentioned were a time ago regarded as a possibly profitable source of quinine, but their extraction cost more than that of cinchona barks, and now cupreas were a thing of the past and only brought a few pence per pound on the drug market.—The vote was seconded by Mr. H. WYATT, jun., who was of the opinion of Markham and other authorities that it was to be regretted that these barks were by custom improperly called "cinchona barks," and not as they should be, "chinchona barks." Such mispronunciation was on a par with that of calling *Rhamnus purshiana* "cascára sagrada" instead of "cáscara sagrada."—On carrying the vote with acclamation, the meeting terminated.

PHARMACEUTICAL SOCIETY OF IRELAND.

COUNCIL MEETING.

The monthly meeting of the Council was held on Wednesday, the 3rd instant, at 67, Lower Mount Street, Dublin, the PRESIDENT, Mr. Downes, being in the chair, and the other members attending being the Vice-President, Mr. Beggs, and Messrs. Grindley (Hon. Treasurer), Wells, Conyngham, Bernard, Kelly, Porter, O'Sullivan, Hayes, Ryan, and Dr. Walsh. On the motion of the PRESIDENT, seconded by Mr. WELLS, a vote of condolence with Sir George Duffey, the Visitor of the Society, and Lady Duffey, on account of the death of their son, Lieutenant Duffey, was passed. The President congratulated the Council on the election of a member of the Society (Mr. Baxter) to the office of Chairman of the Coleraine Commissioners.—Mr. CONYNGHAM took exception to a statement made by Mr. Wells at the October Council meeting, viz., "One gentleman brought assistants to the meeting, and when he (Mr. Wells) asked them to retire they would not." That was absolutely untrue. He (Mr. Conyngham) brought no assistants there.—Mr. WELLS said the statement was absolutely true. If the cap fitted Mr. Conyngham let him wear it.—A formal report by the President of what took place at the meeting on October 25 was read.—Mr. HAYES remarked that it was natural for the members of the Assistants' Association not to have come to that meeting when they were turned out of the prcvious meeting. PRESIDENT: That was a very different meeting.—Mr. CONYNGHAM: They were allowed to come here for twenty years,—Mr. WELLS: That is not the fact.—PRESIDENT (to the Registrar): Next business.—A protest from Mr. Conyngham in relation to the voting at the annual meeting was marked "read." The next business was the co-option of a member of Council in the room of Mr. Hodgson. Mr. William Burns, registered druggist, of Ballinamore, was proposed by the PRESIDENT and seconded by Mr. WELLS. Mr. HAYES proposed Mr. Samuel Boyd, of Mary Street, Dublin. The voting being six for each, the President gave a casting vote in favour of Mr. Burns.—Mr. CONYNGHAM said the President was not in order in doing so because he had not previously voted at the same time with the other members of the Council.—VICE-PRESIDENT: But he did.—Mr. KELLY said if more respect was not paid to the chair he would leave the Council.—Dr. H. C. Tweedy, Mr. Brown, Mr. John Smith, Dr. McKinney, Mr. James Guiler, and Mr. W. V. Johnston were elected Examiners in different departments.—A motion by Mr. BERNARD to revise the form of voting paper for the election of members of Council having passed, and other business having been disposed of, the Council adjourned.

EVENING MEETING.

The first of the evening meetings was held in the Society's rooms on Monday evcning, the PRESIDENT in the chair. He addressed a few words as to the object of the meetings, after which Messrs. Smith, Doran, W. V. Johnston, and H. O'Connor were elected a committee, Mr. H. O'Connor, Hon. Sec., and the following were elected as reporters to bring before the Society any matters of interest marking the advance of science in the branches from which they were elected:—Mr. A. L. Doran, Chemistry: Mr. J. Smith, Materia Medica and Botany; Mr. Johnston, Pharmacy. It was also resolved that the communication read before the Society be written on white ruled foolscap paper, and on one side only, to admit of uniformity for subsequent binding purposes. A copy of each communication, with a right to publish the same, shall become the property of the Society. A discussion followed, raised by Dr. WALSH, as to the best way of preserving powdered ergot, in which Messrs. Smith, Wells, Johnston, Doran, and Dr. McWalter took part.—Dr. MCWALTER raised a discussion on the question as to whether it is justifiable to dispense syr. ferri. iodi. if made from the liquor to which hypophosphorous acid has been added as a preservative, and the President submitted a troublesome suppository for consideration as to the best way of making.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday, November 4, Mr. T. MORLEY-TAYLOR, President, took the chair at the first musical and social evening of the session. A first-class programme had been arranged, under the direction of the ex-president, Mr. C. Morley, including songs by Messrs. J. Hornby, J. Sime Waterston, A. Purnell, W. Taylor, Cross, and Henley; part songs by the Kalema Quartet; a recitation "Over the Hill from the Poorhouse" by Mr. S. A. Walton, and pianoforte solos by Mr. A. T. Rugman, who performed his task as a soloist and accompanist in such a skilful manner as to call forth exclamations of both pleasure and surprise that he, a pharmacist, should also be so clever a musician. The humorous element was supplied by Messrs. Purnell and Henley, the other pieces all being of a more or less sentimental character. —After an interval, during which coffee and other light refreshments were served out, further additions were made to the roll of members, bringing the number of new members elected since the opening of the session to about thirty-three. Mr. TAYLOR then said they were having a very enjoyable evening, and they had to thank Mr. C. Morley for getting up the entertainment, and also the gentlemen who had so kindly assisted him by singing, etc.; on behalf of those present he thanked them most heartily.—The rendering of "God Save the Queen" concluded a most successful social evening, which was attended by nearly fifty members of the Association.

MIDLAND PHARMACEUTICAL ASSOCIATION.

On Thursday, November 4, the winter session of the Midland Pharmaceutical Association was opened with a social gathering and dance at the Grand Hotel, Birmingham.—The PRESIDENT (Mr. F. J. Gibson), was unavoidedly prevented from being present in consequence of the death of a relative, and his duties were gracefully performed by Mr. Jeffery Poole, Vice-President. After the reception, dancing was indulged in, the office of M.C. being fulfilled by Mr. Shorthouse, Honorary Secretary. The arrangements were admirably carried out by Mr. Shorthouse.

MEETINGS OF SCIENTIFIC SOCIETIES

CHEMICAL SOCIETY.

The opening meeting of the session on Thursday, November 4, was crowded to overflowing.—After confirming the minutes of the last meeting and introducing some new members, Professor DEWAR, F.R.S., the President, called upon Sir WILLIAM CROOKES to occupy the chair, while he read the papers he had to bring before the Society.

THE PROPERTIES OF LIQUID FLUORINE.

A table in which a comparison of the boiling points of fluorine derivatives of organic bodies with the corresponding chlorine, bromine, and iodine derivatives was first shown. Fluobenzene boils 5° higher than benzene, chlorobenzene 47° higher; para fluoaniline boils 4° higher than aniline, parachlor aniline 43° higher, and so on. This comparison indicates that fluorine must possess a very high volatility, an inference that follows also from the researches of Dr. Gladstone upon the refractive indices of these bodies. Diagrams of the apparatus used for liquefying fluorine were shown. Although no vessels of transparent material other than fluorspar, which is exceedingly brittle, can be used for the manipulation of gaseous fluorine, yet in view of the fact that chemical reaction is suspended at very low temperatures it was surmised that glass might be used as a receptacle for liquefied fluorine, and the supposition proved correct. The gas was to be condensed in a platinum tube, from which it could flow into a glass bulb. When the platinum tube was surrounded by boiling oxygen at a temperature of −183°, no liquefaction took place, but on exhausting when the temperature went down to −185°, a yellow liquid collected in the tube, the colour of which had an intensity such that ·5 Mm. equalled a tube of the gas 1 metre long. At this temperature neither silicon, boron, nor carbon incandesces when thrown into the liquid, and no iodine is liberated from iodides, but the affinity of fluorine for the hydrogen of hydrocarbons is still sufficiently great to cause the ignition of benzene. Solid turpentine is attacked, and a jet of hydrogen directed on to its surface is at once ignited. It has no action upon ice or upon mercury, but a body, presumably a hydrate, which exploded upon the rise of temperature, was obtained. Its boiling point lies in the neighbourhood of −187°; the critical point is −120, and the critical pressure 40 atmospheres. Attempts to solidify the gas were futile; it remained liquid at −210°. To estimate the density of liquid fluorine, recourse was necessary to the observation of its buoyancy for solids of known density, such as wood, amber, ebonite, and methyl oxalate. Amber of specific gravity 1·14 was found to float or sink indifferently, and its density is, therefore, equal to that of the liquid. The refractive index of the liquid is greater than that of liquid oxygen—with which it mixes in all proportions—but its capillary constant is less. With the spectroscope it gives no absorption bands, nor does it show any magnetic phenomenon. Its exact refractive and dispersive indices remain to be determined, but the law that a gas should have the same atomic refraction in the liquid condition as in the gaseous seems to be here departed from, that of fluorine being higher in the liquid state.—In the discussion following, Dr. GLADSTONE commented upon the singular variance of liquid fluorine in its refractive properties from what had been expected.—Dr. PERKIN mentioned that while by the introduction of chlorine, bromine, or iodine, into the benzene molecule the rotation is increased, if one introduces fluorine the rotation goes down; the only analogy he could recall was that of the NO_2 group, the behaviour of which had some resemblance to that of the fluorine atom.—Professor THORPE recalled the fact that while experimenting upon arsenic fluoride, he had noticed that a glass tube immersed in the liquid was quite invisible, and had a refractive power therefore corresponding with that of the liquid.—Sir WILLIAM CROOKES spoke in praise of the way in which the difficulties and dangers of experiments had been overcome. The lives of at least two people had been lost in the attack upon fluorine, and for years until now it had been given up as an impregnable fortress.—Professor ARMSTRONG asked for an explanation of the fact, that although fluorine was yellow it produced no spectrum absorption; in reply to which question Professor DEWAR explained that he had meant no selective absorption.

ON LIQUID AIR AND THE DETECTION OF IMPURITIES.

Professor DEWAR explained shortly, using a diagram to illustrate the apparatus employed, how impurities in air could be detected by its liquefaction. Liquid air, even that which has been filtered through wool and purified by sulphuric acid and soda lime, appears dirty from the presence of foreign bodies; the ordinary proportion of carbon dioxide, ·04 per cent., is sufficient to make the liquid quite milky, but perfectly pure air forms a colourless liquid. The outline of the method is to condense the air at common pressure by passing it from a gas-holder through a bulb kept at a temperature of −200°. Bodies not liquefiable nor soluble in liquid oxygen must in this way be separated. Experiments carried out had shown that 1 volume of hydrogen in 1000 of air could be detected, but the delicacy did not reach beyond this limit; but hydrogen has relatively a high solubility in liquid air, and hence the experiment on pure air shows that it contains no gas insoluble in liquid air in greater proportion than 1 in 200,000. An experiment upon the gas given out by the springs at Bath had shown that besides a small proportion of organic matter of the nature of petroleum it contained a quantity of helium but no trace of oxygen. Artificially the author had never obtained atmospheric nitrogen so free from oxygen as this specimen was, no trace of oxygen being perceptible, even by the spectrum analysis.—A third paper by Professor Dewar was then read upon

THE ABSORPTION OF HYDROGEN BY PALLADIUM AT HIGH TEMPERATURES.

The apparatus employed for the purpose was illustrated by a diagram and briefly described, and some of the numerical results obtained were enumerated. A bar of palladium, 4 or 5 Cm. long and about 5 Mm. thick, was enclosed in a strong steel cylinder, which contained besides a very small amount of open space, in order that after the absorption of much hydrogen the accumulated gaseous impurities might be easily expelled. This amount of metal, about 10 C.c., at a temperature of 420°, and under a pressure of 80 atmospheres, had been made to occlude 2980 C.c. of hydrogen; at 500°, under a pressure of 120 atmospheres, it absorbed 3700 C.c. of the gas. Corresponding amounts absorbed at intermediate temperatures and pressures prove that the behaviour of palladium towards hydrogen is the same at these temperatures as at lower ones, and that below this point no sort of critical temperature existed as has been hitherto supposed. Further observations upon this subject are being made.

SHEFFIELD MICROSCOPICAL SOCIETY.

The inaugural meeting of the winter session took place in the Rutland Institute, Fargate, on Friday, November 5. The PRESIDENT, Dr. George Wilkinson, B.A., occupied the chair, and there was a large attendance of members and friends.—A lecture was delivered by Mr. B. W. WINDER, F.R.M.S., F.C.S., on—

AIR AND ITS IMPURITIES.

After referring to the impossibility of the human mind to grasp the idea of what infinity means, both as regards space and minuteness, the lecturer proceeded to describe some of the smaller forms of life which are always present with us. These, he said, might be divided into two classes, the organic and inorganic, or, perhaps better still for the evening's subject, into living and dead matter. First taking the living portion of atmospheric impurities, he said the minute specks we see as motes in the sunshine are germs, some of our plants and flowers, some the germs of disease, some their antidote. Where they come from originally is not a subject for our consideration this evening, for suppose we were to admit they were carried here from some other planet, it only removes the difficulty one stage farther away, as the question naturally arises, how did the other planet become possessed of them? Where they go to is a question much more easily answered—they do not all go, they stay and multiply, and carry on the work for which they were originally created. Some to build up new matter, some to break down and remove old and effete matter. After showing the enormous amount that one bacterium could produce in a week if allowed to multiply, the lecturer said two great laws existed to prevent this. To increase and multiply, an animal, no matter how small, must have food, and none of these minute forms had the power of producing from within themselves material for multiplication; on the contrary many of them produced their own toxin or poison. Secondly, the great struggle for existence serves to keep in check the undue supply, and the law comes in of the survival of the fittest. The lecturer proceeded to remark on the great work done by Pasteur, Koch, Klein, and a host of other investigators who had done so much to extend our knowledge in this subject. Whilst alluding to

Pasteur as the great figure-head of bacteriology, he was, he said, by no means prepared to accept as proved his theory of inoculation against hydrophobia. Many people attempted to compare vaccination against small-pox with this method, but there was not the slightest similarity between them. In vaccination you render a person unlikely to take the disease by depriving the body or blood of the material which would be required to support the germs of small-pox—and this, please note, before the person has contracted the disease—and in hydrophobia the person already has the poison in his system, and that in the most virulent form; is the weaker poison introduced later on going to overcome the strong? Hydrophobia could be completely stamped out in twelve months if the muzzling order were carried out properly. The lecturer then described the dust taken from the various workshops and other places, and referred to the diseases produced by them. With regard to the black smoke from our high chimney-stacks, the damage it does is not so much of itself as so many people make out, but it prevents the sunshine from getting to us, and if only our working classes knew the advantages we derive from sunshine we should see a good many cleaner cottage windows and open casements to let it in.—A discussion then took place, in which the PRESIDENT and Messrs. J. AUSTEN and T. DOBB took part, and a very hearty vote of thanks was accorded to the lecturer on the motion of Mr. G. T. W. NEWSHOLME, seconded by Mr. W. B. TOLPUTT, L.D S.

PARLIAMENTARY NOTES.

TEN MONTHS' EXPORTS AND IMPORTS are contrasted in the Report on Trade and Navigation Accounts just issued by the Board of Trade. The report is a compilation of statistics from figures supplied by the Customs and the Excise Departments, and reviews the trade of the United Kingdom for the ten months ending October 31 last. The total exports amounted to £195,274,228, and show a net decrease on the corresponding period of 1896 of £16,065,029. On the other hand, the imports have increased by £12,936,324, and reached the stupendous total of £368,786,726. These figures will no doubt furnish political economists with ample material for more or less lucid speeches on the decline of British trade, for it appears certain that we sell less goods than we buy—in fact, £173,512,498 less.

TAKING THE CLASS OF GOODS more directly concerning the chemical and pharmaceutical world, it will be found that the Board of Trade Report contains some ground for optimism. In the class of chemicals, dye-stuffs, and tanning substances, there has been a steady decrease in the imports and as steady an increase in the exports. The value of shipments to Great Britain in these articles is shown to have been less by £757,066 than in the compared period of 1896—a fall chiefly due to the receipt of fewer manufactured chemical products—less cochineal, coal-tar dyes, and Valonia; but perhaps the result was also affected by the lower value of saltpetre. The other side of the account reveals an increase of exports in this class of £300,000, due largely to activity in alkali and in chemical manures. Medicinal preparations, however, show a respectable increase of £3400, and the value of the outward shipments of medicine is stated at £927,486. There would thus appear to be considerable faith abroad in the efficacy of British quack and other medicines. Among other points of interest exhibited by the Report is the fact that Germany is taking year by year an increasing quantity of alkali, and the United States a diminishing amount. Germany and France are also our best customers for chemical manures, for, between them, they absorb nearly one half of the total exported.

THE IMPORTS of olive oil show a drop of 2600 tuns, valued at £74,300, but seed oils have advanced in value, though with a slightly diminished quantity. Turpentine, Peruvian bark, and gum arabic were not in such demand apparently, for they were lower both in quantity and value. Gum arabic shows the greatest decrease of all - 15,000 cwts.—but the reason is pretty plain when it is observed that "other gums" are credited with greatly increased figures. Paraffin, resin, tallow, and stearine partake of the general depression in chemical imports, but a very satisfactory phase of the trade in stearine is the growing importance of Australian goods. Russia has fallen to the insignificant position of being able to send 200 cwts. only, whilst the figures for Australasia have for the past three years grown enormously; 30,000 cwts. are stated to have arrived from "down under," and the trade is growing. The values, too, have considerably decreased, so that one is led to conclude that there is something in this particular manifestation of imperialism. At any rate, Australia looks like monopolising the import trade in tallow and stearine.

"UNENUMERATED DRUGS" is as vague a term as the lawyer's "sundry charges," but it is a feature in every report. There is a suspicion that when any difficulty in classification is met with by the Government statisticians, the doubtful item is sent to swell the collection of "unenumerated drugs." When, therefore, one finds that £25,000 of these nondescript substances reached Great Britain during the period under review, the fact must be swallowed whole, for it contains no special meaning, and is only intended to arouse speculations as to the official conception of a drug.

IN PARAFFIN, NAPHTHA, and other products of coal, the amounts exported from Great Britain were less than in 1896, but the value of the goods sent reached the respectable total of £1,376,142. Seed oil, too, showed a falling of, but soap increased by 8000 cwts., and the fact may be of some satisfaction to those who have suffered from the want of it in continental cities, as well as those who see in the increased demand for the article evidence of the spread of civilisation.

MEDICAL NOTES.

THE DEATHS, within a few days of each other, of three distinguished members of the medical profession have occurred, namely, Sir William Mackinnon, late Director of the Army Medical Department; the Rev. Dr. Haughton, of Dublin; and Sir Rutherford Alcock, at one time British Minister in Pekin, all of whom achieved success and distinction in their various careers.

SIR WILLIAM MACKINNON, who was a son of the Manse, his father being a parish minister in the Isle of Skye, saw more active service than most men. He entered the army as assistant-surgeon in the 42nd Highlanders (Black Watch) in 1853, and served with that regiment throughout the Crimean War, and was present at the battles of Alma and Balaclava and also at the Siege of Sebastapol. Then he went to India, and was personal staff-surgeon to Sir Colin Campbell (Lord Clyde) throughout the Mutiny. His next experience of war was in New Zealand, and later on he accompanied Lord Wolseley to Coomassie as chief medical officer of the Ashanti Campaign, which has been styled the "Doctor's War." Sir William Russell, the *doyen* of war correspondents, relates in the *Times* a somewhat amusing incident that occurred in India. "Mackinnon rushed into the tent of a friend one morning with staring eyes and every symptom of bodily suffering, exclaiming, 'I am poisoned! I am dying! The apothecary has given me a deadly dose of belladonna in mistake.' His friend rushed off to Dr. Till, who hastily made for the tent in which Mackinnon lay. Just at the door of the tent was Lord Clyde, who demanded what all the noise was about. 'I am dying, sir, that's all!' exclaimed Mackinnon. 'Dying?' was the reply; 'then why can't you die quietly like a gentleman, sir, and not make such a row?'" Sir W. Mackinnon's views on the present burning question of rank and title for army surgeons were against their receiving a purely military title, and this probably did not enhance his popularity amongst his subordinates when head of the Army Medical Department.

THE REV. SAMUEL HAUGHTON, M.D., was one of the most brilliant men ever produced by Trinity College, Dublin. He obtained his Fellowship in 1844 at the early age of 23, having previously gained a considerable reputation as a mathematician. Some of his first published works were the well-known manuals written in conjunction with Professor Galbraith. He took Holy Orders early, but seldom preached and never held a living. His connection with medicine began in 1859, when he entered the School of Physic as a student and graduated as M.D. in 1862. He became Registrar the same year, and at once commenced the much-needed process of regeneration of the School, which had fallen into a condition of decrepitude. His successful efforts in this direction were recognised and appreciated not only in Ireland, but by the educational and scientific world; Oxford, Cambridge, and Edinburgh each gave him honorary degrees. He represented the

University of Dublin on the General Medical Council for eighteen years, and made his mark as a valued member of that body.

Sir Rutherford Alcock was the son of a medical practitioner and was born in London in 1809. After entering the medical profession, he served with the British forces in Portugal and Spain and retired in 1837. Afterwards he was successively British Consul at Foochow, Shanghai, and Canton, and then for seven eventful years (from 1858) he was Consul-General in Japan. Japan in those days was no place for the foreigner. Mr. W. Anderson, in contributing some notes to the *British Medical Journal*, says that at this time the country was beset by rival factions, who hated above all things the "red-haired barbarians," of whom the peace-loving Briton was a type. An attack was made on the British Legation, but fortunately without any important result. A year later a party of Englishmen was attacked, one of the number being done to death in cowardly fashion. Alcock rose to the occasion, and by his advice an indemnity of £100,000 was demanded and obtained from the Governor of Yedo, but the Daimio of Satsuma would make no reparation, and his chief town was bombarded by the British till he was brought to a sense of his responsibility. For this service Alcock was gazetted K.C.B., and three years later was appointed British Minister in Pekin. In 1871 he retired from the diplomatic service and lived in London, where he took much interest in many schemes for the improvement of public health.

An M.D. writing to the *Lancet* on the treatment of corns, mentions a "tip" communicated to him by a layman concerning corn plasters. Instead of applying them whole as purchased, the advice is to cut the plaster in two across the centre and then to apply the two sections round the base of the corn. This method afforded relief at once, and in six months the corns were got rid of. The two sections can be fitted round the base of the corn accurately and tightly, in a way that is impossible when dealing with a ring of fixed circumstance.

Dr. Pavy, on the 11th inst., gave a leeture before the Royal College of Physicians, on the "Pathology and Treatment of Diabetes." This lecture was supplementary to the Croonian lectures on the same subject delivered in 1894.

The General Medical Council will meet on November 23. The President, Sir Richard Quain, though improved in health, is scarcely well enough to take the chair on that occasion, and it is anticipated that the Executive Committee will arrange for some other member to temporarily perform the President's duties.

EXTRACTS FROM CONSULAR REPORTS.

The Doctors at Cameroon (Africa), according to Sir F. C. Lascelles, have come to the conclusion that the only successful treatment for malaria fever, which is the commonest illness there, is quinine, administered in daily doses of about 1 to 1·05 gramme. On the other hand, quinine seems to work injuriously in cases of blackwater fever, which, according to observation in the Cameroon Hospital, are more easily cured without it.

A Botanical Garden is to be established on the Cameroon Mountains, on the recommendation of Professor Wohltmann, in order to experiment as to the possibilities of cultivation at greater altitudes, the present garden being situated in the lowlands.

The September Export of chemicals, and chemical and medicinal preparations from Great Britain amounted to £636,378, being a decrease of £2900 on that of 1896 (£639,278); while the export for the nine months ending September 30, 1897, shows an increase of £226,736, the total being £6,496,678 as against £6,269,942 for the corresponding period of the previous year.

The Value of Drugs and Medicinal Preparations, taken from the above totals for the same periods, show a decrease in both cases, being £3634 less for September and £5405 for the nine months. The total amounts were £91,704 for the shorter and £821,050 for the longer period. Add the respective decreases to these figures, and the total export for the corresponding months in 1896 will be seen.

LETTERS TO THE EDITOR.

Local Organisation.

Sir,—Will you permit me to thank you on behalf of the Nottingham Chemists' Association for the prominence given to Mr. Newsholme's excellent address delivered at the inaugural meeting of our Society, and also for your able "leader" bearing on the subject of that address. Just now "local organisation" is in the air, and I know of no better way in which a new association could begin its career, or an old-established one open its session than by inviting a member of the Pharmaceutical Council to come and address them, and thus bring themselves into direct contact with their representatives. I am sure this has had a marked effect in our own case, and doubtless would have in others. Stimulated by your appeal, we are arranging for a discussion on the proposed amendment to the Pharmacy Act, and expect to have a good meeting for that purpose on the 24th inst. It is sincerely to be hoped that every local association throughout the land will do likewise. May I add for the encouragement of others that we have now a roll of members numbering fifty-four and associates thirty-six, and that we have thirty-six students attending our class in chemistry and fifteen that in materia medica—the two subjects taken during the first term of the present session.

2, Chapel Bar, November 9, 1897. A. Eberlin.

Hon. Sec. Nottingham and Notts. Chemists' Association.

Sir,—An impetus has been given to the organisation of pharmacy by the editorials, addresses, and letters, which have recently appeared in your columns, and the best thanks of pharmacists are due to those who inaugurated this movement. The state of affairs revealed at the Council Meeting last week shows the need for some scheme of organisation sufficiently comprehensive to include every pharmacist in business. We are on the eve of having a new Pharmacy Bill introduced, and yet there are nearly fifty towns where a local secretary might be appointed which have not nominated anyone to fill that office; such apathy is sure to be detrimental to the success of any Bill, and it would be well for the Council to consider the advisability of devoting its energies to uniting the forces of pharmacy before it introduces a Bill which, in the present condition of things, stands but little chance of being carried. Organisation is sadly needed, and Mr. Newsholme's suggestion, which may be briefly summarised as "Every man on the Register in touch with some local association, and every local association in touch with the Council," is the ideal to be aimed at. How can it be realised? In the first place we need some strong central body to vigorously take the matter up and see that a local association is formed in every large town. I should imagine that such work does not lie outside the scope of the Pharmaceutical Society itself, and certainly there exists no body better equipped for the task than it is; this is a matter which does not need Parliamentary sanction, and could be initiated at once. When these associations are formed they should endeavour to draw into their membership every pharmacist within a given radius; it would not be difficult to form branches in smaller towns, especially if gentlemen connected with the larger associations would occasionally attend meetings and deliver addresses at such towns. In a city like Nottingham there are at least half a dozen gentlemen capable of doing such work, and who would not shrink from doing it. These might visit such towns as Grantham, Newark, Mansfield, Ilkeston, and Long Eaton twice a year, and foster the formation of associations affiliated with the Nottingham one. From other centres the same thing might be done, and thus a network of associations formed throughout Great Britain. Before that could be accomplished it would be necessary to formulate some positive policy. Enthusiasm can never be aroused without a positive policy, and perhaps the most convenient phrase for expressing such a policy is that which I believe was suggested at Glasgow—"Pharmacy for the pharmacist," or to express it more fully, "If for the 'safety of the public' it is necessary that those who prepare and sell medicines shall pass a qualifying examination before being permitted to follow their profession, then it follows that for the 'safety of the public,' it is necessary that none but those qualified by such examination shall be permitted to prepare and sell medicines." The logic of this assertion is beyond controversy, but we know that it is not carried out in practice, nor is it ever likely to be in its entirety, for some articles used as medicines are also used for

other purposes, and it would be folly to attempt to restrict the sale of such to chemists only; but when due allowance has been made for these things there still remain many preparations which might, with advantage to the community, be included in a schedule of drugs, the sale of which should be restricted to registered chemists. How far this principle can be carried out must of necessity be left for experts to decide, but in this connection one thing must not be forgotten, viz., that Parliament, when considering Bills, is not always guided by principle and policy, for expediency has also to be taken into account, and if we are to obtain our just claims we must do all that lies in our power to make it expedient for Parliament to grant them, and this can only be done by united effort. Before anything satisfactory can be accomplished for pharmacy it seems to me that three things are essential:—1. Organisation, to bring individuals in touch with each other; 2. Education, to teach pharmacists what the Society can and cannot do; 3. United effort to influence Members of Parliament in favour of our claims. When these are in operation we may hope for a better day to dawn.

Nottingham, November 8, 1897. WILLIAM GILL.

ELEMENTARY PHARMACEUTICAL EDUCATION.

Sir,—I have been much interested in reading the "Annotations" published in the *Pharmaceutical Journal* of the 23rd and 30th ult. on Provincial Pharmaceutical Education, and am glad to find that your views so greatly harmonise with those I expressed in an address I gave eleven years ago to the Midland Counties Chemists' Association, published in the *Pharmaceutical Journal* of November 27, 1886, pages 435 to 441. To any one who is interested in this subject, they will see the whole of my scheme set forth in the Journal referred to. It will there be found that in order to focus the difficulties of pharmaceutical education in the provinces I sent out 125 forms of inquiry to representative chemists in all important provincial centres, which brought 103 replies. These replies showed that at that time throughout the whole of Great Britain only about 230 students had entered classes that season for pharmaceutical education. I have not had an opportunity of making such an inquiry now; but should not be surprised if a similar condition of things still obtained. In the address I showed the necessity of requiring apprentices, immediately they left school, to join classes, either in public institutions where provision is made for pharmaceutical students, or in classes specially formed according to the scheme I suggested, which would ensure a three years' course of study based on a syllabus which I recommended should be issued and controlled by the Pharmaceutical Council, with annual local examinations. I there elaborated a curriculum scheme for the three years, which included home work, and showed how the teachers might be obtained, and also dealt with the financial aspect of the question. I have, however, not much hope that the discussion you have raised will lead to a practical result until a curriculum is enforced by Act of Parliament, by which the master will be required in the indentures of the apprentice to make provision for his attending lectures and for home study, and on the other hand compelling the apprentice to follow a defined course of study, and to pass his annual examination. In the scheme I strongly insisted upon these annual examinations, because I believed that if enforced they would weed out in the early stage of apprenticeship a number of youths who, by their failure in the first year, would see that they had made a mistake in their calling, with the result that they would probably leave our business and become useful citizens in other spheres, whilst the trade would be protected from illegal competitors.

Birmingham, November 8, 1897. THOMAS BARCLAY.

STUDY DURING APPRENTICESHIP.

Sir,—Referring to the letter of Mr. W. E. Plant in your issue of last week, I should like to say, as one of the Plymouth juniors, that I think Mr. Holmes was fully acquainted with the state of affairs existing in Plymouth regarding time for study to apprentices. Mr. Holmes was for many years behind a chemist's counter in the town, and is personally well known to many of the masters and their apprentices. The conditions now most generally followed in the Plymouth shops are these: For the winter one or two evenings per week at 7 or 8 to attend the classes in chemistry and botany at the technical schools, and Wednesday evenings to attend a series of alternate lectures on pharmacy and materia medica, given at the rooms of the local association by members. During the summer botanical rambles are taken on Wednesday afternoons (early-closing day), alternating with a botany class held on Tuesday evenings Judging by the number who attend and the high-class work done at the examinations held at the end of the sessions, the apprentices do get the time to study, and make good use of it. This time is no more than they should get, I will admit, and I think masters throughout the country would find it to their advantage to allow this time, because if an apprentice is serving four years, and attends a series of classes during the first three years, he should be of considerable commercial value to his master for the remainder of his apprenticeship, and especially if only an apprentice is kept. On the other hand, apprentices may often find time for a glance at a book during shop hours; this does not take the place of systematic study, but half a loaf is better than no bread. In conclusion, I think that parents should stipulate when their sons are apprenticed that a reasonable amount of time should be allowed during apprenticeship to attend classes where possible, or for private study in the technical subjects required for the qualifying examination. If this were done and shop hours were curtailed, there would be less chance of the rising generation of pharmacists drifting away to drug companies and stores.

Plymouth, November 9, 1897. A. DOWNING.

Sir,—In his letter in this week's *Pharmaceutical Journal*, Mr. Plant says that the Council of the Pharmaceutical Society should control apprenticeships, and that indentures of apprenticeship should be registered at Bloomsbury Square. The same thing has been said before by correspondents in the Journal. I am not one of those carping critics of the Pharmaceutical Society who maintain that the Council of the Society is nothing more than a group of West-end pharmacists, who know nothing of the needs of the trade. On the contrary, I hold that the present Council is fully alive to the condition of pharmacists in this country and sincerely anxious to improve their position. But I think that every means should be taken to avoid giving of any loophole to the criticisms of the adversaries of the Society. As the *Pharmaceutical Journal* is the official Journal of the Society, outsiders naturally take its statements as representative of official views. I think, sir, that a note which was inserted in your issue of October 16 might be seized by the enemy as a proof of the Council's lack of interest in the welfare of the craft, but I trust that the opinion therein expressed does not represent the views of the members of the Council. In referring to the "Apprenticeship difficulty," you said, "the difficulty, such as it is, has been created entirely by chemists and druggists themselves, and why they . . . should expect the Society to pose as a *deus ex machina*, relieving them of their responsibilities quite passes comprehension." If that statement is an indication of the views of the Council, it simply means that the Council is saying, "Am I my brother's keeper?" Following that line of argument, the police might exclaim, on hearing of a man having his watch "snatched," "What is that to us? People should not wear their watches in a position that enables thieves to take them so readily." If the whole trade is suffering from the effect of certain chemists taking apprentices from an unsuitable class, then surely it is the plain duty of the Society to do its best to prevent such practices. I am convinced that the depressed condition of pharmacy is almost entirely due to the exceedingly lax way in which the Society accepts declarations that candidates for examination have spent three years in dispensing prescriptions. The great offenders are not chemists, but surgeons. I know a surgeon who obtains young men to act as clerks by holding out to them the inducement of their becoming chemists. Of course, they do some dispensing—of a kind. No doubt such cases are known to most pharmacists. It is men with such a training as this who take situations with limited companies, and I am firmly convinced that if only those could enter for examination who had been properly apprenticed to chemists in business on their own account, the stores would have to close half their branches for want of qualified assistants. Everyone will admit that the practise of pharmacy by limited companies has done infinitely more harm to the trade than all other adverse circumstances combined. Surely it would be fair that only chemists should have the right of producing the new generation of chemists. Such a claim by pharmacists would, I think, be looked upon by the Legislature as in every way reasonable, for any educated man would argue that a pharmacist must possess a knowledge of something besides mere dispensing, a knowledge which could only be gained in a pharmacy under the personal tuition of a pharmacist. No doubt there are chemists who take unsuitable apprentices, but it is mainly due to the fact that the better classes

are shy of putting their sons in so sorry a business, and I maintain that a registration fee would do much to prevent errand boys blossoming into chemists. I cannot think that a registration fee, to be fixed by the Privy Council, would meet with serious opposition in the "House." I sincerely hope that local associations will take up this important matter, and that the Council will at any rate express an opinion regarding it. To all those who think that large numbers of chemists who are outside the pale of the Society would be attracted to a Royal College of Chemists, it would also be very interesting to know what local associations think of that idea.

London, November 7, 1897. FYTON (115/25).

*** Our correspondent does not quote the whole of the passage he takes objection to, and so proves that he totally misses the point of our remarks, which was that chemists and druggists generally—"and especially those of them who do not belong to the representative body"—have no right to expect the Society to relieve them of their responsibilities as individuals. Any assumption that the opinions expressed editorially in the *Pharmaceutical Journal* represent official views is purely gratuitous. At the same time we doubt whether any member of Council would be prepared to accept the view that he is his "brother's keeper," to the extent of continually endeavouring to protect individual members of the craft against the results of their own folly, especially in the case of those not connected with the Society. [ED. *P. J.*]

Sir,—With much that has been written on this subject by your correspondent, Mr. Plant, I cordially agree, and it therefore gives me the more pleasure to be able to assure him that Mr. Holmes was made acquainted with the opportunities which the apprentices of Plymouth and district enjoy, by a vote of thanks being proposed, seconded, and heartily carried to those employers who gave time for study by the apprentices themselves, whom he then met, and who had the privilege of listening to his interesting and thoroughly practical address. A considerable part of that address, I may mention, was occupied with emphasising the importance of not neglecting that commercial side of education which can only be gained behind the counter. The employers of this district, as a rule, deserve every credit for affording to their apprentices opportunities for attending classes, and many of those who conduct their businesses with one or two apprentices, as instanced by Mr. Plant, put themselves to much inconvenience in order that their pupils may have regular time both for study and recreation. There are no doubt exceptions and, as a protection against such, it certainly appears to me that parents and guardians neglect their duty if they do not secure a clause in the indentures of the apprentice providing sufficient time to be allowed for this now so necessary purpose. May we not hope some day to go a step further and, when attendance at a course of classes extending over three years shall have been made a compulsory prelude to the qualifying examination, see a clause inserted giving the same protection to the chemist's apprentice which is now extended for a similar purpose to pupil teachers in Board schools?

Plymouth, November 9, 1897. OSWALD A. READE.

LOCAL SECRETARIES.

Sir,—I was pleased to read the discussion that took place in the Council last week regarding local secretaries. During the time I was an assistant it fell to my lot to be assistant to several local secretaries of the Pharmaceutical Society in different parts of the country, and I noticed that they all seemed to be in the same apathetic state, simply sending their assistants to collect the subscriptions of those already belonging to the Society. And since I have been in business on my own account I have never yet had the honour of a visit from the present local secretary (nor even from his assistant) even to collect my subscriptions to the Society. I do not know whether Mr. Young's suggestion of a paid official for each county would work better than the present scheme, but I think that if local secretaries were appointed for, say a term of three years, no one to be appointed twice in succession, such a scheme might encourage such a friendly rivalry that each successive secretary might try to do more for the Society than his predecessor. Probably others may have other and possibly better schemes to suggest.

November 8, 1897. ASSOCIATE IN BUSINESS (115/13).

FORMULÆ, METHODS, AND REACTIONS.

Sir,—In your last week's issue, under "Formulæ, Methods, and Reactions" (p. 401), you give my pyrogallol test for sesame oil, and state that the pyrogallol is dissolved in hydrochloric acid s. g. 1·19. The manner in which you insert this in the Journal shows that it is not a typographical error, and as I never recommended an acid of such unusual gravity, the source from which you gleaned the information must have been inaccurate. It is of small moment, but as a matter of fact the description of method of testing also differs from the original in so far as it is possible to infer that the oil and not the pyrogallol solution is boiled to produce the colour reaction. Such an inference would render the test worthless, and as pyrogallol is as delicate a test as can be applied to detect the oil, including Baudouin's test, the furfurol test, and others subsequently introduced, it should be described properly to prevent possible misconstruction or failure. The test was described in a paper read before the North British Branch some years ago (*Ph. J.*, [3], xxi., 638). It will be found, on referring to the above, that pyrogallol was dissolved in HCl pure (*i.e.*, B.P., sp. g. 1·16), and after shaking, the supernatant fluid (oil, of course) was removed and the acid pyrogallol boiled. Of course, it is immaterial whether the oil or acid is removed so long as the acid is boiled, but as a matter of convenience it is better to follow the mode originally given.

Peterhead, November 9, 1897. J. F. TOCHER.

*** We are glad to publish Mr. Tocher's correction, which would not have been necessary had he favoured us with a brief description of the reaction at the time such information was asked for in the Journal columns. [ED., *P. J.*]

MEDICAL MEN AND PRESCRIPTIONS.

Sir,—If chemists and medical men would combine, I think they might help one another to improve their status and increase their incomes. Medical men should not prescribe tablets, tabloids, palatinoids, nor any proprietary or quack medicines, pills, and so forth, nor should they ever dispense medicines; and chemists should give up advising and prescribing behind the counter. The B.P. contains (or should contain) all the drugs, preparations, and chemicals that medical men require, and we ought never to prescribe anything not to be found in it. It is lamentable to see highly educated chemists impoverished by evils which might be removed by the united efforts of themselves and medical men.

D. HOOPER, B.A., M.B., and M.R.C.P. (Lond.).
Physician to the Surrey Dispensary.
9, Trinity Square, S.E., November 4, 1897.

CREOSOTE AS A GERMICIDE.

MR. GEORGE MEE, of Enfield, referring to the death of an infirmary nurse, which occurred as the result of a scratch with a pair of scissors that had been used for an operation, directs attention to the value of creosote in checking the action of septic matter thus introduced into the system, and expresses the opinion that it would be equally effective in preventing any ill effects likely to follow dog bites.

OBITUARY.

OPIE.—On October 28, Thomas Trezise Opie, Chemist and Druggist, St. Agnes, Cornwall. Aged 79.

BRISCOE.—On October 30, Charles Briscoe, Chemist and Druggist, West Firle, Sussex. Aged 70.

HINDLE.—On November 2, James Hindle, Chemist and Druggist, Blackburn. Aged 52. Mr. Hindle was an Associate of the Pharmaceutical Society.

WISKEN.—On November 2, Robert Wisken, Chemist and Druggist, Herne Hille, S.E. Aged 62.

VICKERS.—On November 5, Thomas Vickers, Chemist and Druggist, Beverley. Aged 60. Mr. Vickers took an active part in the public affairs of the town, representing St. Mary's Ward in the Town Council for six years. He was also a Pasture Master, a director of the Cottage Hospital, and chairman of the trustees of the Rising Star Lodge of Oddfellows.

A large number of Answers to Queries are unavoidably held over this week, owing to extreme pressure on our space.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Abraham, Austen, Barclay, Bayley, Bell, Bennett, Bolton, Brauer, Bruckmann, Burford, Chambers, Colley, Cook, Cox, Cracknell, Critchley, Davies, Eberlin, Gill, Gordon, Hickisson, Hill, Howie, Hutchin, Kirkby, Lescher, Maddison, Mee, Merson, Mitchell, New, Parsons, Poulenc, Robins, Selleck, Shapley, Short, Shuttleworth, Smith, Tocher, Ward, Williams, Wyatt.

SUPPOSITORIES.

BY EDMUND WHITE, B.SC., F.I.C., AND J. OLDHAM BRAITHWAITE.

The subject of this paper was suggested to us by a casual examination of several suppository moulds. The capacity of those first examined was found to vary between such wide limits that we were induced to extend the investigation so as to embrace not only the subject of moulds, but of suppository-making as well, particularly in relation to the accuracy of dosage. The results of this investigation reveal a very unsatisfactory state of affairs, and after indulging in a considerable amount of destructive criticism we shall endeavour to show how the imperfections which we have found may be remedied. As an appendix we propose to discuss methods of analysis applicable to the determination of the constituents of suppositories, and to bring forward some observations on the physical properties of oil of theobroma, which have an important bearing upon the results of our work. In order to assist the discussion of the whole subject, we will subdivide the subject-matter under the following headings :—

1. Suppository moulds.
2. Examination of suppositories derived from various sources; methods of analysis.
3. Observations on oil of theobroma.
4. Methods of manufacture.
5. Suggestions for improvement.

1.—Suppository Moulds.

In this country the moulds employed are almost entirely those adapted for making suppositories by pouring a previously prepared and melted mixture into them, and allowing it to solidify. In the present British Pharmacopœia the moulds are directed to have the capacity of 15 grains—presumably 15 grains of the mixture to be made up into suppositories. Inasmuch as the density of this mass varies according to the specific gravity of the substance mixed with the oil of theobroma and the specific gravity of the sample of theobroma itself (a point to which we shall refer later on), there is considerable opportunity for variation in the results with different materials. For any given mould which will hold 15 grains of *suppositoria acidi tannici* will obviously receive more than 15 grains of the denser *suppositoria iodoformi*. It would be interesting to know how the makers of suppository moulds have interpreted the expression in the Pharmacopœia "of the capacity of 15 grains."

We have investigated the capacity of numerous moulds from various sources by the following method, which was adopted in order to render the results comparable by avoiding several possible causes of variation. The same sample of oil of theobroma was employed throughout, because the specific gravity of different samples is said to vary within somewhat wide limits, a statement with which we shall presently deal. The thinnest possible film of soft soap was smeared over the interior of the moulds, and the oil, melted over a water bath, was stirred with a thermometer and poured in just as it was thickening previous to solidification. This occurred at a temperature of about 25° C., and great care was exercised in stirring so as to avoid the presence of air bubbles in the solidifying oil. Each hole was overfilled, and after standing about two hours at a temperature of 15-16° C., the projecting oil was carefully cut off flush with the mould by means of a sharp knife with a straight edge. The moulds were then opened, and the contents removed and weighed on a sensitive balance. After weighing, each cone was cut into segments and examined for air bubbles. We give the results in grains of oil of theobroma, and in the second column the weight of the same volume of distilled water, calculated from the previously determined specific gravity of the solid oil (·965).

Table I.—Old Moulds.

	Grains of Oil of Theobroma.	Grains of Water.
A 1	14·35	14·87
,, 2	14·00	14·50
,, 3	13·30	13·78
,, 4	13·85	14·35
,, 5	14·50	15·03
,, 6	14·00	14·50
,, 7	13·65	14·15
,, 8	13·80	14·30
,, 9	13·95	14·45
,, 10	13·10	13·58
,, 11	13·70	14·20
,, 12	13·80	14·30
B 13	14·00	14·50
,, 14	14·95	15·49
,, 15	13·85	14·35
,, 16	13·95	14·45
,, 17	15·00	15·54
,, 18	14·55	15·08
,, 19	14·35	14·87
,, 20	13·86	14·36
,, 21	13·10	13·58
,, 22	13·80	14·30
,, 23	13·80	14·30
,, 24	15·45	16·01
C 25	14·00	14·50
,, 26	14·35	14·87
,, 27	13·95	14·45
,, 28	13·90	14·44
,, 29	13·55	14·04
,, 30	13·80	14·30
,, 31	13·85	14·35
,, 32	13·90	14·44
,, 33	13·90	14·44
,, 34	13·85	14·35
,, 35	13·80	14·30
,, 36	14·00	14·50

Table II.—New Moulds.

	Grains of Oil of Theobroma.	Grains of Water.
D 1	13·60	14·09
,, 2	13·70	14·20
,, 3	13·90	14·44
,, 4	13·85	14·35
,, 5	13·70	14·20
,, 6	13·65	14·15
E 1	14·60	15·13
,, 2	14·65	15·18
,, 3	14·00	14·50
,, 4	14·00	14·50
,, 5	13·90	14·44
,, 6	14·00	14·50
F 1	13·85	14·35
,, 2	13·85	14·35
,, 3	13·85	14 35
,, 4	13·95	14·45
,, 5	13·95	14·45
,, 6	14·10	14·61
G 1	14·0	14·50
,, 2	14·6	15 13
,, 3	13·90	14·40
,, 4	13·70	14·20
,, 5	13·60	14·09
,, 6	13·70	14·20
	60-grain Moulds.	
H 1	65·00	67·36
,, 2	63·90	66·21
,, 3	64·65	66·99
,, 4	64·00	66·32
,, 5	63·65	65·96
,, 6	63·45	65·75
I 1	60·80	63·01
,, 2	61·30	63·52
,, 3	61·00	63·21
,, 4	61·20	63·42
,, 5	60·90	63·10
,, 6	60·60	62·80

The total results may be summarised as follow :—

	Highest.	Lowest.	Average.	Average capacity in grains of water at 15° C.
Mould A (12 holes)	14·35	13·1	13·8	14·3
Mould B (12 holes)	15·45	13·1	14·23	14·75
Mould C (12 holes)	14·35	13·55	13·9	14·4
Mould D (6 holes)	13·9	13·6	13·73	14·23
Mould E (6 holes)	14·65	13·9	14·19	14·7
Mould F (6 holes)	14·1	13·85	13·92	14·42
Mould G (6 holes)	14·6	13·6	13·91	14·41
Mould J (6 holes)	15·8	15 2	15·41	15·96
	15·58	15·24	15·36	15 91

Inspection of the list shows variations within wide limits, hardly one hole giving approximately correct results for either water or for oil of theobroma. From this cause alone, therefore, one might expect inaccuracies in suppositories made in such moulds. We do not think that the mechanical difficulties in making accurate moulds should prove insuperable. A firm of makers have recently delivered to us a six-hole mould made after we had communicated our results to them. The examination of this gave the following results :—

No. of hole in mould.	1st Expt.	2nd Expt.
J 1	15·35	15·37
,, 2	15·8	15·36
,, 3	15·39	15·29
,, 4	15·31	15·24
,, 5	15·2	15·35
,, 6	spoilt	15·58

In order to determine what variation might be expected in suppositories made in the same moulds, we have filled one (with six numbered holes) three times in succession under the conditions previously described with the greatest possible care to avoid causes of variation other than those incidental to the method of manipulation. These results are included in the following table :—

No. of Hole.	1st Expt.	2nd Expt.	3rd Expt.	Maximum Variation.
1	16	16	15·8	·2
2	15·8	15·6	15·4	·4
3	15·3	15·6	15·4	·3
4	15·5	15·6	15·6	·1
5	15·7	15·7	15·6	·1
6	14·8*	15·5	15·5	·0

* This suppository, when cut open, was found to contain a large vacuole. Excluding the result of expt. 1, hole 6, we get an average variation of less than one-fourth of a grain.

We include also in our table results obtained in the examination of two moulds of six holes each, sold as 60-grain moulds. These gave the following summarised results :—

	Highest.	Lowest.	Average.	Average capacity in grains of water at 15° C.
Mould H	65·	63·45	64·11	66·44
Mould I	61·3	60·6	60·97	63·2

2.—Examination of Suppositories.

Investigation of the capacity of the moulds having yielded the esults already described, we proceeded to examine trade samples of suppositories, ready-made, or made to the order of a special prescription. We give, in the first place, a tabular statement of these results, discussing afterwards the methods of analysis adopted.

Suppositoria Acidi Tannici B.P.

No.	Weight of suppository.	Weight of tannin found.	Calculated weight of tannic acid in 15 grains of mass.
1	15·27	3·01	2·94
2	15·23	2·93	2·88
3	14·78	3·08	3·12
4	14·8	3·08	3·12
5	14·96	2·33	2·36
6	14·96	2·28	2·29
7	14·8	2 0	2·02
8	14·5	2·16	2·23
9	13·6	1·93	2·1
10	13·8	1·95	2·11

The tannin was determined by melting and shaking the suppository with successive quantities of warm water—about 10 C.c. at a time. After cooling, the aqueous fluid was filtered and the process repeated until the washings gave no coloration with ferric chloride. Three washings were sufficient. The filtrate was evaporated, dried, and weighed as tannic acid. The process was checked by experiment with weighed quantities of tannic acid and oil of theobroma, and found to yield results a few milligrammes in excess of the calculated quantity. This is due to the slight solubility of the oil, as explained under morphine suppositories.

Suppositoria Morphinæ B. P.

No.	Weight of suppository.	Morphine hydrochloride found (1) by evaporation,	(2) by titration.	Calculated for 15 grains of mass.
1..	14·53	·55	·52	·55
2..	13·11	·50	·48	·55
3..	14·6	·60	·54	·55
4..	15·27	·81	·77	·74
5..	14·48	·41	·35	·36
6..	14 35	·52	·46	·48
7..	12·8	·33	·27	·31
8..	13·1	·51	·45	·51
9..	14·19	·37	·30	·31
10..	14·8	·69	·63	·64
11..	14·8	·70	·63	·64

The weight of morphine hydrochloride which should be present in each suppository (·5 grain = ·032 Gm.) is so small that the ordinary morphimetric methods are not available, particularly in presence of so much foreign matter of the nature of oil of theobroma. After numerous experiments the method described below was adopted.

The suppository was melted in a test-tube on a water bath with 10 C.c. of water and the mixture thoroughly shaken. When the oily layer separated perfectly clear, the tube was placed in an ice chamber for an hour, and the aqueous fluid filtered through a small filter, care being taken that as little fat as possible passed on to the filter paper. The residual fat was washed with a little cold water, which was poured on to the filter, and then remelted with 5 C.c. of water as before. After a second cooling this was drained off and filtered, and the residue treated a third time in the same manner. The filtered aqueous fluid was then divided into two equal portions. The first evaporated on a water bath, the residue dried at 100° C. and weighed ; while the hydrochloric acid in the second portion was titrated with centinormal silver nitrate solution. It was found by experiment that the results obtained by weighing the dry residue of the aqueous filtrate were slightly in excess of the theoretical requirements. For example, ·5 grain morphine hydrochloride was accurately weighed and melted in a tube with 15 grains of oil of theobroma. From the congealed mixture the morphine was extracted by water as described above, and the evaporated aqueous filtrate yielded a dry residue weighing ·53 grains, whereas if nothing but morphine hydrochloride had been present it should have weighed ·493, since the salt $C_{17}H_{19}NO_3,HCl,3H_2O$ loses 1·44 per cent. of water when dried at 100° C. This result was confirmed by several control experiments on oil of theobroma alone, and since water removes, under the conditions mentioned, a small quantity of soluble fixed matter from the oil, the residual morphine salt will be increased in weight to a corresponding extent. The error can, however, be corrected by comparison with the result of titration, and the evaporated residue can be tested by the ordinary qualitative reactions to confirm the presence of the alkaloid. That the method of titration is sufficiently delicate is shown by the following experiment :—·034 grm. morphine hydrochloride dissolved in water and titrated with $\frac{N}{100}$ $AgNO_3$ solution required 9·1 C.c.

1 C.c. $\frac{N}{100}$ $AgNO_3$ sol. ≡ ·003755 grms. $C_{17}H_{19}NO_3,HCl,3H_2O$.

∴ 9·1 C.c. ≡ ·03417 grms.

The tabulated results of our examination of eleven reputed official

suppositories from seven different sources may be summarised thus :—Weight of suppository : highest, 15·27 grains ; lowest, 12·8 grains. Morphine hydrochloride found : highest, ·77 grain ; lowest, ·27 grain.

Suppositoria Iodoformi, B.P.

No.	Weight of suppository.	Iodoform found.	Calculated weight of iodoform in 15 grains.
1	14·8	2·01	2·03
2	15·1	2 36	2 34
3	15·7	2·29	2·19
4	15·7	2·76	2·64

The determination of the iodoform proved rather troublesome. The first process tried was saponification of the whole suppository by boiling it with alcoholic potash solution in a flask fitted with a reflux condenser for two or three hours. By this treatment the fat is saponified, the iodoform reacting with the potassium hydroxide to form iodide and formate of potassium. The determination of the iodine in the mclange thus produced we found involved a good deal of labour, and the simpler process described below was adopted.

The suppository was placed in a well-stoppered bottle with ½ fluid ounce of rectified spirit and heated just to the boiling point of the spirit. The mixture was then vigorously shaken until no more particles of iodoform were left undissolved, and was then stood aside to cool. When the fat had solidified the spirit was decanted and the treatment with fresh spirit twice repeated. The alcoholic filtrates and washings were then treated in a beaker with an alcoholic solution of 7 grains of silver nitrate, warmed and set aside for an hour. The contents of the beaker were then heated to ebullition, and the precipitated silver iodide collected and weighed. Blank experiments with oil of theobroma alone showed that rectified spirit extracted from 15 grains of oil about ·33 grains of matter, chiefly fatty acids, the alcoholic solution of which gave no precipitate with alcoholic silver nitrate. Moreovcr in the reaction between iodoform and silver nitrate some free acid is formed which would prevent the precipitation of silver salts other than the iodide. In control experiments with weighed quantities of iodoform and oil of theobroma the precipitated iodide of silver, when ignited, showed no evidence of the presence of organic matter, and yielded the required quantity of metallic silver on subsequent examination.

The following table shows the results obtained by the control experiments :—

	Expt. 1.	Expt. 2.	Expt. 3.	Expt. 4.
Weight of iodoform taken and mixed with 1 Gm. oil of theobroma	·301	·209	·434	·212
Weight of iodoform found	·292	·198	·424	·209

Suppositoria Hydrargyri B.P.

No.	Weight of Suppository.	Weight of Mercury Found.	Calculated Weight of Mercury in 15 grains.	Mercury in 15 grains B.P. Suppos.
1 .	16·2	1·58	1·46	
..	16·1	2·10	1·95	2·42

The determination of the mercury was easily effected by placing the suppository enclosed in a tared filter paper (previously well extracted with ether) in a Soxhlet tube and exhausting with ethcr. The oil was rapidly removed, leaving the mercury in the filter paper.

Unofficial Suppositories.

I. Zinc Oxide Suppositories.

Two suppositories from different sources were examined. These were supplied in response to the following prescription :—

℞ Zinci Oxidi..... gr. iij.
Ol. Theobrom.....*q.s.* ut. ft. suppos.
Mittc vj.

No.	Weight of suppository.	Zinc oxide found.	Calculated weight of ZnO in 15 grains.
1	15·18	2·30	2·27
2	15·40	2 65	2·55

The determination of the zinc oxide was first attempted by extraction with ether in the Soxhlet tube, but we found that some of the oxide was washed through the filter paper. The fat was therefore removed by extraction with cold ether, the filtrate being returned until quite clear. The last traces of fat, being troublesome to remove without the use of a large volume of cther, were disposed of by incinerating the filter and contained oxide, and weighing the residue after heating some time to reoxidise any trace of metallic zinc thus produced.

II. Lead Iodide Suppositories.

These suppositories were made to the following prescription :—

℞ Plumbi Iodidi..... gr. i.
Ol. Theobrom. .....*q.s.* ut fiat suppos.
Mitte vj.

No.	Weight of suppository.	Weight of PbI_2 found.	Calculated weight of PbI_2 in 15 grains.
1	14·5	·84	·87
2	14·2	·89	·94

The lead iodide was determined in the manner described for zinc oxide suppositories.

3.—Observations on Oil of Theobroma.

The weight of substance capable of being cast in a given mould is obviously influenced by the sp. gr. of that substance. This point has, therefore, an important bearing upon the application of the foregoing results to a criticism of the uniformity of the weights of suppositories made in moulds of a given capacity. The published statements as to the sp. gr. of oil of theobroma are somewhat conflicting, and in order to obtain further evidence we deemed it desirable to determine the sp. gr. of samples of oil prepared from the cocoa itself in order to exclude the possibility of contamination —either accidental or intentional. With this object we wrote to Messrs. Dunn and Hewitt, the cocoa manufacturers, of Pentonville Road, who very kindly supplied us with samples of untreated cocoa-nibs, in the natural condition, representing the chief varieties found in commerce, and duly authenticated as to their origin. Four ounces of each kind were finely ground, enclosed in strong linen, and squeezed in a hydraulic press between plates previously heated in boiling water. The expressed oil was then collected and obtained in a pure and bright condition by filtration through paper in a hot water funnel. A portion of each oil so obtained was solidified, air bubbles being carefully excluded, and its sp. gr. determined by floating in diluted alcohol (at 15° C.) of known sp. gr. We also determined the melting point of the oils by the capillary tube method, the determination not being made until twenty-four hours after solidification in the tube. The results are embodied in the following table :—

Variety.	Sp. Gr. at 15° C.	Melting Point.
Guayaquil	·948	33·6–33·9° C.
Grenada	·970	33–33·3° C.
Trinidad	·950	31·5–32·5° C.
Ceylon	·980	33–33·6° C.
Caraccas	·974	33·9–34·2° C.

4.—Methods of Manufacture.

In the first place, it is obvious that with the moulds at present obtainable it is impossible to attain either constant or satisfactory results in making suppositories, for not only do we find that different moulds vary, but the holes in the same mould are by no means uniform ; *e.g.*, in mould B there is a difference of 2·35 grains

between the weight of theobroma oil contained in the largest and the smallest hole. It ought not to be impossible to secure more uniform results with the facilities which modern engineering skill affords, and we can only assume, either that insufficient care is exercised, or that tools not admitting of sufficiently accurate adjustment are employed. As bearing upon this point it is interesting to consider the results obtained from mould J, delivered by the maker with a guarantee of accuracy, and made after he had been informed of the state of affairs. A very simple way of obtaining the required accuracy, which we offer as a suggestion, is to determine the sp. gr. of the metal from which the mould is to be made. The block of metal, before boring, could be accurately weighed to one-tenth of a grain. Then the weight of metal to be drilled out by calculation might be determined. This could easily be done, taking ·965, the mean sp. gr. of oil of theobroma, according to the most reliable observations. After drilling out approximately this calculated weight of metal, the drilled block could be weighed and finally adjusted, repeating the weighing for each hole. Assuming the sp. gr. of the metal to be 7·6, it is obvious that if $\frac{7·6 \times 15}{·965}$ grains of metal (= 118·1 grains) has been removed a cavity will have been produced which will hold 15 grains of oil of theobroma of the given sp. gr. Taking the widest variation in the observed sp. gr. of different samples of oil, we should thus obtain a mould holding from 14·8 grains (sp. gr. of oil, ·945) to 15·3 grains (sp. gr. of oil, ·980). This method is capable of great accuracy, since a variation of 1 grain in the weight of metal drilled out makes approximately only one-tenth of a grain difference in the theobroma capacity of the cavity, owing to the great difference between the sp. grs. of the metal and oil.

Admitting, however, as we think we may fairly do, the possibility of obtaining moulds of *uniform* capacity, the maker would still be met by the difficulty of selecting a suitable standard. Although water might be used, this would not remove the ultimate difficulty which arises from the variation in the sp. gr. of the oil of theobroma. This difficulty will constantly occur in any method of manufacture in moulds of *fixed capacity* whether adapted for pressure or pouring in a melted mixture. For our observations on the sp. gr., although of interest, because they are obtained from samples of authenticated origin, are not sufficiently numerous to justify us in stating that they include the greatest possible variation—in fact other observers have given a variation of ·945-·982* and even more.

But accepting this source of variation as inevitable—and on the basis of our figures a mould holding 15 grains of Guayaquil oil would hold 15½ grains of Ceylon oil—a much more serious consideration is the variation in the specific gravity of suppository masses containing ingredients whose densities vary widely from that of cocoa butter. In order to test this point experimentally some *Suppositoria iodoformi* B.P. were made and cast in moulds whose weight capacity for theobroma oil had been previously determined. The same sample of oil (sp. gr. ·965) was used in both cases.

Experiment 1 :—

Average contents of each of 6 holes, 15·36 grains of oil of theobroma.

Average weight of iodoform suppositories, 18·06 grains.

If each hole of this mould held exactly 15 grains of oil of theobroma each iodoform suppository would weigh 17·60 grains.

Experiment 2 :—

Average contents of each of 6 holes, 15·59 grains of oil of theobroma.

Average weight of iodoform suppositories, 18·19 grains.

Calculated weight of iodoform suppository for a mould holding 15 grains of oil of theobroma = 17·49 grains.

It is, of course, obvious that the pharmacopœial requirements could be met by cutting down the moulded suppositories to the weight of 15 grains, assuming the iodoform to be accurately mixed, but one knows that this would spoil the appearance of the article. For it is always necessary to over-fill the holes and scrape the excess off after solidification in order to obtain a nice appearance. A suggestion to have a series of various sized moulds of known capacity to meet various requirements may be dismissed as impracticable. The difficulty here presented, could, however, be removed by varying the amount of theobroma in each case, so that each finished suppository, whatever its weight, might prove to be, should contain the required weight of medicament.

This can easily be done with the official suppositories, which are ordered to contain a fixed amount of medicament in each; and with regard to prescriptions containing different amounts of other substances outside the official formulary, we are now engaged in compiling a table showing the displacement value for 1 grain of each substance commonly used in suppository form in terms of oil of theobroma. This list will enable the pharmacist to ensure the proper strength of his products so far as the causes of variation already discussed will allow.

It is also necessary that the pharmacist should determine beforehand the weight capacity of his mould; this is particularly necessary until the makers of moulds attain greater accuracy.

Proceeding now to discuss the results obtained in our analyses the first thing to do is to eliminate the errors due to variations in the moulds and the sp. gr. of the masses so moulded. This we have done by calculating the proportion of active constituent to 15 grains of mass. If nothing but the moulds had been at fault we ought to have found the results complying fairly closely with the requirements. Nos. 1 and 2 in the lists of tannic acid and morphine suppositories were made by one of us, and analysed by the other. The results are satisfactory. The causes of the variation are, in our opinion, three. First, inaccuracy in weighing materials; this, however, ought to be non-existent. Secondly, improper distribution of material in the melted theobroma. This could be avoided with proper care. But from observation and inquiry we are convinced that there exists among many pharmacists a pernicious system of make-weight procedure which is adopted in order to make the mass yield the prescribed number of suppositories. We mean by this that having to make—say 12 tannic acid suppositories—the misguided operator takes 36 grains of tannic acid and 144 grains of oil of theobroma. Recognising the impossibility of getting 180 grains of material into his moulds after mixing them by the aid of several implements, he gravely adds a piece more theobroma, "about as big as a nut," to allow for this inevitable loss. Having thus disturbed the proportionate quantities of medicament and oil, the latter being in excess, it is obvious that suppositories made from the mixture, even if weighing 15 grains, will not contain the prescribed weight of tannic acid. We infer that the deficiency of medicament shown by the large majority of our analyses is due to this cause. Good dispensers always mix materials for one or two suppositories more than required, so that the loss of material falls proportionately on all ingredients. We mention this make-weight system only to condemn it in the strongest terms.

5.—Suggestions for Improvement.

After considering the subject in its various aspects and in relation to the results of our work, it seemed that the existing methods which depend upon moulds having a fixed capacity could not

* 'Oils and Fats and Waxes.' Benedikt and Lewkowitsch, p. 435.

realise the conditions for the desired accuracy under the varied circumstances already described. What is required is a mould whose capacity may be varied within certain limits so as to render one able to deal with the varying volume of basis and medicament. We have produced a mould which realises the required conditions, and would only remark that, being the first one we have had made, it is open to some mechanical alteration to facilitate the manipulation without altering the principle of construction. The principle involved is the compression into a compact form of a weighed quantity of material. Having had but little opportunity of practical work with the new mould, we propose deferring any further statements regarding it, only observing that excellent suppositories, each containing ten grains of chloral hydrate, have been made by this machine. This shows that the mould has some capabilities not possessed by the ordinary form in use in this country.

PHARMACY AT SOME OF THE AMERICAN UNIVERSITIES.

BY PROFESSOR J. REYNOLDS GREEN, SC.D., F.R.S.

I need hardly make an apology for introducing to your consideration an aspect of the very important subject of pharmaceutical education. I have been engaged in teaching pharmaceutical students for ten years past, and for the last three years have had opportunities, as one of the Board of Examiners, of ascertaining what the average student considers to be sufficient attainment for him before he embarks in the actual practice of his profession. During the last ten years many changes in methods of instruction have been made, which, in so far as they have led students to be more fully acquainted with the structure and composition of the objects of their researches have been a distinct gain to the cause of education as contrasted with cram. Indeed, these years have seen, in theory at least, a great and increasing protest against the latter, which has undoubtedly led, though to varying extent in different quarters, to practical study, based on observation and reflection. While we in England have been engaged in fighting the battle of pharmaceutical education, others in other countries have not been idle. In many respects we have been left behind, in others we have fully held our own. So far as higher education and its recognition have been concerned, we have been distanced by many American institutions of University rank. Though certain tentative efforts have been made in various quarters, the older British Universities have shown themselves unwilling to throw open their portals to receive those asking for pharmaceutical education as such. This is hardly perhaps to be wondered at, for those ancient seats of learning are almost necessarily very conservative of the old traditions that reach back to the middle ages, and embark on new enterprises with extreme caution, if not actual reluctance. The more recent University Colleges, not fettered by such traditions and imbued much more fully with the spirit of modern enterprise and competition, have recently taken steps in the desired direction, and more than one of them are encouraging students of pharmacy to enter their doors by arranging for them definite curricula of study. In America some go farther than this by raising the subject to the height of graduation and by giving degrees to those who pass certain qualifying examinations. During last summer I had the opportunity of attending the meeting of the British Association at Toronto, and in the short time at my disposal after the Association rose I had the pleasure of visiting two of such universities, and of making myself, to a slight extent, familiar with the courses of study which are held to be necessary qualifications for such degrees. I regret that my opportunities were very much curtailed by the necessity of returning to England in time for the opening of our own School of Pharmacy. That, of course, was my misfortune and not my fault. Instead of being able to speak of the general condition of pharmaceutical education in the United States, I can only give you a brief account of what I found to be the condition of things at her great centres, Chicago and Minneapolis. My ideas of matters beyond these two cities are derived from general information, which I was able to obtain there from the professors whose hospitality I enjoyed during my visit.

Colleges and Courses of Study.

There are more than forty colleges and schools of pharmacy in the United States, and the courses of training offered by them differ widely in character and extent. Some of them hardly deserve the name of schools; they call themselves colleges of pharmacy, but their teaching is hardly at all practical, and cannot be regarded as entitling them to the name they have assumed. The amount of laboratory work included in the obligatory curriculum is too small to be of any value. In some of these schools the total hours of instruction are less than ten; in others the instruction, including laboratory courses, occupies over thirty hours weekly. The laboratory hours in some occupy from sixteen to twenty-four hours weekly of the students' time during the whole period of his school attendance. As in England, the pharmaceutical student in the United States often finds himself so far hampered by want of means that he is compelled to devote a good deal of his time, often more than half of it, to earn a certain stipend by employment in drug stores, or by following other means of ekeing out his resources during the period of his college training. Other students, more fortunate, can give their whole time to study. The customary course of college education pursued by the former class consists of two annual sessions of about six months each, with one half of the student's time occupied by some employment as a means of self-support. These half-time students constitute by far the greater number of those preparing for the pharmaceutical profession, and many schools of pharmacy plan their courses so as to require only one half of the student's time. Others plan their teaching exclusively for those who devote their entire time and attention to their school work. In both cases the college education leads, however, to the same goal, the attainment of the degree of Graduate in Pharmacy.

Educational Facilities in Chicago.

In Chicago, the centre of pharmaceutical education is the School of Pharmacy of the North-Western University. Unlike most of the educational establishments, it provides for both classes of students, giving full-work courses for full-time students, and half-work courses for the others. The school was established in 1886 as the Illinois College of Pharmacy, and is now incorporated with the North-Western University. It may fairly be described as the leading institution in America which is devoted to pharmaceutical education. Its equipment has been liberal and effective from its earliest days, and no other pharmaceutical school or college is more amply provided with laboratories. It is satisfactory to find that its career of usefulness and success has been remarkable. Only by one college in America has its annual attendance of students been surpassed. It claims at the present moment a thousand alumni. While it is now an integral part of a great university, which gives it strength and permanence, it is pre-eminently a pharmacist's school. It is governed with the aid and advice of experienced and practical pharmacists, both in its general affairs and in the work of instruction. The executive

committee of the school consists of five practical chemists, or as the Americans prefer to say, druggists, well known to the pharmaceutical profession and to the business world, and a majority of the members of the faculty, too, have had extended and varied experience in the actual practice of pharmacy. The school at the very outset, before embarking on the details of its work, took into careful consideration the existing conditions and needs of the pharmaceutical practitioner in the United States with the view to make it when once launched the most efficient and practical school of its kind. Two departures from the then existing methods of teaching were made at the very commencement, departures which have found a place in our own School here at home. The first was the establishment of a special laboratory for practical courses in the art of compounding and dispensing physicians' prescriptions ; the second was the introduction of laboratory methods in the study of crude drugs. These were followed later by special laboratory courses in chemistry, galenical pharmacy, the manufacture of pharmaceutical chemicals, drug assaying, the examination of chemical and pharmaceutical products, food, water, and urine, and the technique of bacteriology.

Degrees and Examinations.

At present the North-Western University confers two degrees in Pharmacy. The first is that of Graduate in Pharmacy (Ph.G.), the second that of Pharmaceutical Chemist (Ph.C.). For admission to the College a preliminary examination must be passed, the requirements for which, I am compelled to say, are extremely elementary. In fact, our own Preliminary examination, much as it is criticised, and I think justly criticised, is more searching than the Chicago one. The subjects are only English and arithmetic. In the former the candidate must show an ability to write English which is correct in orthography, punctuation, the use of capitals, grammatical construction, and composition. In the latter the requirements go only as far as the knowledge of vulgar and decimal fractions and percentage and proportion. This examination can be excused a candidate if he can produce certain evidence of general education in the shape of certificates from various examining bodies, much as is the case with ourselves. The requirements for the degree of Ph.G. include regular attendance during two full school terms of twenty weeks each, which range from September to June. Half-time students finish their courses in two years instead of one. Each full week's work comprises thirty-two hours. Besides mere attendance during this time, the degree is not given without evidence of satisfactory completion of the required work, including good standing in the examinations throughout the courses and diligence and success in the laboratory work.

How the Work is Divided.

The first session's work, from September to the end of January, comprises pharmacy, chemistry, and botany. In the laboratory work under the first head are included the study of the properties of common plant substances, synthetical inorganic pharmaceutical chemistry, and the production of galenical preparations. One hundred and sixty hours of laboratory work are devoted to this subject. The chemistry is partly theoretical and partly practical, going as far in the latter direction as volumetric analysis. Botany is dealt with in a general rather than a special manner, the range of study being rather more extensive than the requirements for our Minor examination. In the second session, from February to June, the more advanced work of pharmacy, including dispensing and the study of the United States Pharmacopœia. takes a prominent place, chemistry, pharmacognosy, and a certain amount of human anatomy and physiology also being studied. In his second year the student works for the higher degree of Ph.C., or pharmaceutical chemist. His work embraces a good deal of pharmacy still, including the pharmacy of organic chemicals, and the digestive ferments ; the chemical constituents of vegetable and animal drugs, the pharmacopœias of the world, together with miscellaneous technical subjects. In chemistry he studies physical chemistry, corresponding to what we include under the head of physics, physiological chemistry, and a special course in organic chemistry, besides volumetric analysis of alkaloids and other volumetric processes of the Pharmacopœia. He also takes up inorganic gravimetric analysis, the assaying and valuation of drugs and their preparations, and water and milk analysis. His work includes also microscopic work, partly devoted to examination of drugs, food products, etc., and partly of a more general character; also bacteriology, therapeutics, and toxicology. At the conclusion of his course he must pass a satisfactory examination, and submit a thesis embodying the results of some piece of research. Courses for post-graduate study on special lines are also arranged. The equipment for this work is very complete. The College itself is an imposing edifice of six storeys, containing liberal provision for lecture-rooms, laboratories, library and museum, professors' rooms, and the usual offices and other requisites of a well-appointed modern college building. The laboratories are all fitted up with steam, electricity, and gas, and are well lighted and ventilated. The lecture-room is large and airy, and equipped with every convenience for lecture demonstrations, and is in easy communication with the preparation and apparatus rooms and with the chemical museum.

The Chicago Laboratories, etc.

The laboratories are spacious and well fitted up. There is ample accommodation for more than four hundred students simultaneously. Taking them seriatim, the first is the laboratory for botany, microscopy, and pharmacognosy, or, as we should call it, the histological laboratory. I must confess to a feeling of envy while looking over this room. It is about 50 feet long and 40 feet wide, lighted on three sides, but chiefly from the north and east, and it adjoins the museum, with which it is in communication. The tables are arranged to accommodate about six students each, and every student has his definite place allotted to him, with drawer or locker, of which he holds the key. Each place is supplied with two such lockers, so that two students can be accommodated at each place, working, of course, alternately. The microscopes in use are supplied by the College without charge. There are three principal chemical laboratories, which occupy one floor 110 by 105 feet. Their walls are of a special hard impervious smooth-faced brick, and the furniture and fittings are of oak. On the next floor above is a combustion room, which is paved with asphalte and provided with soapstone tables, etc. These three laboratories are devoted to general chemical work, qualitative and quantitative analysis, etc., to applied pharmaceutical chemistry, and to physiological chemistry respectively. The laboratories for pharmacy and dispensing are about 100 feet long by 50 feet wide. The two departments are kept separate, the former being supplied with steam water-baths, drying closet, steam stills, evaporating pans, fume chambers, etc., while the latter is supplied with a complete outfit of the apparatus, implements and devices employed in compounding and dispensing medicines. In the same building the University has fitted up a laboratory of human histology, and a bacteriological laboratory. These are primarily for the students of its medical school, but they are open also to students of pharmacy. Adjoining the histological laboratory is the museum of botany and materia medica. In this department the North-Western

University is far behind our Society. The museum occupies a corner room about 50 feet square, and gives assurance of ample space for some time to come. Though it contains several thousand specimens of vegetable drugs and related products, these are not yet worthy of the rest of the appointments. They are displayed as well as they can be for examination by the students. The herbarium, too, is not far beyond its infancy. There is a good library, which, of course, contains the works necessary to the student of pharmacy and to the scientific and practical pharmacist. It includes the standard text-books, the national pharmacopœias of all countries, complete sets of the *American Journal of Pharmacy*, our own Journal, and other similar scientific and technical literature, together with all necessary recent works of reference. The staff of the school includes four professors, teaching respectively pharmacy, chemistry, therapeutics, and botany with materia medica; three assistant professors, attached to the chairs of pharmacy and chemistry, besides assistants and demonstrators. The subjects taught are pharmacy, physics, chemistry, botany, microscopy, pharmacognosy, human anatomy and physiology, materia medica, therapeutics and toxicology, applied pharmaceutical chemistry, and bacteriology. The fees charged the students compare very closely with our own, for a ten months' course, extending over two semesters, as stated already, amounts to $150, or about £30. Half-time students are charged $37.50 for each semester of five months. The tuition for the whole second year of the course for the degree of Ph.C. is $100. For most of the information which I have obtained concerning the College and its mode of working I am indebted to Professor Schneider, who showed me over the building, and was so kind as to give me every facility for making myself acquainted with the details of the curriculum.

Pharmaceutical Education in Minneapolis.

From Chicago I went on to Minneapolis to spend a day, as I hoped, with my friends Professors McDougal and Wessbrook, who take charge respectively of botany and bacteriology there. On my arrival I was disappointed to find that the latter, whom I knew well at Cambridge, was away at Montreal attending the meeting of the British Medical Association. The University of Minnesota, situated at Minneapolis, stands in a fine park a mile or two beyond the busy part of the city. It possesses very fine well-appointed buildings, which stand well apart from each other in the park. Each department is consequently separately housed. The University confers the degree of Doctor of Pharmacy (Phm.D.) upon its graduates in pharmacy. Naturally its requirements exceed those of the North-Western University. Every student upon whom the degree is conferred must be twenty-one years old and of good moral character, and must have studied at least two years, attending two full courses of lectures and laboratory practice. In some cases study at some other college is accepted in lieu of the first of these, but the second must be undertaken at Minneapolis. During the courses regular attendance at all lectures and laboratory work is essential, and a satisfactory examination has to be passed at the completion of the term of study. Frequently students take three years instead of two. Professional examinations, both written and *viva voce*, are held at frequent intervals during the year. Some advantage is presented by these, inasmuch as all students who have obtained throughout the year 80 per cent. of the marks in certain branches are excused the final examination in such branches. There is a general entrance examination which may in the case of three-year students be prepared for at the College, provided it is passed during the first year of study. There are a number of preparatory schools in the neighbourhood of the University where the subjects required for admission may be pursued. Practising pharmacists, who may be desirous of taking certain branches of study, may avail themselves of the College facilities, but their studies and time are subject to regulation as special students. The time table is a long one, but as the subject is an interesting one, perhaps I shall be pardoned if I quote it at length. In the first year the subjects studied are general pharmacy, metrology, nomenclature, pharmaco-technology, inorganic pharmaceutical chemistry, inorganic elementary chemistry, qualitative chemistry, pharmacal mathematics, physiology, botany, materia medica, pharmaceutics, physics, pharmacognosy, microscopy, pharmacopœia, and Latin. The second year is devoted to advanced courses in pharmacology, pharmaco-technology, inorganic pharmaceutical chemistry, organic pharmaceutical chemistry, inorganic general chemistry, qualitative chemistry, pharmaceutics, pharmacognosy, microscopy, and materia medica. Besides these the following subjects form part of the curriculum: Quantitative analysis, pharmaceutical and medical jurisprudence, bacteriology, toxicology, urine analysis, mineralogy, hygiene, pharmacopœia, unofficial pharmacy, proximate analysis, and the chemistry of foods. I cannot of course enter into details of the courses of study in these subjects. They are very comprehensive and complete. Laboratory work follows each lecture, and has direct reference to the subjects treated of in the lecture. It is interesting to note that in pharmacognosy special attention is given to the examination of powdered drugs, and weekly test examinations are held. It is interesting to us to notice that among the books in use a prominent place is given to Flückiger and Hanbury's 'Pharmacographia.' A point which will perhaps call forth some comments is that a course of homœopathic pharmacy is given which comprises both lectures and laboratory work. It is part of the second year's curriculum. These subjects are treated by professors of pharmacology, including jurisprudence and sanitary science, materia medica and pharmacognosy, chemistry, organic chemistry, botany, bacteriology, physiology and hygiene, besides assistant professors and demonstrators. The laboratories are good, being spacious and well ventilated, and lighted and fitted up with every modern appliance. The lecture-rooms present a very different appearance to our own, being furnished with chairs instead of benches. Each chair has a fixed arm on the right hand side, which carries a small book-rest or kind of table for the convenience of note-taking. The cost of the first year's training at Minneapolis is $75, and that of the second year, $90, amounting in all to about £35, which is very low. Minneapolis is indeed in most respects an ideal place for a pharmaceutical student.

I am sorry that my time did not allow me to visit other educational establishments in the United States. I should especially have liked to see the work at the Highland Park Normal College at Des Moines, Iowa, which is an institution of rather a different type. Like the others it confers degrees upon its students, and it has this advantage in the State of Iowa that the State authorities in pharmacy will issue a certificate of registration to a candidate without further examination, on presentation of a diploma from the Highland Park College of Pharmacy. Comparing the courses in these higher schools of pharmacy in America with those of our own School here, it is at once seen that they are comparable in many respects. The completeness of the curriculum and the importance attached to practical laboratory teaching and work as contrasted with mere book work are approximately the same in all. Thus the lines upon which we conduct the education of our students are found to be those which commend themselves to the judgment of the chief educational authorities in the United States.

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 424.)

Vogl (Carbon Bisulphide).—A lemon-yellow precipitate is formed on adding to a liquid containing carbon bisulphide an alcoholic solution of potash, followed by a solution of copper sulphate.

Vogl (Chenopodium Seeds in Flour).—The presence of chenopodium seeds is indicated by the formation of a rose-red colour on digesting the flour for a few hours with alcoholic hydrochloric acid.

Vogl (Ferric Salts).—A violet colour is produced with salicylic acid in slightly acid solutions.

Vogl (Glucose).—This is a modification of Mulder's test (*q.v.*), in which litmus is used instead of indigo.

Vogl (Narceine).—A blood-red colour is produced on adding chlorine water and a few drops of ammonia, and it does not disappear on adding excess of ammonia.

Vogl (Nitric Acid).—The presence of nitric acid in water is indicated by the formation of a red violet colour on boiling 15 C.c. of the water with a little gold leaf and a few drops of pure hydrochloric acid, then filtering and adding stannous chloride.

Vogl (Quinine).—A pink or red coloration is produced on treating with chlorine water and adding potassium ferricyanide in fine powder.

Vogl (Sulphuric Acid).—Chlorine is evolved on adding potassium chlorate to vinegar containing sulphuric acid.

Vogl (Tannin).—Chlorine water and a few drops of ammonia cause the formation of a blood-red colour.

Vogl (Turpentine Oil).—The colour of an essential oil containing turpentine is altered on mixing 5 drops with 1 drop of sulphuric acid.

Volhard (Silver Chlorides, Iodides, Bromides).—This method of determination requires four solutions. (1) Decinormal ammonic thiocyanate, made by dissolving about 8 Gm. of ammonium thiocyanate per litre, and adjusting to decinormal strength with decinormal silver nitrate. (2) Decinormal silver solution. (3) Saturated solution of iron alum. (4) Pure nitric acid. To set the thiocyanate solution, place 50 C.c. of decinormal silver solution in a flask, add 5 C.c. of ferric indicator, and 10 C.c. of nitric acid. The thiocyanate is then run in until a faint brown colour is produced; this should require 50 C.c. To determine chlorides, the difference between the amounts of silver and thiocyanate solutions added indicates the amount of silver used up by the salts.

Vom Rath (Picro-Osmic Acid).—Mix 200 C.c. of saturated aqueous solution of picric acid, 12 C.c. of 2 per cent. osmic acid solution, and 2 C.c. of glacial acetic acid.

Vom Rath (Picro-Platinic Mixture).—Mix 200 C.c. of saturated aqueous solution of picric acid, 1 Gm. of platinic chloride dissolved in 10 C.c. of water, and 2 C.c. of glacial acetic acid.

Vom Rath (Picro-Platin-Osmic Mixture).—Add 25 C.c. of 2 per cent. osmic acid to the picro-platinic mixture.

Vom Rath (Picro-Sublimate Mixture).—Mix 1 part of cold saturated solution of picric acid, 1 part of hot saturated sublimate solution, and add 0·5 to 1 per cent. of glacial acetic acid. Objects are fixed in this for several hours and then brought direct into alcohol.

Vom Rath (Picro-Sublimate-Osmic Mixture).—Add 10 per cent. of 2 per cent. osmic acid solution to the picro-sublimate mixture.

Von Ebner (Decalcification Mixtures).—(1) Mix 100 C.c. of cold saturated aqueous solution of sodium chloride, 100 C.c. of water, and 4 C.c. of hydrochloric acid. Preparations are placed in this, and 1 or 2 C.c. of hydrochloric acid added daily until they are soft. (2) Mix 2·5 parts of hydrochloric acid, 500 of alcohol, 100 of water, and 2·5 of sodium chloride.

Von Koch (Copal Imbedding Method).—This is a valuable method for the study of corals and other objects in which hard and soft parts are intimately combined. Small pieces of tissue are stained in bulk and dehydrated with alcohol, then immersed in a thin solution of copal in chloroform, prepared by triturating small fragments of copal with fine sand, adding chloroform and subsequently filtering. The capsule containing the objects and the copal solution is gently heated on a tile by means of a night-light placed beneath it, and as soon as the solution is so far concentrated as to draw out into brittle threads on cooling, the objects are removed from the capsule and left to dry for a few days on the tile. When they have attained such a degrees of hardness that they cannot be indented by a finger-nail, sections are cut from them by means of a fine saw. These are then rubbed down even and smooth on one side with a hone, and cemented with the smooth sides downwards on slides, Canada balsam or copal solution being employed for the purpose. Leave the slides for a few days on the warmed tile and, as soon as the cement is perfectly hard rub down the sections on a grindstone, then on a hone, to the requisite thinness, and polish. Finally, wash with water and mount in balsam. A variation on this plan is to imbed the objects unstained, remove the copal from the sections by soaking in chloroform, decalcify if necessary, and then stain. Or, after removing the copal, a section may be cemented to a slide by means of hard Canada balsam, the exposed half of the specimen being then cautiously decalcificd and stained.

Von Marchi (Nerve Stain).—Harden the nerves for a week in Müller's solution, then place for a few days in a mixture of 2 parts of Müller's solution and 1 part of 1 per cent. osmic acid solution. This method gives positive images of the degenerated elements, whereas that of Weigert gives negative ones only.

Von Wistinghausen (Blueing Sections).—For neutralising or blueing hæmatoxylin-stained tissues, add 3 to 5 drops of a saturated solution of sodium bicarbonate in 70 per cent. alcohol to a watch-glass filled with 70 per cent. alcohol, in which the tissues are soaking. See Squire's method.

Vosseler (Venice Turpentine Mounting Medium).—Commercial Venice turpentine is mixed with an equal colume of 96 per cent. alcohol in a tall cylinder glass, allowed to stand in a warm place for 3 or 4 weeks, and then decanted. Microscopic preparations may be mounted in this medium without previous clearing with essential oils, etc., and as its refractive index is below that of Canada balsam or dammer, delicate details are more distinctly brought out. Stains keep well in the medium. See Suchannek's formula.

Vosseler (Wax Feet).—To complete the dissociation of macerated tissue, the plan is sometimes adopted of placing the tissue on a slide, covering it with a thin glass cover supported on four little feet made of pellets of soft wax, and tapping the cover with a needle so as to press it down gradually and segregate the cells of the tissue by the repeated shocks. When the segregation has proceeded far enough, mounting medium is added and the mount closed. Vosseler obtained a good material for making the wax feet by melting white wax and stirring into it one-half to two-thirds its bulk of Venice turpentine.

Vrij, De (Quinine).—See De Vrij.

Vulpius (Acetanilid).—Boil a few grammes of the substance with 1 C.c. of caustic potash solution and then suspend over the hot mixture on a glass rod a drop of filtered chlorinated lime solution. Acetanilid colours the drop yellow, with a violet tinge by reflected light, and upon further heating it turns violet.

Vulpius (Sulphonal).—The odour of mercaptan is evolved on heating sulphonal with potassium cyanide, and the fused mass yields a red colour when treated with ferric chloride.

Waddington (Arabin for Serial Sections).—A purified gum arabic for serial section mounting is prepared by dissolving the gum in distilled water, filtering, pouring the filtrate into alcohol, and washing the white pasty mass that separates with alcohol until the washings are free from water. The white powder obtained on drying the mass should be dissolved in distilled water and filtered twice. Slides coated with this solution are drained and dried, and may then be preserved ready for use indefinitely.

Wagner (Alkaloids).—A solution of iodine and potassium iodide (decinormal iodine solution) throws down brown precipitate with aqueous solutions of alkaloidal salts.

Wagner (Eosine).—The colour is discharged by collodion.

Wagner-Fresenius (Solution).—Iodine is dissolved in potassium iodide solution.

Waldeyer (Decalcification of Bone).—To a 0·1 per cent

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

solution of palladium chloride, add one-tenth its volume of hydrochloric acid.

Walz (Fixed Oils in Essential Oils).—Colour reactions are produced on adding a syrupy solution of antimony terchloride.

Wanklyn (Alkaline Permanganate Solution).—Mix caustic potash, 200 Gm., potassium permanganate 8 Gm., and distilled water 1000 C.c. Boil off about 250 C.c., then make up to 1 litre with ammonia-free water.

Wanklyn (Ammonium Chloride Solutions).—For the stronger solution dissolve 3·15 Gm. of ammonium chloride in 1000 C.c. of distilled water; 1 C.c. equals 1 milligramme of ammonia. For the weaker solution mix 10 C.c. of the stronger solution with 990 C.c. of water; 1 C.c. equals 0·01 milligramme of ammonia.

Wanklyn (Standard Soap Solution).—Dissolve 10 Gm. of Castille soap (containing 60 per cent. oleic acid) in 1 litre of methylated alcohol (35 per cent.). Standardised against standard solution of lime, 1·11 pure fused calcium chloride in 1000 C.c. of distilled water.

Wanklyn (Standard Silver Nitrate Solution).—Dissolve 4·79 Gm. of silver nitrate in 1000 C.c. of distilled water; 1 C.c. equals 1 milligramme of chlorine.

Warburg (Ehrlich-Biondi Mixture).—The Ehrlich-Biondi mixture is acidified by diluting 2 C.c. of the mixture with 40 C.c. of distilled water, and adding 3 C.c. of 0·5 per cent. solution of acid fuchsine, and 0·2 C.c. of 0·2 per cent. solution of acetic acid.

Warington (Citric Acid in Lime and Lemon Juice).—Exactly neutralise 15 to 20 C.c. of the juice, or 3 or 4 C.c. of concentrated juice, with normal soda solution, and make up to 50 C.c., then heat to boiling, and add a slight excess of calcium chloride solution. The mixture is boiled for 30 minutes, the precipitate collected and washed with hot water, filtrate and washings concentrated to about 15 C.c., and a drop of ammonia water added, the precipitate collected on a small filter and washed with boiling water. Both filters with their precipitates are dried, ignited at a low red heat, and the ash titrated with decinormal acid, each cubic centimetre of which equals 0·007 Gm. of citric acid.

Wartha (Anthraquinone).—A green to bluish-purple colour is produced on heating anthraquinone with potash solution and a little alcohol.

Wartha (Sulphur in Illuminating Gas).—A red colour is produced on adding a drop of sodium nitroprusside solution to a soda bead that has been passed along the outer part of the gas-flame, then held for a minute in the luminous part of the flame and crushed.

Watson (Gallic Acid).—A red colour is produced on adding ammonia and hydrochloric acid to an aqueous solution of gallic acid.

Watson (Pyrogallic Acid).—A lemon-yellow colour is produced on adding ammonia to an aqueous solution of pyrogallic acid.

Watson (Tannin).—A purple colour is produced on adding ammonia and nitric acid to an aqueous solution of tannin.

Wayne (Glucose).—A solution containing 2 Gm. of copper sulphate, 10 Gm. of caustic potash, 10 Gm. of glycerin, and 200 Gm. of water is reduced on warming in the presence of glucose, cuprous oxide separating out.

Webb (Dextrin Freezing Mass).—A thick solution of dextrin (1 : 40) in aqueous solution of carbolic acid is used for imbedding, and subsequently frozen.

Weber (Blood).—A blue coloration results on treating urine or other liquid containing blood with glacial acetic acid, shaking out with ether and adding to the separated ethereal layer old resinified turpentine oil, together with a few drops of freshly prepared 10 per cent. tincture of guaiacum. Compare Almén's reagent.

Weber (Indican).—On heating to boiling 30 C.c. of urine containing indican, with 30 C.c. of hydrochloric acid, then cooling and shaking with ether, a blue foam will be produced, whilst the ethereal layer will be coloured red.

Wedl (Orseille or Orchella Stain).—Mix 5 C.c. of acetic acid, 20 C.c. of absolute alcohol, and 40 C.c. of distilled water; then add sufficient archil, from which excess of ammonia has been driven off, to form a dark reddish fluid.

Weidel (Xanthine).—The yellow residue left by xanthine on evaporating with chlorine water and a trace of nitric acid, is coloured a deep yellowish-red by the action of ammonia vapour.

Weigert (Clearing Celloidin Sections).—A mixture of 3 parts of xylol with 1 part of anhydrous carbolic acid is used. As this mixture discolours basic aniline stains, replace the carbolic acid with xylol when they are employed.

Weigert (Correcting Picro-Carmine).—Solutions of unsatisfactory picro-carmine are treated with small quantities of acetic acid until a slight precipitate remains, even after stirring; then place on one side for 24 hours, filter, and add ammonia, drop by drop, at intervals of 24 hours, until the solution becomes clear. If the solution stains too yellow add acetic acid; if it overstains red add a little ammonia.

Weigert (Fibrin Stains).—Sections of alcohol material are stained in a saturated solution of gentian or methyl violet in aniline water, then placed on a slide, the excess of stain removed by means of blotting paper, and solution of "lugol" poured on to them. Next, remove excess of lugol with blotting paper, and add a drop of aniline oil to differentiate and clear. Change the aniline once or twice as it becomes dark, then remove all traces of it by means of xylol, and mount in balsam. In the modification of this stain used as a neuroglia stain a warm-saturated solution of methyl violet in 70 or 80 per cent. alcohol is decanted after cooling, and 5 per cent. of aqueous solution (? saturated) of oxalic acid added. Moreover, the pure aniline is replaced by a mixture of equal parts of aniline and xylol.

Weigert (Gram's Method).—In this modification aniline is substituted for alcohol, in order to avoid prolonged washing with the latter, and the process is conducted on a slide. The section is placed on a slide, stained with a few drops of gentian-violet aniline-water, prepared as in Gram's method, the excess of fluid removed, and a few drops of Gram's solution applied. Subsequently, remove the liquid by gently blotting it off, then wash the section by allowing aniline to flow backwards and forwards over it and, when colour ceases to come away, repeat the operation with xylol for about 1 minute, then mount in balsam.

Weigert (Hæmatoxylin).—Dissolve 1 part of hæmatoxylin in 10 parts of absolute alcohol; then add 90 parts of distilled water and 1 part of aqueous solution (1 : 70) of lithium carbonate.

Weigert (Neuroglia Stain).—Pieces of tissue, 0·5 Cm. thick, are hardened for 4 days or more in 4 per cent. formaldehyde solution, and then mordanted for 8 days at the normal temperature in an aqueous solution containing 5 per cent. of neutral copper acetate, 5 per cent. of acetic acid, and 2·5 per cent. of chrome alum; prepare this solution by adding the alum to water, raising the solution to boiling point, and adding the acetate and powdered acetate. Next, wash the tissues in water, dehydrate, imbed in celloidin, and cut sections. Treat the sections for 10 minutes with a 0·3 per cent. solution of potassium permanganate, well wash in water, then immerse for 2 to 4 hours in a solution prepared by dissolving 5 per cent. each of "Chromogen" and formic acid in water, filtering, and to each 90 C.c. adding 10 C.c. of 10 per cent. sodium sulphite solution. After this bath, leave the sections for 24 hours in a 5 per cent. solution of chromogen, then carefully wash, and stain with a modification of Weigert's fibrin stain, which see.

Weigert (Staining Brain Tissue).—Pieces of brain and spinal cord are hardened in bichromate solution, followed by alcohol, then imbedded in celloidin or gum. If imbedded in celloidin, the pieces are subsequently taken from the spirit in which they are immersed, and placed for 1 or 2 days in saturated aqueous solution of copper acetate, diluted with an equal bulk of water, the mixture being kept at about 40° C. Afterwards transfer the pieces to 80 per cent. alcohol until required for cutting. Or, the sections can be cut first, and then treated with copper acetate. To stain the sections, after being well washed in 90 per cent. alcohol, they are transferred to Weigert's hæmatoxylin and left for a few hours to 2 days, according to the differentiation required. When opaque and of a deep blue-black colour, they should be well washed for 2 or 3 days in distilled water. Next decolorise for 0·5 to 2 hours in a solution of 2 Gm. of borax and 2·5 Gm. of potassium ferricyanide in 200 C.c. of water. As soon as the grey and white substances are sharply defined, again wash the sections in water for half an hour, then dehydrate, clear, and mount in balsam.

Weigert (Stains for Bacteria).—Dissolve 2 to 4 Gm. of methylene blue, and 2 Gm. of fuchsine (or Victoria blue) in 15 C.c. of alcohol, then add 85 C.c. of water.

(To be continued.)

NOTES AND FORMULÆ.

(Specially abstracted for the Pharmaceutical Journal.)

Tolu Balsam.

As a ready test for purity, Gehe and Co. recommend mixing a few grammes of balsam with carbon disulphide. A few drops of the solution are then drawn off, evaporated, and the residue covered with sulphuric acid. Pure balsam gives an intensely blood-red colour reaction, while mixed colours are indicative of adulteration with resin.—*Handelsber. Gehe and Co.*, April, 97, 6/8.

Ichthalbin or Ichthyol Albuminate.

In order to render ichthyol more convenient for use in internal medication, Vieth has prepared a compound of ichthyol and albumin which is perfectly odourless and tasteless. It is obtained by precipitating an aqueous solution of albumin by means of ichthyol. Sack has experimented with this substance, and finds that it possesses all the therapeutic properties of ichthyol. The dose is from 1 to 2 grammes per diem for adults, and 1 gramme for children.—*L'Union Pharm.*, xxxviii., 249, after *Semaine Méd.*

To Keep Sounds and Bougies Aseptic.

The instrument is first washed with vigorous rubbing for at least one minute in absolute alcohol. This is sufficient to sterilise it; to keep it aseptic it should be kept immersed in liquid paraffin oil in an oblong glass vessel covered with a well-fitting lid. Surgical instruments, such as sounds and bougies, may be kept perfectly aseptic for an indefinite period in this manner. The mineral oil, too, serves the useful purpose of a lubricant, rendering the instruments more easy of introduction into the urethra.—*Rev. Med. Pharm.*, iv., 173, after *Sem. Méd.*

Mineral Manures for Pot Plants.

Müller Thurgan finds that the following causes a rapid growth of plants in pots:—Potassium nitrate, 30; potassium phosphate, 25; ammonium sulphate, 10; ammonium nitrate, 35. By omitting the ammonium nitrate the flowering of the plant is hastened.—*Journ. de Pharm.*, v., 593, after *Ann. Agronom.*

Aniline as a Solvent for Indigotin.

Brandt recommends commercial aniline oil for the extraction of indigotin from indigo for the purpose of assay. The extraction is conducted in a Soxhlet apparatus until the reflux solution is colourless. The aniline extract is freely diluted with water and a sufficiency of hydrochloric acid added to convert it into the soluble chloride, which is readily filtered off. The indigotin is collected on a tared filter, washed first with hot water and then with a very little alcohol, and is then dried and weighed. By this method 84·25 per cent. of indigotin was obtained from Java indigo and 67·5 per cent. from a Bombay sample.—*Ann. Chim. Analytic*, ii., 223, after *Rev. Gén. des Mats. Color.*

Intestinal Calculus Formed of Salol.

Robin reports a case of intestinal obstruction in a patient who had been taking salol for some time. After evacuation, the calculi were found to consist of salol, the total weight being 4 grammes, that of the largest concretion being 2 grammes. Although the salol was administered in the form of powder the calculi were crystalline in structure.—*Répertoire* [3], ix., 232.

Iodo-Anisol.

According to Merck, ortho-iodo-anisol is a powerful antiseptic and an energetic local irritant. It occurs in a yellowish-red crystalline mass, boiling at 240°.—*Merck's Report*, No. 144, 88.

Linadin.

Linadin, which is obtained from the spleen in the proportion of about 10 per cent., is a brown odourless powder, tasting somewhat like cod-liver oil; the ash is rich in phosphoric acid and in iron, and contains from 0·01 to 0·02 per cent. of iodine.—*L'Union Pharm.*, xxxvii., 207, after *Revue de Flandres.*

Administration of Castor Oil to Children.

Hofmann and Schoelensack recommend the addition of sufficient brown moist sugar to make a stiff paste.—*Ph. Cent.*, xxxviii., 152.

Ossalin (Adeps Ossium).

Stroschein gives this name to an animal fat prepared by him from the marrow of fresh beef bones. It is recommended as a basis for ointments. Ossalin is a remarkably mild fat; it is quite neutral, and produces no irritation on the skin. Its colour is greyish-white and its odour similar to tallow. According to the author, ossalin is capable of absorbing as much as 200 per cent. of water, and ointments prepared with it should therefore be readily absorbed by the skin.—*Pharm. Zeitg.*, xlii., 354.

Mouth-Wash Tablets.

Heliotropin, 0·01 Gm.; saccharin, 0·01 Gm.; acid salicylic, 0·10 Gm.; menthol, 1·00 Gm.; sacchar. lactis, 5·00 Gm.; spiritus rosæ *q.s.* ut fiant tablettæ, No. 100. Eosine colours the substance a nice red, chlorophyll, green, and indigo-carmine, blue.—*Pharm. Zeit.*, xlii., 381.

Relative Toxicity of Alcohols.

Experimenting with gold fish on the relative toxicity of the alcohols, Picard finds that this is directly as their molecular weights, and after a long series of experiments, concludes that the relative toxicity may be expressed by the following figures:—Methylic alcohol, ⅔; ethylic, 1; propylic, 2; butylic, 3; amylic, 10. These results are contrary to those of Dujardin-Beaumetz in so far he found methyl to be more poisonous than ethyl alcohol.—*Comptes rendus*, cxxiv., 829.

Anusol Suppositories.

The following recipe is given for these suppositories, which have furnished good results for hæmorrhoids. Anusol (iodine resorcin bismuth sulphonate), 7·5 grammes; zinc oxid., 6·0 grammes; balsami peruviani, 1·5 gramme; olei cacao, 19·0 grammes; ungt. cerei, 2·5 grammes; M. f. supp. No. 12. —*Pharm. Centralh.*, xxxviii., 242.

Detection of Margarin in Cheese.

Bremer takes the iodine number of the volatile fatty acids as an indication of the quality of the article. The number of the volatile fatty acids should not exceed 95, and the author thinks this a fairly reliable standard for non-adulterated cheese or butter. —*Forschgs. Ber.*, iv., 51.

Detection of Salicylic Acid in Preserved Tomatoes.

Solanorubin, which is the colouring matter of tomatoes, prevents the direct application of the usual reactions for salicylic acid. Griggi therefore treats 1 gramme of the preserve with 10 C.c. of petroleum ether in a test tube. The latter is drawn off with a pipette and treated in another test tube with a sodium hydrate solution of 0 5 to 1 per cent., which dissolves the salicylic acid, while the colouring matter remains in the petroleum ether. If the sodium hydrate solution is sufficiently weak, the identification with ferric chloride can now be carried out. The solanorubin thus obtained gives a blue coloration with concentrated sulphuric and hydrochloric acids; it is decolorised by nitric acid; it does not change with acetic acid, or with potassium and sodium hydrate.—*Pharm. Centralh.*, xxxviii., 168.

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THE QUESTION OF PRICE.

In commenting at various times on the efforts now being made to control the retail prices of proprietary medicinal preparations, it has been felt to be necessary to insist upon the fact that there is no position that can be logically taken up by pharmacists as professional men except that of declining to sell such goods below face value. Attempts to maintain a fixed minimum below the face price can only result in wide differences in prevailing customs —some individuals insisting upon face price, others agreeing to allow what they regard as a fair discount, and a third section making no effort to secure anything above the fixed minimum. Nor is it altogether inconceivable that some dealers will even endeavour to nullify the effects of any agreement that may be entered into by selling goods, on occasion, below that fixed but not unalterable minimum. Human nature is very prominent in most human beings, and, though it goes against the grain to admit the fact, there are chemists on the Register who are not above taking advantage of their neighbours who may repose confidence in them on the strength of mutual agreements. With the idea of securing uniformity in the prices charged for dispensing physicians' prescriptions, private marks understood by all the chemists in a given district have from time to time been adopted by local associations. But a very common experience has been for a chemist, who used the distinctive mark to indicate his charge, to find that his dispensing business was leaving him, owing to the unscrupulous action of some fellow-craftsman in the district, who has taken advantage of his acquaintance with the private mark to undersell him. When such practices are possible it is hopeless to expect that anything like universal agreement can be arrived at, even in the matter of a so-called minimum price for proprietary preparations, and the only satisfactory position for the self-respecting pharmacist is to decline to to supply the articles at less than their face value.

Some light is thrown upon this question by what is at present taking place in the bookselling world. Years ago, it occurred to an enterprising bookseller that he could increase his business by resorting to a discount system, and as is well known, retail booksellers all over the country have, as a result, had their profits curtailed in the same manner as chemists. First, they were driven to allow twopence discount in each shilling on all books sold, but at last the extreme limit of twenty-five per cent. discount was attained. The effects of this were disastrous to bookselling as conducted by men of culture in days gone by, who knew what was in the books they sold, and did not content themselves with merely handing goods over their counters. Nor has the modern policy of working for next to nothing commended itself in the long run to all those who were in such haste to adopt up-to date methods, in the hope of enticing a little business away from their more conservative neighbours. An attempt to meet the difficulty by producing books at net prices has not been an unqualified success, though it offers what must nowadays be regarded as a fair working profit. But some publishers who adopted this plan have already relinquished it, and though others continue their adherence to this most reasonable of all methods, its prospects are none too hopeful. At the present time, this matter of the retail prices of books is being vigorously threshed out in the public press, but the whole case is concisely summed up in the remarks of two individuals. Mr. Marston, a leading publisher, argues that the public, having become accustomed to receive twenty-five per cent. discount, will continue to demand and expect it. But, as a correspondent of the *Times* sensibly remarks, though book buyers are like other people in wanting to buy at the lowest possible price and going where they can do it, yet if they can get no discount anywhere, they will be quite content to pay the published price, so long as they are satisfied the book is worth it. In other words the public is prepared to give the face price if that is the lowest price.

Reverting then to chemists and their retail trade, the obvious remedy for "cutting" in the prices of proprietary articles is that those articles shall cease to be singled out by the vast disproportion between their wholesale prices and indicated values, so that everyone shall be compelled to sell them at their indicated values. On goods that require no special skill in handling them, it is unreasonable to expect the public to be prepared to pay profit in a similar proportion to what should be forthcoming when special skill is exercised in business transactions. Such exaggerated profits are generally allowed to have prevailed in connection with proprietary preparation some years ago, before chemists had the powerful weapon they had helped to create turned against them. For, as has frequently been pointed out, the traffic in many of the articles that now supply "stores" with their chief reason for existence was fostered by chemists and druggists, who saw in it an easy method of securing large profits without much trouble and with no expenditure of time or special skill. That such was the case is much to be regretted, but the mischief is done now, and the only course open is to face it and make the best of circumstances which cannot be controlled. The policy which should obviously be pursued is to decline to supply goods the prices of which are nominally fixed, at anything below those prices, and if practical uniformity in that direction can only be secured by lowering the retail prices or advancing the wholesale ones, either plan should be cheerfully accepted as affording the most satisfactory way of retreat from an untenable position. But the necessities of the case require that this difficulty shall not be approached in the spirit of a mere huckster; the pharmacist of to-day ought to pose as something better than the mere retailer of other men's goods, and in proportion as he accepts this view of the matter, so will he secure emancipation from the toils that his business predecessors have left to entangle him.

ANNOTATIONS.

THE NEW BYE-LAWS drafted by the Council of the Pharmaceutical Society and agreed to by the members at the special general meeting called for the purpose, were approved at a meeting of the Privy Council held on Thursday, November 11, and come into operation immediately.

THE PROPOSED EDUCATIONAL CONFERENCE, referred to by Mr. James Cocks, President of the Plymouth, Devonport, Stonehouse and District Chemists' Association, at the meeting of that Association held on November 10 (see *ante*, p. 436*b*), had the entire approval of those attending the meeting, though the matter was not formally discussed. So we are informed in a letter recently received from Mr. Cocks. The terms of the proposition placed before the members were, as mentioned last week—

> That with a view to placing elementary pharmaceutical education on a uniform and satisfactory basis throughout Great Britain, it is desirable that a conference should be called to deal with the matter, in accordance with the views expressed in the *Pharmaceutical Journal* of October 23 last, and that the President of the Pharmaceutical Society should be requested to preside at that conference.

At a meeting of the Manchester Pharmaceutical Association, held the same night, notice of motion was given by Mr. William Kirkby (see p. 452), who is so well known in connection with the pharmaceutical course at Owens College, Manchester, and intends to propose at the next meeting of that Association—

> That it is desirable that a conference should be called to consider the desirability of formulating a curriculum of pharmaceutical education, and for making such other recommendations as should be considered necessary to improve pharmaceutical education, and that the President of the Pharmaceutical Society should be asked to preside at the conference.

Intimations have been received to the effect that propositions couched in similar terms will be brought before the members of other local associations for consideration, and we have great pleasure in recording these evidences of the apparently deep-seated interest now being manifested in the subject to which attention was so recently re-directed in the Journal.

LOCAL ORGANISATION is another subject that is very much in the air at present, and seems to possess an unusual interest for pharmacists. Mr. Newsholme's Nottingham address appears to have been of service in stirring the dry bones, and his efforts are being worthily seconded by others, who see in his suggestions the key to what has hitherto proved a most difficult problem, viz., the complete union of registered chemists for purposes of defence and improvement of the conditions under which they labour. Birmingham, which is noted for the prominent and advanced position it has taken up in the field of general politics, is equally to the fore in the consideration of political matters of exclusively pharmaceutical interest, and at a meeting of the Midland Pharmaceutical Association on Thursday next, Mr. R. Darton Gibbs, the Secretary of the Federation of Pharmaceutical Associations, will open a discussion on this same topic of local pharmaceutical organisation. Meanwhile, meetings have been held at Chester (see p. 453) and Derby to consider the desirability of forming local associations there, and a meeting with a similar object in view is announced to be held at Scarborough on Monday next. These three meetings are due to the activity of the Proprietary Articles Trade Association, the officials of which are exerting themselves for the permanent good of chemists in thus encouraging them to combine.

CONSOLIDATION OF THE PHARMACEUTICAL SOCIETY is the third prominent subject at present before the craft, and that is naturally receiving a great deal of attention. What Plymouth and the neighbouring towns think in this matter, which involves amendment of the Pharmacy Act and therefore requires very careful treatment, appears from our report of the meeting held last week (*ante*, p. 436*c*). The resolutions of that meeting differ to some extent from the original proposals put forward, but the principles of the latter are in no degree affected by what actually was agreed to. Briefly, our South Devon friends think (1) That registered pharmaceutical students should be eligible for the Associateship of the Pharmaceutical Society, and not be permitted to enter for the qualifying examination until at least three years have elapsed from the date of registration as a student; (2) That full membership of the Society should be open to all registered chemists. The proposal with regard to exemption from jury service is one with which we are all heartily in accord, but the reform cannot be effected through the medium of a Pharmacy Act Amendment Bill, and the suggestion may therefore be left out of sight for the moment. The Plymouth recommendations with regard to the proposed Bill may therefore be reduced to the two summarised above, and the resolutions which Mr. Kirkby intends shortly to move at Manchester (see p. 453) embody the principles of the same two recommendations. What other associations will do in this matter remains yet to be seen, but there is little doubt that all will agree that the principles involved are fundamental.

THE BRISTOL PHARMACEUTICAL ASSOCIATION announces a meeting of the members of the Association, to be held at University College, Bristol, on Wednesday next, the 24th inst., at 8 p.m., "for the purpose of discussing certain amendments of the Pharmacy Act, which the Pharmaceutical Society proposes to bring into Parliament during the ensuing session." All registered chemists in the district are invited to attend the meeting, and in the letter that is being sent out by the Hon. Secretary, Mr. B. Keen, it is pointed out that it is pretty clearly indicated in the *Pharmaceutical Journal* of November 6 what form the amendments will take, but it is also observed that as the Pharmaceutical Council will probably be much influenced in its action by the opinion of local associations throughout the country, it is desirable that, prior to the meeting, the recipients of the letter should carefully consider the points referred to, as well as any other practical way in which they think the Act may be improved. The letter concludes with the words :—"I am requested to urge upon you the necessity of being present at the meeting; if it is impossible for you to attend will you favour me with your opinion in writing, as to how far you are in sympathy with the object in view (see *Pharm. Journ*, p. 416*b*)?" Apparently, action is being taken at Bristol on the lines of the Plymouth suggestions.

THE QUESTION OF TITLES was practically left in abeyance at Plymouth, and Mr. Kirkby apparently intends to leave it so. But, as Mr. Carteighe emphatically remarked at the meeting of the Pharmaceutical Society on Tuesday night, this question is one to which it is very proper and even necessary that associations should devote their attention. Existing pharmaceutical titles, he pointed out, are conferred by the State and, therefore, comparatively valueless from a professional point of view. But those who are agitating for some higher title for pharmaceutical chemists should remember that titles to be of any value can only be conferred by a corporate body which is also an educating body. Mr. Carteighe hopes to see the Pharmaceutical Society become a component college of the reconstructed University of London, and in that event the problem of higher titles for pharmacists will be solved in Great Britain, as the man who prepares himself for what may be termed the Government qualification will then be on the road to win a title which will carry with it a certain social distinc-

tion. This may or may not be regarded as the last word on this important and, to many, fascinating subject, but in any case Mr. Carteighe's remarks should be carefully weighed by all ambitious reformers.

The Western Chemists' Association (of London) held its annual dinner at the Café Royal, Regent Street, W., on Wednesday evening, when Mr. J. W. Taplin, the retiring President, occupied the chair, and there was a large attendance of members and friends, including Mr. Walter Hills, President of the Pharmaceutical Society; Messrs. C. B. Allen and W. Warren, Members of the Pharmaceutical Council; Mr. Richard Bremridge, and many prominent London pharmacists. The toast of the evening—"The Western Chemists' Association"—was ably responded to by the President-elect, Mr. J. Hitchcock Mathews, who briefly sketched the history of the Association during its seven years' existence, and referred with pardonable pride to the influence it had been able to exert in matters pharmaceutical. Mr. Walter Hills, in responding to the toast of "The Pharmaceutical Society," said there were two subjects of the highest importance at present agitating the world of pharmacy—education and consolidation of the Society. He was glad to see there was a wave of enthusiasm spreading over the country, in regard to improved educational facilities for pharmaceutical students, and hoped the effects would be permanent. Referring to the proposals recently placed before the Plymouth Association, Mr. Hills said he sympathised with most of them, but felt it was necessary to proceed slowly and cautiously.

The Council of the Pharmaceutical Society, Mr. Hills observed, is at present in favour of introducing a Parliamentary Bill next session, with the view of consolidating the Society by admitting all chemists and druggists to full membership. If they obtained that, it ought to be possible for them to secure further advantages in the course of two or three years, as he fully anticipated a greatly increased membership of the Society as the result of such a Bill as he mentioned passing. At the same time, he thought it was a good thing for associations to discuss such matters as alterations of titles and all the other points brought up at the Plymouth meeting, and he hoped chemists all over the country would continue agitating during the present winter session. Mr. T. Morley Taylor, President of the Chemists' Assistants' Association, responded for "The Visitors" in a smart little speech, and after the Chairman's health had been drunk, Mr. Herbert Cracknell, one of the Hon. Secretaries of the Association, in responding for the Dinner Committee, gave some interesting particulars concerning the position of the body he has worked so well for during the past six years. He emphasised the fact that the Association is open to all chemists in business in any part of London, and urged upon them the desirability of joining the only representative body of the craft, except the Pharmaceutical Society, in the metropolis.

A Bust of Faraday has been unveiled at the Michael Faraday Board School, Faraday Street, Walworth, and Sir J. Crichton Brown, in performing the ceremony, expressed the hope that one day every year would be set apart in the school in memory of the great natural philosopher, so that some part of his work should be explained. The bust has been presented by the managers of the Royal Institution of Great Britain, and is a copy in white marble of the original one executed by Matthew Noble. On the wall immediately behind the bust is fixed a large brass tablet bearing the following inscription:—"Michael Faraday, natural philosopher, D.C.L., F.R.S., born at Newington, Surrey, September 22nd, 1791. He was a patient student, an eloquent expounder, and a brilliant illustrator of the laws of nature. Fullerian Professor of Chemistry in the Royal Institution of Great Britain, 1833 to 1867. Faraday's noblest monument is his 'Experimental Researches in Electricity and Magnetism' from 1831 to 1851. He died at Hampton Court Green, August 25, 1867, and was interred in Highgate Cemetery."

An Evening Meeting of the Pharmaceutical Society will be held in the Society's House, 36, York Place, Edinburgh, on Friday next, November 26, at 8.30. Mr. J. Laidlaw Ewing will take the chair, and an inaugural sessional address on "The New Dualism in Chemistry" will be delivered by James Walker, D.Sc., Ph.D., F.R.S.E., Professor of Chemistry in University College, Dundee. Additions to the Library and Museum will be exhibited and described by the Assistant-Secretary if time permit.

The Sancta Maria Lodge, No. 2668, the members of which will be mainly connected with St. Mary's Hospital, was consecrated at Freemason's Hall, London, on Monday afternoon last by the Most Worshipful Pro-Grand Master, the Earl of Lathom. The new Lodge, which is fortunate in having H.R.H. the Prince of Wales, the Most Worshipful Grand Master, as W.M., is presided over by Edmund Owen, M.B., F.R.C.S., as Deputy Master, and the Officers include the Hon. R. B. Wibraham, Senior Warden; J. E. Lane, F.R.C.S., Junior Warden; Malcolm Morris, F.R.C.S., Treasurer; M. Handfield-Jones, M.D., Secretary; A. P. Luff, M.D., Senior Deacon; Henry Pearce, M.R.C.S., Junior Deacon; and P. P. Whitcombe, M.B., Inner Guard.

The 'Pharmaceutical Journal' is invaluable as a work of reference to all who are interested in the art of pharmacy, and a complete set of volumes from the beginning should be the essential nucleus of every pharmaceutical library. Local pharmaceutical associations especially should have all the varied information embodied in our pages during the past fifty-six years available for the use of their members, and the Editor has pleasure in directing attention to the fact that the twenty-nine volumes from 1841 to 1869, substantially bound in half calf, have been placed by a friend at the disposal of any association which can make use of them. Applications should be addressed to the Editor without delay.

The Increase of Highly Educated Germans is said to be producing alarm in their native country, and the Berlin correspondent of the *Pall Mall Gazette* says the extent to which University education is utilised by the Fatherland is giving rise to serious anxiety. At the Prussian Universities alone the number of students is stated to have increased as follows:—In 1870-71 there were 6,664; in 1878-79, 9,506; in 1888-89, 13,946; in 1895-96, 14,742, so that in twenty-five years the numbers have doubled. The town of Dantzig has for some time been ambitious of maintaining a university of its own, but the authorities are reported as having desisted from carrying out the project since prominence has been given to what are regarded by them as "disquieting" figures. So does the pendulum swing backward in course of time.

The Colonial and Foreign Issue of the Journal will be published next week, when more than eleven thousand copies will be circulated at home and abroad. Correspondents are requested to despatch communications for this special issue not later than Tuesday next, and to be careful to address them to the Editorial Department, 17, Bloomsbury Square, W.C. Several letters for the Editor have recently been directed to the Publishing Office, 5, Serle Street, W.C., with the result that some little delay was caused in delivery. Advertisements, on the other hand, should not be addressed to Bloomsbury Square.

THE WORLD OF PHARMACY.

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN LONDON.

The first evening meeting of the session was held on Tuesday last, when the chair was taken by Mr. WALTER HILLS, President of the Society, at 8 o'clock. The first paper read was by Professor J. REYNOLDS GREEN, on

PHARMACY IN SOME OF THE AMERICAN UNIVERSITIES.

The paper, which is printed at p. 441, gave rise to a brief discussion :—

The PRESIDENT said the subject of pharmaceutical education was in the air, and no doubt this paper would supply material for a good deal of discussion during the coming session; and it would be better appreciated when in print than it could be at the moment, consisting as it did of so much detail. He almost wondered, seeing the immense number of subjects taught, whether the hours in America did not contain more than sixty minutes.

Mr. CARTEIGHE said this paper, on which he congratulated the author, was quite out of the ordinary run, and was very useful, not only for its bearing on pharmaceutical education, but also as touching on a subject, which he had had, when President, a good deal to consider how far any recognition was afforded by the State to the educational attainments of the pharmacist, as testified by examination. It had been pointed out that in the State of Iowa the certificate of the University was accepted as evidence of qualification, and that reminded him of the good old times when degrees in medicine and surgery were given by the two great universities without regard to any examination by any corporate body whatever. The practice followed in Iowa was not universal in the United States, different States having different regulations, but the moral he drew was that the educational status of the pharmacist in this country must in future be obtained by a qualification in some university or college, and he must not expect to obtain from any average legislature any title which would give him such a position as he ought to possess. The Americans, he thought, thoroughly understood the difference between trade and professional knowledge. They were keen enough in all matters of business, but they had a very clear idea of the value of knowledge, and of the honourable position which the possession of it ought to occupy. Primary education in the States was fairly good; secondary education was not, in his opinion, so good in proportion as it ought to be. The equipment of the universities which Professor Green had described might well excite envy. These centres of learning were endowed generously by men who had made money in commerce, and who felt it a duty to spend it in this way, and they were not hampered by old traditions in the same way as ourselves. They recognised more clearly there than in any other part of the world that a pharmacist, though to a certain extent he was a trader, might nevertheless be entitled to recognition as a professional man. The late Mr. Schacht once advocated an attempt being made to obtain the degree of bachelor in pharmacy from certain national or local universities, and he would recommend the younger members, whose thoughts ran in such a direction, to read the speech made by Mr. Schacht on that occasion. He thought the moral of the present paper was that the actual title a man should hold could be most easily and righteously awarded by an educational body, one not fettered by the State. Unfortunately all titles came from the State, and in this country a particularly antiquated system with regard to titles prevailed. Many men of high university attainments, who fulfilled duties similar to those of an Under Secretary of State, were termed "clerks." In the States they would be deemed worthy of the highest distinction; but such being the case here, it was no wonder that pharmacists were still in the same position with regard to title. Those, therefore, who were agitating for some such title as Fellowship of the Pharmaceutical Society should remember that titles, to be of any value, could only be issued by a corporate body which was also an educating body. If and when the Pharmaceutical Society became a part of a great university of London, as he hoped it would, it would be possible to arrange that a man might prepare for what might be called the Government qualification, and at the same time be on the road to a title which would give him a certain social distinction and would also be more valuable in other ways than merely passing a statutory examination. He could endorse everything Professor Green had said as to the universities he had visited, which he had had the opportunity of seeing actually at work. It was remarkable, not only the advantages offered to students at Chicago, but the extent to which they were availed of, and the fees that were paid. The apprenticeship system was almost unknown in America, and many of their students had never been in a pharmacy at all before entering on the curriculum. The liberality with which American citizens endowed colleges and universities was well known, and though something of the same kind was seen in connection with the newer universities and colleges now springing up in England, he feared it had not yet extended very far in the direction of pharmacy.

Mr. MARTINDALE said he visited at the time of the Chicago exhibition the pharmaceutical colleges at Chicago, Philadelphia, Boston, and New York. The North-Western College was then only just completed, but he was much pleased with the building and arrangements. Very few clerks in drug stores, as they were called, went through any apprenticeship, but many of them after a few years entered the colleges as students, chiefly, however, he believed with the idea of discovering or manufacturing some nostrum by which they could acquire a fortune rather than with the view of pursuing an ordinary pharmaceutical career, such as the English student looked forward to. The examinations in America were on a very different system to the English. The examining bodies were not connected with the colleges, but were elected from the chemists and druggists in the State, and did not necessarily have regard to any course of study the candidate might have followed. The State examination was quite independent of the college, as it was also in Germany. He must say he envied the Americans of the educational advantages they possessed.

The PRESIDENT, in proposing a vote of thanks to Professor Green, said he must confess he still thought the apprenticeship system had its advantages, and that nowhere could pharmacy be learned so well as in a practical business. He even had his doubts whether the medical profession had not lost something by the abolition of the system of pupilage.

The vote of thanks having been carried by acclamation, and briefly acknowledged by Professor GREEN, a paper was then read by Messrs. EDMUND WHITE and J. O. BRAITHWAITE, on

SUPPOSITORIES.

This paper is printed at page 437, and after it had been read,

The PRESIDENT said he was not himself very much exercised in mind about the moulds being exactly the right capacity; he did not think a difference of a grain or so from the weight ordered was of importance. It was, however, important that each mould in a set of six or twelve should be practically identical. The great problem was to give the requisite amount of the active ingredient in each, but whether there were 14½ or 15½ grains of oil of theobroma was a comparatively slight matter. He believed that in the forthcoming Pharmacopœia matters would be improved, but it would be necessary for each pharmacist to make himself acquainted with his own mould and know how to deal with it. If he did that, he thought probably, with a little care and experiment, he would be able to turn out suppositories which would be much more accurate than some of those which had been referred to.

Mr. GERRARD thought a fifteen-grain suppository was scarcely large enough in many cases, as, for instance, where five grains of bromide of potassium had to be incorporated. He thought twenty grains not at all too large. The general shape was slightly conical, but he was inclined to favour the cylindrical, as being more likely to be retained in position. He had examined many samples of oil of theobroma obtained from Messrs. Cadbury, Birmingham, and, generally speaking, they had a melting point lower than 31·5, the lowest limit mentioned in the table. Whether this was due to their being derived from a mixture of various cocoas he could not say. It was usual to melt the cocoa butter, and then if the ingredient were insoluble, to mix it in mechanically and then pour into the mould. The process was purely a mechanical one, and if the ingredients used were of greater specific gravity than the butter, they tended to fall in the time which elapsed between pouring the first and last, and consequently the results were not exactly uniform. You could not carry any mechanical process to such a nicety as to ensure scientific accuracy. Another method, however, was to grind up the oil of theobroma into a powder, rub up the substance to be employed with it into a kind of paste, and roll it into a rod like a pill mass. Then place it on a measured surface and divide it into the number

of parts required with due care. This was quite as accurate as using a mould.

Mr. Holmes said he believed there were two forms of oil of theobroma recognised, one the commercial and the other the pure. He had been asked which he wanted. It would be interesting to know what was the difference between them. Many years ago he was told by a cocoa manufacturer that the demand for this oil was greater than the supply, its principal use being in making chocolate creams.

Mr. C. Umney said the firm mentioned by Mr. Gerrard offered about every three months ten or twenty tons of the expressed oil of theobroma on the Mincing Lane Market, and it was always disposed of at a fairly uniform price, for the manufacture of chocolate creams. His own impression was that a large firm like that would blend their cocoas according to their commercial value; it might be sometimes Guayaquil, sometimes Ceylon, sometimes Trinidad, and sometimes Caraccas. The latter was considered to be best in flavour, which would probably have some influence in the case of high-class cocoas. There might be something in the mode of expressing the oil, Mr. White probably used a small, whereas Messrs. Cadbury would have a powerful hydraulic press which would express the last fraction of oil, and this might perhaps have an effect on the melting point. There was a substance known in the trade called decolorised cocoa butter, but that was not what was used in pharmacy, which should have a yellowish colour.

Mr. Martindale thought the shape most preferred in England was that drawn by Mr. White on the board, something like a rifle bullet, cylindrical but with a conical point, but there was a shape used in America and much recommended, something like the teat of a feeding-bottle; it was supposed to be retained better than the other.

Mr. Gerrard said there was a substance known in commerce as cocoa butter made from cocoa-nut oil, which had a lower melting point than cocoa butter, and was largely used for mixing with it by chocolate manufacturers, but they were now looking for something still cheaper. He had been asked to call on a wholesale house with reference to a kind of fat—of which he showed a sample—of which he knew nothing. It had the appearance of cocoa butter, a rancid odour, and about the same melting point.

Mr. Matthews asked whether the temperature at which the oil of theobroma was expressed would have any influence on its subsequent melting point. If the oil were overheated its melting point afterwards would probably be affected.

Mr. White, in reply, said he could not tell what would be in the new Pharmacopœia. In the present one the directions were all right, but the difficulty was to carry them out. The onus was thrown on the dispenser, and if he used the same sized mould for substances of different specific gravity it was obvious the weights obtained must vary. The instrument described was devised to meet that difficulty. What Mr. Gerrard said as to size was quite reasonable, and the process of scraping or pounding the cacao butter and mixing it cold was the one they adopted. The medicament was incorporated with it in a granular condition, and a very slight pressure was sufficient to force it into the mould. They used a powerful hydraulic press, and got out practically the whole of the oil. Any shape desired could be obtained, within certain limits. He had no special knowledge about the melting point of oil of theobroma, but it was well known to vary under varying conditions, and that all oils if overheated altered their physical characters, and that they nearly all solidified at a different temperature to that at which they melted. After being once melted they melted again at a lower temperature.

The President then proposed a vote of thanks to the authors of the paper, which was at once carried.

Salts of Emetine.

Dr. B. H. Paul next drew attention to some specimens of a salt of emetine prepared by Mr. Whiffen, of Battersea, who was making it on a commercial scale. This salt was the hydrobromide, of which there were two or three samples. It had the appearance of a powder, but it was really a crystalline salt, as was quite apparent on looking at another bottle in which the salt was still suspended in the liquor from which it crystallised. The powdery condition was due to the salt effervescing and crumbling as soon as it was exposed to the air. In the most permanent state it contained about 10 per cent. of water; when heated on a water-bath to 100° C. it lost that water, but took it up again on exposure to the air; in this respect behaving very much like sulphate of quinine. There was also a sample of the hydrochloride of emetine, but this was not so convenient a salt on account of its extreme solubility, dissolving in rather less than its own weight of water, so that it was very difficult to crystallise. The hydrobromide was much less soluble and more easily obtained in the crystalline form, and medical men who had used it found no objection to it. There were also specimens of the other alkaloid of ipecacuanha and its hydrochloride, one of them showing how cephaeline was deposited from an ether solution, the crystals being so delicate that the moment they were taken out and placed on a filter they were crushed before they could be dried. There was also a specimen of the alkaloid, emetine which had been made some few days, and though at first quite white, it had now acquired a slightly yellow colour from decomposition under the influence of light. The salts were perfectly permanent, and did not alter by exposure, or in solution. There was a sample of solution of the hydrobromide 1/1000, which had been made some weeks, the solvent being alcohol and water of the strength of wine, the amount of the alkaloid corresponding to that contained in the ipecacuanha wine of the Pharmacopœia. The solution of hydrochloride kept equally well. There were also other salts, the ferrocyanide, gold and platinum salts, the picrate, chromate and mercuric salts. There was a third alkaloid which gave a remarkable fluorescence in solution, but by that light it was not visible. It had been stated that when all the alkaloid had been removed from ipecacuanha the residue was as useful in the treatment of dysentery as the natural drug, and in fact better, because it had no nauseating effect, and de-emetinised ipecacuanha had therefore been recommended for this purpose. The question had still to be solved what the efficacy of this form of ipecacuanha was due to, and an attempt had been made to investigate this. So far the results had not been very satisfactory, but from the crude, smeary product described as ipecacuanhic acid they had succeeded in getting a crystalline body in small quantity, which appeared to be something of the nature of a saponine. They were endeavouring to find a solvent which would separate and purify it, two specimens were shown, one crystalline and the other in a more crude state. He thought Mr. Whiffen was to be congratulated on being an exception to the want of enterprise shown in regard to products of this kind by British chemical manufacturers. Hitherto they had been obliged to go to France or Germany for such products. The dose of emetine was 1 to 3 milligrammes on the basis of the dose of ipecacuanha prescribed in the British Pharmacopœia. Attention was also directed to a specimen of a new anæsthetic called orthoform, which had been recently introduced and used with success in the German hospitals. It had no effect on the unbroken skin, but wherever there was a wound, a cancerous surface, or the nerve ends were exposed it was said to be very efficacious and not at all poisonous.

The President proposed a vote of thanks to Mr. Whiffen and Dr. Paul, which was carried unanimously, and those present then adjourned to the Examination Hall, where refreshments were served, and some novelties in pharmaceutical appliances were exhibited, including a tablet-compressing machine, a formaldehyde vaporiser, etc.

CHEMISTS' ASSISTANTS' ASSOCIATION.

Mr. T. Morley Taylor, President, took the chair at a meeting held on Thursday, November 11, when a paper was read by Mr. Thos. Thompson on

A Mathematical Training and its Bearing on a Pharmaceutical Career.

Mr. Thompson observed in his preliminary remarks that taking into consideration the recent action of the Pharmaceutical Society in seeking powers to extend the syllabus of the Preliminary examination by introducing mathematics, and also the fact that the assistants of to-day are the masters of to-morrow, it is their duty if they have the least desire to further the interests of pharmacy, to impress upon the embryo pharmacists the benefits and advantages derived from a mathematical training, although it has nothing directly to do with the ordinary routine of business. Just as Plato wrote over the portals of his school, "Let no one ignorant of geometry enter here," so to-day, future lawyers, clergy, and statesmen are compelled, at all the great seats of learning, to devote a considerable portion of their time to the study of curves, angles, numbers and proportions, not because those subjects have any special bearing to the requirements of their future careers, but for the simple reason that in the very act of acquiring that

knowledge they are most likely to become vested with that habit of constant and exact thinking so absolutely necessary to success. And why, asked Mr. Thompson, should not this logical discipline be necessary to the future career of pharmacists? whose duties and responsibilities are none the less onerous because there is a commercial side to their profession. The speaker then went on to point out that in the examination room the would-be pharmacist has his mental faculties put to a severe test, especially those of judgment and reasoning, and it is then that the man with an intellect fully equipped with the mental powers of well-trained faculties excels over one not so equipped, and whose clear, concise answers bear a striking contrast to the hesitating and undecided ones of his *confrère*. From the examination room to the pharmacy is but a step, and there again the almost every day emergencies and contingencies which have to be met call into play the faculties of judgment and reason no less than the exercise of his skill. At no time in the history of the civilised world has such an advance been made in all branches of science as in the Victorian era. What with free libraries, polytechnics, lectures on every conceivable subject, and associations similar to the C.A.A., the means of acquiring knowledge in every branch of science and art are available to all, so that the artisan and the mechanic can boast of his scientific attainments no less than the pharmacist, and if the latter wishes to retain those higher emoluments, which the responsibilities of his calling demand, he must keep himself in touch with the requirements of the age in which he lives. Mr. Thompson was afraid that the majority of pharmacists lack that enthusiasm for the scientific side of their calling, without which there can be no real success, and are content so long as they know sufficient to qualify; but, on the other hand, there are a few whose higher ambition and nobler aims inspire them to continue their researches into unknown regions, with credit to themselves and honour to their calling, and it is to this latter class of men that pharmacy must look for advancement in the future, therefore they should foster a love for post-graduate study and research, and he considered the best way to do this is to make men, in the first place, clearer, more exact, and consecutive thinkers, and if algebra and geometry do not do that they are worth nothing. It had been advanced by high authorities on education that such subjects as chemistry train the mind to grasp abstruse facts, and the eye to make accurate observations, but he thought it is perfectly obvious to anyone that with a previous mathematical training the principles of such subjects are much more readily grasped, as are also botany and materia medica by a previous knowledge of the classics, the botany of the present day being practically a conglomeration of words derived from the Greek. Mr. Thompson next dealt with the importance of a mathematical training of the faculties, from a psychological point of view, showing that they are developed in an orderly manner, and that no benefit can possibly be derived from a haphazard education. Thus the faculties of reasoning and judgment can only be developed by the systematic pursuit of some disciplinary study, a study which proceeds through the simple to the complex by a series of steps which follow one another in strictly logical sequence; such, he claimed, is the science of mathematics. The peculiarity of mathematical reasoning depends, said Mr. Thompson, upon the nature of those processes by which conception of abstract spatial qualities and relations, together with conception of number and of relations of numbers are formed. These processes of so-called "conception" are the achievement of imagination and intellect working in conjunction. In all forms of applied physical science calculation by means of arithmetical and geometrical conception plays a most important part, and mathematical reasoning legitimately enters into processes of argument about all things and all events as are measurable. Mr. Thompson concluded his paper, which was listened to with extreme interest, by remarking that it is not enough, however, to regard mathematical science only in its far-reaching application to such subjects as chemistry and physics, or even in its indirect power of strengthening the process of reasoning or deducing consequence from premises in him who studies it. There is something in the beauty of the truths themselves, and the student is the richer, even though he studies them for their own sakes merely and for penetrating the subtle harmonies and affinities of numbers and magnitudes, and the astonishing way in which out of a few simple and self-evident problems and germinating truths the intellect of man can gradually unfold a whole system of new and beautiful theorems, expanding into infinite and unexpected uses and applications.—The PRESIDENT said they were all indebted to Mr. Thompson for bringing forward the subject of a mathematical training, and also for having written so very able a paper upon it. He had, perhaps, not pointed out so directly the exact bearing of mathematical science upon pharmacy, but had more particularly given several reasons why it should form a sort of basis for education generally. There are, he (Mr. Taylor) thought, very few sciences that have not some bearing, more or less, upon a pharmaceutical career, and there are very few careers in which a mathematical training is not very useful.—As no one seemed inclined to combat the opinions expressed in the paper, Mr. GAMBLE (Secretary) rose to thank Mr. Thompson on behalf of the Association for his paper. He thought it reached a rather high standard of writing, apart from the subject, and if they went into the subject-matter of the paper they must all admit that the opinions expressed were such as are held by the most eminent educationalists of the day. There could be no doubt that a course of mathematics is the best course of training for a man, whether it be in pharmacy or any other branch of science. An important point, he thought, is the method of exactness that a training in mathematics leads to, and this is probably due to the fact, especially in Euclid and such branches of the science, that it is impossible for a man to clearly grasp the problems before him unless his entire faculties are concentrated upon the matter, thus using his mind to its entire capacity. It was to be regretted that at the present time Euclid and algebra are not included in the course of study required in training for a pharmaceutical chemist, but he hoped that in the near future not only would those subjects be included, but also mechanics and physics. He thought they all would accord to Mr. Thompson their hearty thanks for his very able paper, which would be a standing monument to his ability.

LIVERPOOL CHEMISTS' ASSOCIATION.

A lecture, illustrated by a fine series of lantern photographs, was delivered on Thursday evening, November 11, before a large gathering of Liverpool chemists, by Mr. Charles Sharp, who took as his subject "The Land of Green Ginger, a Discourse in Praise of Gardens." The Land of Green Ginger referred to was an aerial garden originated by a native of Hull, transferred to the metropolis, who, with an idea of keeping his native place in evergreen remembrance, had constructed a garden on the leads of his London house. The lecturer held the interest of his audience centred on the numerous graphic word pictures of the various gardens he drew, and succeeded in imparting the infection of his own enthusiasm to his hearers, amongst whom very appropriately was a number of ladies. A vote of thanks was given to Mr. Sharp at the close on the proposition of the President, Mr. A. C. Abraham, seconded by Mr. Thomas H. Wardleworth. Social functions seem to be in favour with the Association this session, for the next item of their programme is a smoking concert, to be held at an early date.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

A meeting of this Association was held on Wednesday, Nov. 10, at the Victoria Hotel, Manchester, Mr. G. S. WOOLLEY, President, in the chair. Messrs. A. H. Burgess and J. Grier were nominated for membership. Mr. J. L. SLACK read a paper entitled "Stray Thoughts suggested by the Life and Times of John Dalton." In a brief reference to the varied, if somewhat vague, chemical knowledge of the ancients, the author called special attention to the attainments of the Greeks and Romans, who, however, bequeathed very little of scientific value to their descendants. The latter half of the eighteenth century was rich in men of eminent scientific renown, but it was left to a poor north country tutor to meet the need of times by formulating a theory of chemistry, the principles of which are accepted still. Mr. Slack then proceeded to give a succinct and admirable review of Dalton's life and work, together with a short epitome of the Daltonian atomic theory. In moving a vote of thanks to Mr. Slack, the PRESIDENT exhibited his interesting collection of Dalton relics, which includes a large collection of autograph letters, copies of Dalton's first and second prospectuses announcing the particulars of his teaching academy, a short autobiography in MS., a photograph taken from a Daguerreotype from life, a copy of Dalton's 'Elements of English Grammar' (1801), prospectuses of several of his lecture courses, and a copy of 'Atomic Symbols of John Dalton.' In the course of his remarks Mr. Woolley mentioned that it was with his (Mr. Woolley's) great-uncle, the Rev. Wm. Johns, that John Dalton resided for thirty years. Mr. John Wild also exhibited the diploma conferring upon Dalton the degree of Doctor of Laws of the

University of Edinburgh. The paper and the exhibition of Daltoniana were much appreciated by the members. An informal discussion upon the consolidation of the Pharmaceutical Society was taken part in by the President, Messrs. Young, Kemp, Pidd, Wild, Grier, Slack, and Kirkby. It was thought desirable that the subject should be thoroughly discussed at the December meeting. Notice of motion was given of the following resolutions :— (1) That this meeting is of opinion that between registration of a student and presentation for the qualifying examination an interval of three years should intervene. (2) That the consolidation of the Pharmaceutical Society would be promoted by making eligible for election as members of the Society all those who pass the "Minor" or "Qualifying" Examination. (3) That it is desirable that a conference should be called to consider the desirability of formulating a curriculum and making such other recommendations as may be thought necessary to ensure a satisfactory pharmaceutical education, and that the President of the Pharmaceutical Society be asked to preside at that conference.

MEETING OF CHESTER CHEMISTS.

A meeting called by the P.A.T.A. was held at the Grosvenor Hotel, Chester, on Tuesday evening, November 16, Mr. G. Kemp in the chair. The Chairman having said that he felt the P.A.T.A. supplied a want, and its formation was a step in the right direction, Mr. Glyn-Jones addressed the meeting, and explained that it was called to further P.A.T.A. interests in the neighbourhood, and to try to form a local association. He dealt with the progress of the P.A.T.A, and said the large cutters were fighting it hard, claiming that they were not affected by the movement, and would ignore it, yet they took infinite pains to wreck it. Prominent proprietors had recognised its power, and evidence had recently been given of the concern felt in its working. The right of those who paid their money to grumble should be recognised, but as in the case of the Pharmaceutical Society the most persistent grumblers were those who did not move a little finger to help. They took all the benefits without assisting in securing them. He urged the necessity for local organisation, not only to deal with P.A.T.A. matters, but all questions affecting the trade, and instanced the good work resulting from such efforts in other towns. If the position of chemists as individual traders was to be maintained, such combination was absolutely necessary. It was useful, too, for enabling the Pharmaceutical Society to obtain expressions of opinion from local chemists upon any matter affecting them.—Several gentlemen spoke in support of both objects of the meeting, and the following resolution, moved by Mr. Spencer, seconded by Mr. Hopley, was unanimously passed :—

> "That it is advisable that an association of the chemists of Chester and district should be formed to discuss and to decide upon matters affecting the trade, and that Mr. W. F. J. Shepheard be asked to make the necessary preliminary arrangements."

Mr. Turner moved and Mr. Shrubsole seconded—

> "That this meeting expresses its approval of the P.A.T.A., and respectfully urges upon all proprietors the advisability of co-operating with the movement."

This also was agreed to unanimously.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

The fifth annual meeting of this Association was held at the Prince of Wales Hotel on Friday, November 12, at 9.15 p.m. The President, Mr. Alderman Deck, in the chair. There was a good representative attendance. The minutes of the last annual meeting having been read and confirmed, letters were read from Mr. Glyn-Jones, Secretary, P.A.T.A. ; Mr. Newsholme and Mr. Darton Gibbs, Hon. Sec., Federation of Local Pharmaceutical Associations. A vote of continued confidence in the P.A.T.A. was carried, and a contribution to the funds was voted. It was also resolved to hold a meeting on December 3, when Mr. C. S. Addison will move : "That all registered chemists and druggists shall be eligible for membership of the Pharmaceutical Society" ; other subjects suggested by the F.L.P.A. will be discussed. The annual report from the Hon. Sec. was read, showing that the average attendances at the meetings were well maintained ; thanks were accorded Mr. Peck for his valuable services in the past, and regrets were expressed at his resignation. The financial statement given by Mr. Cook showed a balance in hand of £2 11*s.* 2*d.* The following were elected in office :—President : Mr. Alderman Deck, F.C.S. Vice-President : Mr. A. Sidney Campkin, J.P. ; Mr. E. Saville Peck, B.A. Hon. Treasurer : Mr. H. F. Cook. Hon. Sec. : Mr. B. Sidney Campkin, 74, Mill Road, Cambridge. Committee : Messrs. C. S. Addison, E. H. Church, E. W. Moss, H. J. Parsons, H. F. Turner, and L. T. White. A vote of thanks to the Chairman concluded the business of the evening.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACT.

Prosecution by the Treasury.

On Friday, November 12, Mr. Lushington, sitting at the Bow Street Police Court, resumed the hearing of the four summonses taken out by the Treasury charging Joseph Wallace, of 4, Albany Terrace, Regent's Park, with selling a preparation containing aconitine, without labelling the article as "Poison," and without entering the sale in a book, as provided by Section 17 of the Pharmacy Act. Our readers will recollect that on the last occasion the case for the prosecution had closed, and Mr. Schultess-Young had opened the case on behalf of the defendant. Evidence was now given by Miss Tracey to prove that the bottle which was the subject of the present proceedings was sold on June 11 to Mr. Partridge, and that it was made according to the defendant's patent. Further, that the bottles sealed by Sergeant Boswell on behalf of the Treasury were taken haphazard from the common stock.

Dr. Wynter-Blyth, examined by Mr. Schultess-Young, said he was a Member of the Royal College of Surgeons, a Fellow of the Chemical Society, barrister-at-law, and public analyst for the County of Devon and Marylebone. He was also the author of a well-known work on poisons. He had had much experience as regards the analysis of aconite and poisons generally. He received two bottles of Specific No. 1 from Mr. Wallace, which he had analysed. The result of his analysis was that he extracted an alkaloidal residue, by the aid of ether, amounting to 1·2 milligramme. The residue, when tested with the tongue, gave a slight numbing sensation. It had a very bitter taste, and slightly reduced salt of silver. Pure aconitine would not reduce salt of silver, but aconite would. He came to the conclusion from a variety of tests that the preparation mainly consisted of a substance which was a derivative of aconitine, technically, benzoyl-aconine, with a small portion of aconitine. Very little was known of benzoyl-aconine, but Dr. Cash had proved by experiment that it was 300 times less poisonous than aconitine. The small quantiiy which he found was perfectly inert. One-thousandth part of a grain of aconitine would have no injurious effect upon man. Experiments upon mice were not reliable, as they gave no indication as to the quantity of poison present. He had also prepared a tincture according to the specification. The effect of boiling aconitine as there recommended was to split it up into more or less inert substances.

In cross-examination witness admitted that upon the previous trial in February he was consulted by Mr. Wallace, and made an analysis of the specific. He then found that there was a poisonous dose in the preparation. His analysis did not agree at all with Mr. Coppock, but fairly agreed with Dr. Luff's. As a result he was not called as a witness.

The Rev. J. H. Nevill, rector of Stoke Gabriel, in Devonshire, deposed that he had swallowed the contents of a bottle of Specific No. 1, and had suffered no injurious effects therefrom.

Mr. Schultess-Young said he could call other evidence to the same effect, but

The Magistrate said he did not consider this evidence material.

Mr. Bodkin then asked leave to recall Dr. Arthur Luff to state the result of his experiments since the case was last before the Court.

Dr. Arthur P. Luff, recalled, deposed that since October 4 he had purchased a large quantity of aconite root, which was grown at Market Deeping, and had also obtained some Irish whisky from Messrs. Gorman, of New Bond Street, which was certified as having been thirteen years in an oak cask. He tested the whisky to see if it contained the quantity of tannic acid mentioned in the specification, and found that it did. He then prepared an infusion of the root with water acidulated with citric acid. In fact he prepared it according to the specification. Upon analysing the residual, which was equal to the contents of five of the bottles, he found in 1 fl. oz. of the specific 1/20th of a grain of aconitine of the same strength as commercial aconitine. He then experimented by the taste test, and found he got in a very marked degree a tingling, followed by numbness of the lips, of the tongue, and a peculiar sore feeling a

the back of the throat. These sensations lasted for about six hours. He also experimented on mice. Of the purified residue he injected 1/500th of a grain into a mouse. At the same time he injected 1/500th of a grain of commercial aconitine into a second mouse of the same weight. He also injected two drops of dilute solution of hydrochloric acid. The third experiment was with an injection of a little water with hydrochloric acid into a mouse. This had no effect, as the mouse was living at the present time. He found that 1/500th of a grain of what he might term pure alkaloidal residue of the specific killed a mouse in twenty minutes, as against eighteen minutes on the previous occasion. The mice he experimented upon were somewhat heavier mice than those he experimented with on the former occasion. It was possible, by habitually taking aconitine, to acquire immunity from its effects.

The Magistrate, in giving his decision, said whatever the conflict of evidence is, the fact that a mouse was killed, and the fact that Mr. Wallace and Mr. Nevill, who took a bottle, are still alive, I cannot doubt that in these bottles, one of which was sold to the complainant, there was a poison, that the contents contained a poisonous preparation known as aconitine, and that not in an infinitesimal dose. I cannot doubt that it was a dose which was, or might under certain circumstances, be injurious to man. It is no answer to say that these two persons, or any number of men whom Mr. Young can find out, have taken the stuff and felt no effects therefrom. If that is so, it applies all the more to the dangerous kinds of poisons, because persons who hear that may think that it will not affect them in any way. I cannot doubt that it is my duty to convict the defendant upon all the four summonses for selling this mixture, which was a poison, without having been introduced by some person to the buyer who was unknown to the seller, without having made an entry, signed by the buyer, in a book kept for the purpose, containing the name, address, reasons, and all that; and without having sold it in a bottle labelled with the word "poison," and without having sold it in bottles which were distinctly labelled with the name of the poisonous article upon it. The defendant will be convicted upon all four summonses. It is the second time this matter has been here and that he has been convicted. He was convicted before on a former summons, but that is not charged in the present summons against him. I only mention that to remind him that after this the penalty may not be of the same size. He will be convicted and pay a penalty upon each summons of £5. With regard to costs, they are very serious on this occasion.

Mr. Bodkin: They are very serious, and, quite apart from any legal professional costs, I have no doubt the expenses will be £50 to the Treasury.

The Magistrate: From the line of defence that was taken up it was necessary to have an analysis made, and that fact must be considered in dealing with the costs. There will be forty guineas costs to the Treasury on the first summons, and 2*s*. upon each of the others.

Mr. Schultess-Young: I suppose, sir, there will be liberty to appeal?

The Magistrate: You can take whatever course you choose as to appealing.

Mr. Schultess-Young: Will you be pleased to appoint a time to appear here to take the recognisances?

The Magistrate: They can be taken before any magistrate. You will have to find sureties of considerable amount—two sureties in £100.

JUDICIAL COMMITTEE OF THE PRIVY COUNCIL.

A Wholesale Druggist's Mistake.

On Friday, November 12, before Lord Watson, Lord Hobhouse, Lord Davey, and Sir Richard Couch, petition was heard for special leave to appeal from a decision of the Court of Queen's Bench, Province of Quebec, Canada, which reversed a judgment of the Superior Court given in favour of the petitioners in an action brought against them. Mr. Haldane, Q.C., and Mr. Brosseau (of the Canadian Bar) were counsel for the petitioners.

The plaintiff in the action was Dr. England. Dr. England's wife was recovering from influenza, and bismuth was prescribed for her. Two ounces of bismuth were ordered from a chemist, a dose was given to Mrs. England, and she became ill. It was subsequently ascertained that what was supposed to be bismuth was in reality antimony. The chemist stated that he had ordered bismuth from the petitioners—a firm of druggists—and that by the mistake of an employé, antimony was supplied instead of bismuth. Mrs. England died, and Dr. England afterwards brought the action against the petitioners, claiming $20,000 for himself and $20,000 for his son.

The petitioners denied that they were to blame. The jury found that Mrs. England died from natural causes, and that though her death was accelerated by the antimony, it was not accelerated to any appreciable extent, and they gave $1000 damages to Dr. England's son, but none to Dr. England.

The petitioners applied to the superior Court for judgment in their favour, and Dr. England applied for a new trial.

The superior Court decided in favour of the petitioners, and granted their motion for judgment on the ground that the plaintiff had failed to show that the petitioners were guilty of any fault in law towards him, but that the responsibility was with the chemist, and not the petitioners, and that it did not appear that there was any *lien de droit* between the petitioners and the plaintiff. The superior Court dismissed the action and the motion for a new trial. Dr. England appealed to the Court of Queen's Bench, which Court dismissed the application of the petitioners for judgment, and ordered a new trial of the action on the ground that there was *lien de droit* between the plaintiff and the petitioners, although there was no privity of contract between them. The petitioners now applied for special leave to appeal from the decision last mentioned. Their lordships granted special leave to appeal.

HIGH COURT OF JUSTICE.

A Saccharin Patent Action.

Mr. Justice Romer, sitting for Mr. Justice North in the Chancery Division of the High Court on Thursday, November 11, had before him a motion in the action brought by the Saccharin Corporation against the Chemical and Drug Co. Counsel for the plaintiffs said he was instructed to move for an injunction to restrain the defendants from infringing the patent rights of the plaintiffs. Lord Robert Cecil appeared for the defendants, and asked for an adjournment. Plaintiffs were prepared to consent to the motion coming on on the following week provided the defendants undertook to file their evidence on Monday. The reason for that was that the patent was for the manufacture of the saccharin, which was a substance which had a season sale, and contracts were now being entered into for it.

His Lordship asked when the plaintiffs served their notice of motion.

Lord Robert Cecil said a week ago, but the affidavits were not delivered until Tuesday. The action was against the defendants for importing the substance. His clients were the agents of foreign manufacturers, and the evidence as to infringement must come from abroad.

Mr. Justice Romer intimated that he could not put the defendants on terms. The motion must stand over for a week.

Beecham's Pills.

On Thursday, November 11, the case of Beecham *v.* Cawthorne was heard before Mr. Justice Stirling in the Chancery Division of the High Court of Justice. The plaintiff sought to restrain Mr. John Cawthorne (trading as the Leeds Drug Company, at 75, Meanwood Road, Leeds) from selling pills not of the plaintiff's manufacture as and for the plaintiff's.—Mr. Coldridge, who appeared for the plaintiff, was proceeding to open the case when Mr. Compston, defendant's counsel, said his client was willing to treat the motion as the trial of the action, and to submit to a perpetual injunction. He said this was a case where a small retail druggist had sold a small quantity of pills not made by the plaintiff as and for the plaintiff's, and immediately on being served with the writ he wrote to the plaintiff explaining the circumstances, and asking him not to proceed with the action. Plaintiff offered to discontinue proceedings upon being paid £40 by way of damages. The defendant thought this claim too heavy, considering he had only sold 6*s*. worth of pills altogether, but with a view of avoiding litigation he offered to pay £5 and the taxed costs. This offer having been declined, he submitted that the plaintiff ought to be deprived of his costs.

His Lordship granted an injunction in the terms asked, but said he considered the plaintiff ought to have accepted the defendant's offer. Not having do so, all extra costs incurred by the defendant after the offer must be paid by the plaintiff.

LETTERS TO THE EDITOR.

Scientific Education for Pharmacists.

Sir,—I have been much interested lately in reading the correspondence in connection with the scientific education of intending pharmaceutical chemists. In London there seems to be a great lack of evening classes suitable for candidates for the Minor examination, whereas, on the other hand, day students seem very well catered for. There have been several kind allusions to Nottingham in your Journal lately, so since I was connected with the chemical department of the University College of that town for a number of years, you will perhaps allow me to offer a few suggestions to further the cause of "brewing" classes for pharmaceutical students. There are at present a number of institutions, properly equipped with laboratories, etc., at which chemistry and botany might be taught with the existing staff. Lecture and laboratory courses could therefore be readily arranged so as to fit the men thoroughly for their examinations in these subjects. The subjects of materia medica and dispensing would require specialists, but since suitable men are obtainable in the provinces, there should be no difficulty here. Again, the sympathy of the masters must be enlisted, so that the assistants may learn in time to attend the lectures and demonstrations. In some towns the local associations even pay the whole or a portion of the fees, which is a very practical way of showing sympathy. Perhaps I may be allowed to describe the classes started this year at the South-West Polytechnic, Chelsea, which I believe are the first evening classes of their kind started at a technical institute in London. This session it was decided to start with chemistry, theoretical and practical, next year to follow on with botany; then, if the classes were successful, to follow on with materia medica and dispensing. A course of thirty lectures on chemistry is in progress, based upon the syllabus issued by the Pharmaceutical Society for the Minor examination. The laboratory is also open three evenings per week for practical work, which will embrace preparations and qualitative and volumetric analysis. The classes do not start until 8.30 p.m., so as to give assistants every opportunity of attending. A fairly encouraging start has been made by the attendance, nine lecture students and eleven practical students, two of the latter being candidates for the Major examination. I think we may fairly anticipate better results in succeeding years, and I feel confident that if given adequate support, other existing institutions may forward a branch of education which has been somewhat neglected, at any rate, in the evening.

S.-W. Polytechnic, Chelsea, Nov. 11, 1897. J. B. Coleman.
Head of the Chemical Department.

Medical Men and Prescriptions.

Sir,—The suggestions put forward in the letter of Dr. Hooper in your issue of last week are the right kind to bring about a satisfactory combination between medical men and chemists, which would certainly result in their mutual advantage. As qualified chemists, we claim to know how to make emulsions of cod-liver oil, petroleum, or any other preparation of drugs the physician may wish to prescribe for his patient, and we do not think it can benefit either doctor or chemist to be the means of conveying to the public such preparations as are constantly cast upon the market by limited companies, and can be obtained at co-operative stores at various low prices, and thus create a sale for them at the cost of the impoverishment of the chemist, when education and training have fitted him to be the proper dispenser of the doctor's prescription.

Mutley, November 16, 1897. John Barge.

On Advertising, Quackery, and Gullibility.

Sir,—Advertising has become a nuisance, and one very difficult to deal with, because the press is so largely supported by it; but that is no justification of the shameful and shameless way it is sometimes carried on. Hideous, monstrous, and ridiculous advertisements meet the eye and offend the taste everywhere—in newspapers and books, on street hoardings, on railway platforms, on walls along the line, outside and inside omnibuses and tram-cars, on saucepans, and high up in the very air we breathe; even the fair face of the country is disfigured by them, and to get away from them one must go far out to sea, for they are on the beach and the bathing-machines! Many hundreds of thousands of pounds are spent upon them, and of course they pay, or they would not be continued day after day and year after year, as they are; and they pay because the British public is so gullible as to believe a thing must be good in proportion as it is extensively, flamingly, and nonsensically advertised, whereas the reverse is more nearly true, viz., that articles so advertised are generally inferior to old, well-tried articles known and used half a century before the advertisers were born. If an article is much advertised I avoid it, and I advise all my patients to do the same, as regards soaps, cocoas, pills, etc., about which they ask my opinion and advice. I have seen much harm done by advertised soaps, and one of our leading London physicians, who is an expert in skin disease, says "all advertised soaps are abominations." Sixty years ago we had, and we still have, the finest yellow, white Castile, and soft soap, and as I tell all my patients these suffice for all purposes, and we want no others. One of the worst consequences of the modern system of advertising and pushing new things is that some of the oldest, best, and most valuable have been driven out of the market, and cannot now be had for any money.

D. Hooper, B.A., M.B., M.R.C.P. (Lond.).

9, Trinity Square, S.E., November 15, 1897.

The Proposed Pharmacy Bill.

Sir,—I hope the chemists throughout the country will follow the example of the Plymouth and Devonport Chemists' Association, and heartily support the proposed new Pharmacy Bill. The eligibility of Minor men for membership ought to be an inducement to many to join the Society; it is only by union that anything can be accomplished for the good of the craft. I consider all chemists in business should be exempt from jury service, as are dentists and others. The title chemist should also be protected, and limited companies prevented from trading on other men's qualifications. There is no organisation in this part of the country, and we hardly know who is the local secretary for the district.

November 16, 1897. A Country Chemist (116/7).

Study During Apprenticeship.

Sir,—I have been much interested in the correspondence recently published in your columns regarding study during apprenticeship. To judge from the statements of some of the correspondents, there must be a few apprentices—in England at least—who are so fortunate as to be given facility for study. I am sorry to say that I have never heard of such a thing in Scotland. But it is not to this I want to call your attention. The fact that in nearly every shop the hours 8 a.m. to 8 or 8.30 p.m., 10 p.m. on Saturdays, and Sunday duty are the lot meted out to the apprentices is too well known. Perhaps I might be permitted to give a very brief account of my own experience as being the best way of elucidating the point to which I wish to call your attention. During my apprenticeship I worked from 8 a.m. to 8 p.m., and thought it little hardship. It was in a little country town where classes were unknown. I tried to study as best I could in the little time left to me, but, being no genius, made little progress. Apprenticeship served, I engaged in a shop in a coast town at 20*s.* a week. My hours were now 8 a.m. to 9 p.m. Here I have been till recently. I am not blessed with rich parents, and have only my weekly wage to depend upon, so that I thought the best course for me to adopt with regard to progress in my studies would be to get a situation in Glasgow or Edinburgh, so that I might get time to attend evening classes. But what did I find? The chemists in these enlightened towns, taking advantage of young men situated as I, offer £35 to £45 a year as salary. Now, sir, I beg respectfully to state that more unjust and immoral conduct can hardly be conceived. I have been unable to obtain a situation anywhere where evening classes are held, simply because I could not feed and clothe myself and pay evening classes, etc., on £40 a year. I do not grumble at the difficulty of the Minor nor even at the amount of the fee, but I do strongly protest against such conduct. One gentleman (?) whom I interviewed actually hinted that it might be necessary for my parents to assist me pecuniarily—as if I was not, after over five years' experience, fit to earn my daily bread. I ask you, sir, what prospect is left for such as me? And their name is legion who are in a like position. I do not believe in the young men who for ever grumble about their prospects, and who object to being treated as if they were mechanical contrivances for their masters' convenience, but I do believe that a machine ought to be at least well fed and cared for and given a chance of doing its duty properly.

November 16, 1897. Studious (116/16).

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

Analysis of Proprietary Remedy.—We have no knowledge of such an analysis. [*Reply to* J. C. S. (Aldershot).—114/19.]

Dentistry.—Write to the Principal of the Institute of Dental Technology, 4, Langham Chambers, Portland Place, London, W. [*Reply to* L. A. H.—115/19.]

Notes on the B.P.—Your suggestion has been anticipated, but we are nevertheless obliged to you for making it. [*Reply to* Student.—115/40.]

Physiological Action of Drugs.—Dr. Lauder Brunton's 'Lectures on the Action of Medicines' (Macmillan and Co., 10*s.* 6*d.*) is a capital work on the subject. [*Reply to* J. F. H.—114/36.]

Ess. Nectar.—If, as you say, the product obtained by using the formula published in the Journal is "very near," you might very well complete the approximation yourself. Try adding small quantities of the oils you suggest. [*Reply to* W. F. C. B.—114/41.]

Brown Substance from Sewage.—We are unable to speak definitely concerning the deposit, which appears to contain a few fungoid hyphæ, some infusoria and diatoms, together with what is possibly the débris of the growth of diatoms and Oscillariæ, but there are very few diatoms, and no distinct filaments of Oscillaria. [*Reply to* Fungus.—113/11.]

Kew Library.—You appear to have a wrong impression concerning this library. It exists for the convenience of botanists working in the Royal Herbarium, and is as freely available to visitors who are competent to make use of it as it is to the permanent staff. But it could never be run on the lines of a free public library, and we fail to see that you have any legitimate grievance in the matter. [*Reply to* R. G. M.—114/22.]

Dispensing Query.—In the prescription—Potass. iodid., ℥ij.; saponis, ʒij., m. ft. ung., n. et m. utend.—a very satisfactory preparation is obtained by using soft soap for "saponis." If hard soap be used a preparation on the same lines as the official liniment of potassium iodide and soap may be produced, but this is weaker in potassium iodide than when soft soap is used. We should certainly use the latter. [*Reply to* A. P. S.—113/2.]

Dispensing Query.—We have repeated your mixture but fail to notice any separation of the chloroform as you describe. The mixture, as we dispensed it, was merely slightly opalescent. The relative proportion of chloroform and glycerin are too small to cause the separation of the former. Probably your distilled water is the cause of the trouble. This may have a fungoid growth in it which is not visible until the chloroform is added, when it aggregates into distinct flocks, such as you describe. This is often seen when making aq. chloroformi from distilled water which is not very fresh. [*Reply to* Arthuria.—112/19.]

Dispensing Query.—With the prescription—℞ Ol. morrhuæ, ʒiii.; ferri et ammon. cit., ʒss.; potass. carb., gr. xx.; ol. carui, ♏ 6; aquæ ad., ʒvi.—a fair emulsion is formed until the ammonio-citrate of iron is added, which causes partial separation in about fifteen minutes but emulsifies again on shaking. Dissolve the carbonate in a little water and add it to the oil very gradually, to saponify it as far as possible, stirring briskly for at least twenty minutes. Then add the caraway oil, and lastly, very gradually, the ammonio-citrate dissolved in the rest of the water. The addition of a drachm of tincture of quillaia to the oil greatly improves the emulsion. This addition is quite justifiable. [*Reply to* A. P. S.—113/2.]

Separation of Safrol from Camphor Oil.—This is separated from camphor oil by means of fractional distillation, and then cooling that portion of the distillate which comes over near the boiling point of safrol, 232° C. In this way the pure safrol crystallises out and is separated from the non-crystalline portion with a centrifugal machine. A good deal of the camphor oil which reaches this country has been deprived of its safrol. [*Reply to* Sigma.—111/37.]

Roux's Solution.—There are two solutions:—(A) 1 Gm. of dahlia violet, 10 Gm. of 90 per cent. alcohol, 90 Gm. of distilled water; (B) 1 Gm. of methyl green, 10 Gm. of 90 per cent. alcohol, 100 Gm. of distilled water. Mix 1 part of (A) with 2 parts of (B) at the time of using. Schenk's 'Elements of Bacteriology' (Longmans, 10*s.* net) is a very useful practical book, and was published in 1893. The formulæ, etc, will be reprinted in book form if there appears to be a sufficient demand for the work. [*Reply to* J. A.—114/28.]

INFORMATION WANTED.

NOTE.—Readers at home and abroad who may be able to furnish suitable replies to the following queries will greatly oblige the Editor by so doing.

Magnesium Carbide.—W. F. W. (113/14) asks for information concerning the composition of "magnesium carbide" which is sold by ironmongers for preventing the destruction of incandescent gas mantles.

Calcium Carbide.—Pharmacist (113/38) asks for information from "anyone who has had experience" on the following points:—Is the trade in calcium carbide likely to be in the hands of pharmacists? Is it a safe illuminant for shops and dwelling houses, and do insurance companies make any special charges when it is introduced?

Ophthalmic Discs.—A. D. (114/12) asks for a good recipe for a gelatin base suitable for ophthalmic discs.

Capsule Making.—J. B. C. (114/18) wishes to know the address of makers of moulds or machines for making soft gelatin capsules.

OBITUARY.

Smith.—On November 5, John Smith, Chemist and Druggist, Bridlington. Aged 73.

Parris.—On November 9, Thomas Watkin Parris, Chemist and Druggist, West Brighton. Aged 48. Mr. Parris was an Associate of the Pharmaceutical Society.

Upton.—On November 9, Eustace James Upton, Chemist and Druggist, Wallingford. Aged 64. Mr. Upton had been a member of the Pharmaceutical Society since 1892.

Moses.—On November 10, Henson Moses, Chemist and Druggist, Liverpool. Aged 48.

Hurd.—On November 12, William Hurd, Chemist and Druggist, Uttoxeter. Aged 32.

GENERAL INDEX

TO THE

"PHARMACEUTICAL JOURNAL."

A general index for the seventeen years ending June 29, 1895—including volumes IX. to XXV. of the 3rd series—having been repeatedly asked for by readers, such an index will be printed by subscription if a sufficient number of orders are received. The subscription price will not exceed one guinea, and—if the work is to be proceeded with—it is necessary that the orders should be sent without delay to the Editorial Department, "Pharmaceutical Journal," 17, Bloomsbury Square, London, W.C. An order form will be found in the advertisement pages this week (see page 19).

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Barge, Bayley, Bullivant, Campkin, Cocker, Cocks, Davies, Downing, Eberlin, Fisher, Gray, Hetherington, Hooper, Hudson, Hughes, Ingham, Keiller, Kemp, Martin, Matthews, Moore, Pitcher, Rowell, Shorthouse, Smith, Spehr, Stewart, Walker, Warren, Whitehead.

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"THE MONTH."

Tuberculinic Acid. E. A. de Schweinitz and M. Dorset have succeeded in isolating from artificial cultures of tubercle bacillus a crystalline substance (m. p. 161° to 164° C.) readily soluble in ether, alcohol or water, which separated from its solutions in acicular or prismatic crystals with a slight yellow tint. The formula of this substance corresponded closely to $C_7H_{10}O_4$, the formula of teraconic acid, an unsaturated acid of the fatty series. Experiments conducted with this crystalline substance point to the conclusion that it is responsible for the coagulation necrosis of tissue which appears a necessary accompaniment of the progress of tuberculosis. Whether or not it is identical with teraconic acid remains yet to be proved, and its immunising effects have not yet been fully tested. Its solution appears, however, to exert some slight bactericidal action. Further experiments on the substance, which is tentatively termed tuberculinic acid, are proceeding.

—*Journ. Amer. Chem. Soc.*, xix., 782.

Digestive Ferments. Professor Chittenden has shown that potassium permanganate, borax, ammonia-alum, sodium salicylate, quinine, and the salts of most alkaloids act antagonistically to the peptic ferment; while Dr. H. A. Weber's experiments have proved that the so-called harmless colours—orolinc yellow, suffoline and magenta—arrest digestion, even when taken in very minute quantities. Further experiments in the same direction have been conducted by F. D. Simons, who finds that peptic digestion is retarded even after prolonged treatment by picric acid, tropæolin 000 and metanil yellow, pancreatic digestion being retarded in like degree by Bismarck brown, essence of cinnamon, and formic aldehyde (40 per cent.). Salicylic acid and wintergreen oil were found to retard peptic digestion in a less degree, but both peptic and pancreatic digestion proceeded normally in the presence of essence of peppermint, chrysoidine, safranine, or methylene blue.

—*Journ. Amer. Chem. Soc.*, xix., 744.

Percarbonates. MM. Constam and A. von Haussen have discovered in the percarbonates a new class of oxidising substances. On electrolysing a saturated solution of potassium carbonate and gradually lowering the temperature, the disengagement of oxygen at the anode gradually diminishes and finally ceases at about −10° C. At the same time, potassium percarbonate, $K_2C_2O_6$, is formed as a bluish amorphous powder. It should be quickly thrown on a filter and dried over phosphoric anhydride, as it is very hygrometric and decomposes water at ordinary temperatures, the bicarbonate being formed. When gently heated, oxygen and carbon dioxide are given off, the normal carbonate being left, and in the presence of oxidisable matters it acts as an oxidising agent. But it can also act as a reducing agent, manganese dioxide being converted by its action into the carbonate. The authors conclude, therefore, that the new body is the neutral carbonate of potassium peroxide. Like the higher alkaline oxides and the alkaline earths, it produces hydrogen peroxide in the presence of acid.

—*Zeit. f. Electrochemie*, through *Chem. News*, lxxvi., 170.

New Organic Acids. Professor Claisen has prepared some hydroxymethylene derivatives which he describes as strong monobasic acids. They may all be referred to the type $\begin{matrix}R.CO\\R.CO\end{matrix}>C=CH.OH$, where R represents either an alkyl-group (CH_3-, C_2H_5-, etc.) or an alkyloxy-group (CH_3O-, C_2H_5O-, etc.). The new compounds can all be accurately determined by titration with normal alkali in aqueous alcoholic solution, and they dissolve freely, even in the cold, in aqueous solutions of alkali acetates, liberating acetic acid. The determination of the electrical conductivity gave a value for K greater than that obtained for acetic acid, while among substances composed of carbon, hydrogen, and oxygen only, and not containing a carboxyl group, they are probably the first which approach monocarboxylic acids (except formic acid) in strength, and even surpass some of them.—*Liebig's Annalen*, through *Nature*, lvi., 589.

Compounds of Metallic Acetates and Phenylhydrazine. Moitessier finds that the acetates of metals of the magnesium group form combinations with phenylhydrazine analogous to those formed by the chlorides, bromides, and other salts of the same group. A mixture of phenylhydrazine in alcoholic solution and the powdered metallic acetate is simply heated for a short time on a water bath. On cooling crystals of the compound are gradually deposited. These bodies are soluble in water, alcohol, and chloroform, especially when warm, but insoluble in ether. They lose a small portion of the phenylhydrazine at 100° C. Zinc Phenylhydrazine Acetate has the composition $(C_2H_3O_2)_2Zn\,2(C_6H_5N_2H_3)$, forms thick rhomboidal tablets melting at about 135° C. Cadmium Phenylhydrazine Acetate, $(C_2H_3O_2)_2Cd2(C_6H_5N_2H_3)$, occurs in very long prismatic needles, crystallising in radiating masses. It melts at 121° C., fritting somewhat below that temperature. Manganese Phenylhydrazine Acetate, $(C_2H_3O_2)_2{\cdot}Mn\,2(C_6H_5N_2H_3)_2$, crystallises in clinorhombic prisms. It melts at 97° C. Cobalt Phenylhydrazine Acetate, $(C_2H_3O_2),Co2(C_6H_5N_2H_3)$, is slowly deposited in the form of joined prisms and radiating masses of a rose-violet colour. The corresponding Nickel Salt, $(C_2H_3O)_2Ni3(C_6H_5N_2H_3)$, gives bluish-green prisms which turn yellow at 140° C., then brown, but do not melt even at 260°. The nickel salt is noteworthy, since, like the nitrate and iodide of the same metal, it forms a combination richer by a molecule of phenylhydrazine than the other similar compounds of the group. —*Comp. rend.*, cxxv.

Magnesium Oxybromide. Until now an oxybromide of magnesium does not appear to have been described, although the oxychlorides of that metal have been thoroughly studied. Tassily has prepared a magnesium oxybromide, $MgBr_23MgO{\cdot}12H_2O$. It was obtained by dissolving to saturation magnesia calcined at a low temperature, in a boiling solution of nearly 50 per cent. magnesium bromide, the boiling point of which was nearly 150° C. The saturated liquid was filtered through a hot funnel and secured in closely stoppered flasks. In fifteen days the oxybromide was deposited in small tufted groups of acicular crystals, which are optically active. Heated in a current of dry air to 120° C. a hydrate having the composition $MgBr_23MgO{\cdot}6H_2O$ was obtained. Attempts to obtain an analogous oxyiodide were unsuccessful.—*Comptes rendus*, cxxv., 605.

Calcium Boride. Moissan and Williams have succeeded in effecting the combination of calcium and boron by means of the electric furnace. After several failures to obtain workable quantities of the new compound, it was finally produced by fusing together a mixture of pure dry calcium borate, aluminium turnings and sugar charcoal, in a carbon crucible on the electric furnace. The fused buttons so obtained have a crystalline fracture and a metallic appearance. After purification, the boride obtained is a brilliant black micro-crystalline powder, composed of minute rectangular or cubical crystals, which are transparent and yellowish in colour when very thin. The hardness is sufficient to scratch rubies. Although not yet isolated in a state of absolute purity, the formula $CaBo_6$ is indicated.—*Comptes rendus*, cxxv, 629.

Strontium Boride. The same investigators have prepared boride of strontium in the same manner. Like the calcium compound, it was obtained in the form of a micro-crystalline powder, the component crystals being larger than those of calcium boride, and when thin, of a reddish-brown colour. The analysis approximates to the formula $SrBo_6$.—*Comptes rendus*, cxxv., 633.

Barium Boride. The same process afforded barium boride in a similar form, the crystals, although small, being very regular and sufficiently hard to scratch rubies, but not diamonds. The chemical properties are similar to those of the other alkaline earthy borides. The formula $BaBo_6$ approximates to the analytical figures obtained.—*Comptes rendus*, cxxv., 634.

Dioscorine Schütte has further investigated this toxic alkaloid, first isolated from *Dioscorea hirsuta* by Boorsma, in 1889. It was extracted from the dried tubers by means of alcoholic hydrochloric acid, the liberated alkaloid shaken out with chloroform and purified by re-crystallisation of the hydrochloride from alcohol. The base liberated from this salt slowly forms yellowish-green crystals, which melt at 43°·5 C. and are very hygroscopic. It is a powerful base, liberating ammonia from its salts, and is slightly volatile. The hydrochloride, $C_{13}H_{19}NO_2HCl+2H_2O$, crystallises from alcohol in two forms, in needles or in tablets. It loses its water at 37°·7 C.; the anhydrous salt melts at 95°·5 C. The platinum and gold salts are both crystalline. On the animal organism dioscorine acts as a poison resembling picrotoxin. It is a paralysant of the nervous system, but not a protoplasmic poison.
—*Pharm. Zeit. für Russ.*, xxxvi., 379.

Yohimbine. Thoms confirms Spiegel's statement that yohimbo bark contains a powerful alkaloid, which he has isolated in a crystalline form, melting at 234° C., and not 231° as stated by Spiegel. The yield was 0·54 per cent. Thoms has found the alkaloid in the leaves of the tree as well as in the bark. It reacts with sulphuric acid and potassium bichromate like strychnine, which it may also resemble in physiological action. That point, however, remains to be determined.
—*Amer. Journ. Pharm.*, lxix., 577.

Morrhuol. Dr. C. Gundlich has examined the substance supplied under the name of "morrhuol," which is asserted to contain the useful therapeutic properties of cod-liver oil, and finds that it is apparently made by the process described by Chapoteaut," "from any crude product sold as cod-liver oil." Chapoteaut treated the oil with sodium bicarnate solution at a low temperature in order to remove free fatty acids, then shook the oil with 90 per cent. alcohol, which dissolved out the supposed active substance. The crude oil from which Gundlich separated morrhuol by this process was examined for iodine and bromine, but negative results were obtained. Amines were present in the oil and also, in considerable quantities, in the morrhuol. Finally, it was ascertained that a large proportion of the alkaloids found in cod-liver oil are removed by the treatment with alcohol.—*Journal of Pharmacology*, iv., 223.

Antidote to African Arrow Poison. The attention of the Government has recently been directed to the subject of arrow poison by the fatal results following the wounds caused by poisoned arrows in Uganda, and specimens of the arrows with the poison on them have, it appears, been sent by the Marquess of Salisbury to the Royal College of Physicians for investigation, in the hope that some antidote might be devised. The chief poison used in this part of Central Africa is evidently an *Acokanthera* (see *Pharm. Journ.* [3], vol. xxiv., p. 41), and an antidote to its action would in all probability prove an antidote to the poison of the arrows. Thanks to the researches of Professor T. R. Fraser, of Edinburgh, we are now in possession of a knowledge of the physiological action of the plant, and it should not be difficult to find a physiological antidote. Meanwhile, however, news has arrived from Uganda that Dr. Macpherson, who was with the Grant Column on the way to the Man Mountains, west of the Uganda Road, has discovered that the injection of a solution of strychnine answers the purpose of an antidote. He was able to bring round to life men wounded with the poisoned arrows, where previously the wounds had generally proved fatal. Should the investigations made by the College of Physicians prove that Dr. Macpherson's remedy is entirely successful the fact will probably prove useful in two ways, for another antidote to strychnine poisoning will have been added to those already known, if as may be presumed the drugs should be mutually antidotal. Other African arrow poisons contain *Strophanthus*, and as strophanthin belongs also to the class of cardiac poisons and to the same natural order, it would be important to determine whether strychnine is also antidotal to *Strophanthus*.

Soluble Starch. M. P. Guérin finds a substance with the chemical properties of starch dissolved in the cell-sap in *Cola acuminata* and *C. ballayi*, plants belonging to the Sterculiaceæ. The cells in which this substance occurs are almost exclusively epidermal; it has also been found in the mucilage-canals. In the epiderm of the lower surface of the leaves starch-grains of the ordinary kind are present in the same cells as the soluble starch.
—*Bull. Soc. Bot. de France*, 1897, p. 91.

Aromatic Principles in Leaves. M. G. Jacquemin states that plants which bear fragrant or sapid fruits, such as the apple, pear, and raspberry, have also an aromatic principle in the leaves. If these are immersed in a saccharine fluid, together with *Saccharomyces* or some other enzyme, the fluid will acquire both the flavour and the odour of the fruit, and the alcohol obtained by distillation from this fluid will possess the corresponding bouquet.
—*Comptes rendus*, cxxv., p. 114.

Caroubinase, a New Hydrolytic Enzyme. M. J. Effront finds, in the seeds of the carob, *Ceratonia siliqua* (erroneously printed *Seratonia siliqua* in the *Comptes rendus*), during the process of germination, a hitherto undescribed enzyme, to which he gives the name "caroubinase." It is produced especially after the seedling has developed a considerable amount of chlorophyll, and possesses strong liquefying and saccharifying properties.—*Comptes rendus*, cxxv., p. 116.

Copaiba. The conclusion arrived at by L. F. Kebler after a careful comparison of available methods for detecting gurjun oil in copaiba (see *P. J.*, [4], i., 177) was that a modification of the glacial acetic test gave the most trustworthy results, and having since relied upon that test to reveal the presence of gurjun oil, the author now publishes the results of a further study of the commercial products. He finds that copaiba containing from 40 to 60 per cent. of oil is mostly used throughout a great part of North America, and suggests that this commodity should be recognised in the U.S.P. The present requirements of that authority he regards as inflicting hardship on some well-meaning druggists, for "only the solidifiable is recognised, and practically nothing but an unofficial article is used." Figures obtained on examining a number of samples of copaiba and gurjun oil are quoted, and the opinion is expressed that official

recognition ought to be accorded to copaiba containing from 40 to 60 per cent. of oil, and to copaiba oil itself, but not to the resin, which he thinks, might well be dismissed without any inconvenience to the drug trade.

Bisabol Myrrh.

Tucholka gives the following method for distinguishing between bisabol myrrh and the official drug:—Six drops of petroleum ether extract (1 : 15) is mixed with 3 C.c. of acetic acid and 3 C.c. of sulphuric acid added so as to form a lower layer. A rose-red colour is developed at the line of contact and after a short time the whole of the acetic acid layer is coloured red, remaining so for some time. If the petroleum ether extract is more concentrated the resulting colour is brown. The official myrrh treated with this reagent gives only a slight rose coloration of the acid layer, which does not increase; the contact line of both fluids is first green, changing on standing to brown with a greenish fluorescence. An analysis of bisabol myrrh gave: gum soluble in water, 22·1; gum soluble in soda solution, 29·85; resin, 21·5; bitter principle, 1·5; ethereal oil, 7·8; water, 3·17; vegetable and inorganic matter, 13·4. The ethereal oil gave the above distinctive colour reaction very markedly. By means of a modification of Wallach's method for the preparation of the hydrochloride of the terpenes, small, well-formed tablet-shaped crystals melting at 79·3 were obtained. The author calls this product "Bisabolene"; he is unable to identify it with any known terpene. It has the unusually high boiling point of 260° C. The red oil from which the crystalline hydrochloride was separated, when fractionated between 230° to 239° gave the characteristic colour reaction. The oil, no doubt, also contains alcoholic ester-like compounds, since benzoyl chloride reacts very violently with it on gentle heating. The resin removed by alcohol has a strong acid reaction. Two distinct acids were obtained, one of which furnished a soluble, and the other an insoluble lead salt.—*Pharm. Centr.*, xxxviii., 500.

Preparation of Tannalbin.

Schmidt gives the following directions for the manufacture of a preparation said to be quite equal to tannalbin, but which can be manufactured at less cost. Ten parts of a 10 per cent. albumin solution are mixed with 6·5 parts tannin solution of equal strength and the precipitate collected. This is well washed, pressed and dried at 30° C., it is then powdered, sifted through a small sieve and spread out in thin layers heated for six hours to 120° C. According to the author, a good tannalbin should not have a strong astringent taste, and should remain for the greater part undissolved after 23 hours' digestion at 37°-40° C. with artificial gastric juice; digested under the same conditions with a 1 per cent. soda solution it ought almost all to dissolve.—*Pharm. Zeit.*, xlii., 538.

Catechu.

A. G. Perkin has investigated the colouring matter of catechu, and finds that the yellow colouring matter, both of *Uncaria gambier* and of *Acacia catechu*, is quercetin, but the amount yielded by the latter did not amount to more than a trace.

—*Journ. Chem. Soc.*, lxxi., 1135.

Jaborandi Leaves.

A very careful and thorough histological examination of the jaborandi leaves of commerce has recently been made by H. Geiger (*Bericht der Deutsch. Pharm. Gesellch.*, Heft 8, pp. 356-425, pl. 2). From the histological point of view he confirms the results already obtained by Holmes, who worked from the systematic side, viz., that *Pilocarpus jaborandi* is a good species, that *Pilocarpus pinnatifolius* and *P. selloanus* are identical, and that *Pilocarpus spicatus*, St. Hil., is the source of Aracati jaborandi. On this point Holmes expressed doubt from want of good material. From the histological evidence, however, Geiger concludes that the species *P. subcoriaceus* and *P. ypanemensis* are identical with *P. spicatus*, which he also affirms is identical with the Aracati jaborandi. With respect to *Pilocarpus trachylophus*, however, he considers that it should be placed in a sub-genus or section of *Pilocarpus*, on account of the curiously-winged midrib of the petals (he having been fortunate enough to find some flowers), and also because of the vascular character of the warty projections of the epicarp, and of the club-shaped hairs at the base of the leaves. The plant yielding a false jaborandi, to which Holmes gave the provisional name of *Swartzia decipiens*, should, he thinks, be separated as a sub-genus together with *S. alterna*, *S. matthewsii*, and *S. pilulifera*, the last two of which were pointed out by Holmes as the species most nearly allied, since these have large secretion cells, which are absent in the other species of the genus. It is certain that the above-mentioned species have much smaller fruits than the other species, and have a facies which indicates that they might well be considered at all events a distinct section of the genus. In the meanwhile until better specimens of *Pilocarpus trachylophus* and *Swartzia decipiens* are obtainable nothing more definite can be said. Herr Geiger has, however, done good service to pharmacognosy in pointing out the histological differences of the different jaborandi leaves of commerce. These details will be described in a subsequent number of the Journal.

Irritation Caused by Wintergeen Oil.

In the course of treating cases of rheumatism by means of the absorption of methyl salicylate, Vidal noticed that some samples of oil of wintergreen caused irritation of the skin, in some cases even causing an eruption. Investigation showed that irritation invariably followed the use of the natural oil of wintergreen, and that when pure synthetic methyl salicylate was employed simultaneously on the same subject no discomfort whatever was felt. It is evident, therefore, that the natural oil contains some irritant body, and that the pure synthetic oil is to be preferred for application to the skin.—*Nouv. Rem.*, xiii., 615.

Dika Fat.

This vegetable fat is one to which attention might be usefully directed in this country, since it appears to be well suited for culinary purposes. It is extracted from the fruit of the *Irvingia Barteri*, Hook. (see *P. J.* [2], iii., p. 445, and 'Mus. Cat., p. 23), and is extensively used by the natives of the Cameroons. It is somewhat darker in colour than palm oil, and of about the same consistence. The flavour is described as being most agreeable. It has upon occasion been imported here, but a market could not be found for it.—*Chem. Trade Journ.*, xxi., 179.

Origin of Storax.

Dr. J. Moeller of Gratz (*Pharm. Post*, September 19) has recently shown that storax is not, as has been considered, a product of the bark, but is a pathological secretion of the young wood. This he has ascertained by an examination of the tissues found in Oriental storax and by that of stems of the American *Liquidambar styraciflua*, which had been cut in order to cause a flow of the balsam. The latter tree is cut at intervals of three weeks in April, May, and June, with the result that the bark becomes raised from the wood, and that the wood appears dead. The tissues of the perished wood become filled with a yellow matter, and its vessels (which as well as the more central uninjured vessels) contain thyloses, whilst the new wood is formed of a pathological parenchyma, in which schizogenous secreting cells appear, and ultimately unite to form lysigenous lacunæ containing freshly secreted balsam. This development of schizogenous into lysigenous cavities is at present unknown in other plants.

Localisation of Cinchona Alkaloids. Dr. J. R. Lotsy has investigated the distribution of the alkaloids in *Cinchona calisaya, C. ledgeriana, and C. succirubra.* He finds that they occur in the parenchyme, but not in the sieve-tubes of the vascular bundles. Under normal conditions they are found only in living cells, and never in those which also contain calcium oxalate. In young organs, as a rule, the alkaloid is dissolved in the cell-sap, while in older organs it occurs as a solid amorphous mass within the cell. Very active organs—such as the cambium, or the extreme tip of the growing point—do not usually contain any alkaloid, but it occurs in large quantities at a short distance from these localities. In the leaves and the petals the amount of alkaloid decreases with age.—*Botanisches Centralblatt*, lxxi., 1897, p. 395.

Domatia. In the *Proceedings* of the Linnean Society of New South Wales (xxi., p. 758) Mr. A. C. Hamilton describes a number of these structures in Australian and other plants. The most common form in which they occur is that of a tuft of hairs in the axil of a vein on the under surface of the leaf, always connected with an orifice in the epidermis. They may be arranged under five classes, viz. : (1) Circular lenticular cavities on the under side of the leaf, each with a small opening and a thickened rim ; (2) Pouches formed by the widening of the principal and lateral veins at the axils, the space being filled in with tissue so as to form a triangular pouch or pocket ; (3) Depressions or hollows formed by a thinning of the substance of the leaves at the axils ; (4) Bunches of hairs in the axils of the principal and secondary veins ; (5) Denser bunches of hairs in the axils of the veins, when the whole surface of the leaf is covered with hairs. Of the 300 species of plants observed by the author as possessing domatia, 107 belong to the Rubiaceæ, 40 to the Tiliaceæ. The domatia are generally, but not always, inhabited by mites, but the author regards their primary function as connected with the absorption of gas, vapour, or water.

Effects of Mineral Salts on the Development of Plants. M. C. Dassonville has made a series of experiments on the effect of solutions of various mineral salts, especially of Knop's solution, on the growth of cereal crops—wheat, rye, oat, and maize—as compared with that of pure water. The general result arrived at is that with distilled water the tissues are less fully developed, but more strongly lignified. Thus, in a saline solution, both the roots and the stem become longer ; the size both of the vessels and of the air cavities is increased ; while the walls of the vessels are less strongly lignified.—*Comptes rendus*, cxxiv., p. 1467.

Sooty Mould of Citrus. Mr. D. M'Alpine has determined the cause of the disease of various species of *Citrus* in Australia, known as "sooty mould," to be a hitherto undescribed fungus, which he names *Capnodium citricolum.* It is a polymorphic species, having torula, coniothecium, and heterobotrys stages. There are two different kinds of hyphæ, one thin-walled, colourless or slightly coloured, the other thick-walled and distinctly coloured. The colourless hyphæ produce conids, gemmæ, and glomerules; the coloured hyphæ produce conids and gemmæ, as well as sexual organs—spermogones, pycnids, and peritheces. The fungus is saprophytic, living on the sweet excretion from scale-insects, and its spread appears to have been materially promoted by the destruction of honey-eating birds (*Proceedings Linnean Soc. of N. S. Wales*, xxi., p. 469). The "sooty mould" so destructive to orange trees in Florida is, on the other hand, attributed by Mr. H. J. Webber (*Bull.* No. 13, U.S. Department of Agriculture) to the attacks of two pyrenomycetous fungi (*Meliola penzigi* and *M. camelliæ*), which also derive their nourishment entirely from the honey-dew or saccharine secretion exuded by certain scale insects.

Effects of Electricity on Vegetation. In *Bulletin*, No. 43, of the Experiment Station at Amherst, Massachusetts, Mr. Asa S. Kinney records the results of a series of observations on the effect of a continuous electric current on vegetation. With a small alternating current of moderate frequency and high voltage there was in all cases an increase in the rapidity of germination and of the elongation of the radicle and hypocotyl. There was a distinct optimum, above and below which the treatment was less effective, but it was never injurious.

Action of Diastase on Reserve Cellulose in Germination. Dr. J. Grüss describes the processes which take place in the germination of the date-palm. The diastatic enzyme passes from the cell-cavity into the thickened cell-wall, especially in the neighbourhood of the scutellum. This is followed by a partial hydrolytic solution, by which the galactan is removed from the cell-wall. In this manner the hyaline marginal zone is formed. The mannan which remains in this zone undergoes allöolysis ; the mass which is permeated by the enzyme passes over into the various mannin stages, and finally into mannose. According to the reactions, a leucomannin and a cyanomannin can be distinguished. —*Botanisches Centralblatt*, lxx., 1897, p. 242.

A Myxomycetous Parasite. M. E. Roze has detected *Pseudocommis vitis*, a myxomycete, in the hypodermal cells of the tubers, as well as in the leaves, of diseased potatoes. It occurs in the form of plasmodes and of cysts, and attacks both the cell-nucleus and the starch-grains. According to the author, it occurs very commonly in garden and greenhouse plants. The black and brown spots, which indicate the malady known to gardeners as "burning," are due to the attacks of this parasite. It is often overlooked, owing to its very rudimentary structure, consisting of a plasmode-like mucus, which becomes encysted in certain conditions. As long as the plasmode is in a living condition it is able to escape, under favourable conditions, and infect other vegetable tissues.—*Comptes rendus*, vols. cxxiii. and cxxiv.

Fossil Fungi. Evidence drawn from the remains of fungi found in the various geological formations leads Herr M. Staub (*Bot. Centralblatt*, lxix., 1897, p. 267) to the conclusion that the aërial forms have sprung from ancestral marine types belonging to the *Phycomycetes.* The oldest known fungus, *Palæoachlya penetrans*, was a parasite on coral in the Silurian period. Other *Phycomycetes* abounded in the Carboniferous period, and remains of *Discomycetes* are also found. A *Rhizomorpha*, an *Æcidium*, and members of various groups of the *Ascomycetes* occur in the chalk. The fungi of the Cænozoic strata present a very close resemblance to existing forms.

Mycorhiza of Roots. Out of 75 species of plants, natives of the forests of tropical Java, examined by M. J. M. Janse, he finds the roots of 69 to be infested with an endophytic mycorhiza. With one exception (*Lycopodium cernuum*) the filaments of the parasite always enter the tissue by perforating the external wall of an epidermal cell. The roots thus attacked are usually, but not always, destitute of root-hairs. Within the cells of the internal layers of the infected tissue the fungus forms globular structures, varying between 2·5 and 2·3 μ in diameter, which the author calls sporangioles. They are at first filled with a hyaline substance, which subsequently becomes granular from the formation of

spherical corpuscles from 1·5 to 6 μ in diameter, which he terms spherules. The connection of the parasite with the host is one of true symbiosis, the fungus furnishing to the host-plant nitrogenous food-materials obtained by assimilating the free nitrogen of the atmosphere, receiving in return protection as well as food-material in the form of carbohydrates. The mycorhiza may be regarded as a facultative anaerobe, which penetrates the living tissue for the purpose of avoiding oxygen.—*Annales du Jardin Botanique de Buitenzorg*, vol. xiv., p. 53.

The Red Pigment of Flowering Plants.

In *Science Progress*, 1897, p. 406, Mr. F. W. Keeble gives a *résumé* of recent observations and theories on the function of the red pigments of the floral organs known as anthocyan. He dismisses, as unsupported by sufficient evidence, the theory that the red pigment acts as a screen to the chlorophyll, preventing its destruction by the action of the sun. On the other hand, he strongly supports Stahl's view, that its main function is the absorption of heat. This accounts for its very frequent presence in the calyx, corolla, anthers, and styles of wind-fertilised trees and shrubs, where it can have no purpose in the attraction of insects, as in the poplar, hazel, *Rumex*, *Poterium*, etc. In the case of the red stigmas of the hazel, it may materially promote the growth of the pollen-tubes towards the ovary.

Novel Method of Feeding Plants.

The following note by Mr. Paul, of Cheshunt, in the *Gardener's Chronicle*, Oct. 23, 1897, on the method employed by M. Georges Truiffent of administering artificial food to plants, is of considerable interest to horticulturists. After an analysis of the ash of the living plant, the necessary salts for a given time, such as six months, are weighed out and enclosed in a metal cover to form what is called a "pill," which is presumably inserted in the pot, diffusion of the salts taking place through the folds of the metal, and the thicker the metal the slower the diffusion. As the salts dissolve and disappear they are replaced by a core which expands until it completely fills the "pill." The salts have no action on the metal cover, which remains firm and hard. It is stated that the solubility of the salts can be so regulated that a "pill" may be made to last three or six months, as may be desired. By this method of feeding large well-coloured plants are grown in pots of less than half the usual size.

Singapore Botanic Gardens.

The Director of these Gardens, Mr. H. N. Ridley, M.A., has just published two very useful works. The one consists of an alphabetical list of Malay plant names, with their botanical equivalents. This list covers 250 pages of the 'Journal of the Straits Branch of the Asiatic Society' for July, 1897. The medicinal and economic uses of the plants are mentioned where known. The other is a smaller work on the medicinal plants used by the Malays. Evidently the Director is the right man in the right place, and does not allow the climate of Singapore to depress his energies. Mr. Ridley is a corresponding member of the Society, and has already contributed liberally to the Herbarium and Museum of the Society.

Lichens on Cascara Bark.

Senft describes three lichens as characteristic of cascara bark. 1. *Thelotrema rhamni-purshianæ*. The fructification is embedded in a whitish-grey smooth crust and the apothecia are semi-orbicular, yellowish in colour, 0·2 to 1 Mm. broad, with a pore opening at the apex and a depressed blackish disc. The spores are large spindle-shaped, hyaline, muralilocular, with 8-16 dissepiments. The paraphyses are thread-like and loose. The author has never succeeded in finding eight spores in one ascus, therefore considers this lichen to be different from the one described by Fee. 2. *Ochrolechia rhamni-purshianæ*. The apothecia are platter-shaped, 0·3-1·5 Mm. long, and rest on a smooth or slightly torn crust. At first the fruits are entirely covered by a thick white covering; this opens later, showing an orange-coloured disc. The club-shaped asci are situate between thread-like paraphyses, and contain eight large elliptic hyaline spores with a very thin epispore. The author has only discovered this lichen on cascara sagrada. 3. *Arthonia complanata*. The fruits or lirellæ are black, 0·3-0·5 Mm. broad and up to 1 Mm. long. The hyaline greenish spores are elliptic, 6 to 7, septate, the segment at the apex being twice as long and a little broader than the others, while the lowest is much smaller, but longer than those in the middle. When ripe the spores are brown. The asci contain eight spores and are united with the paraphyses in a gelatinous mass.—*Pharm. Post.*, xxx., 431.

Senecio Aureus.

D. T. Gundrum, of Sacramento, California, enumerates in the *Therapeutical Gazette* (October, 1897, pp. 655-657) several cases in which the fluid extract of this plant proved very efficacious in stopping capillary hæmorrhage, especially in hæmaturia, hæmoptysis, and menorrhagia. It is not an astringent, and is therefore supposed to act through the vasomotor nerves. The dose given was a drachm every four hours, or four times a day.

Sleep of Plants.

In a large number of plants examined, Herr E. Stahl finds that the nocturnal position of the leaf or leaflets acts as a protection against the deposition of dew, and thus promotes transpiration and increases the amount of nutriment conveyed to the assimilating organs by the ascent of water in the stem. He regards this as its main function rather than, as has been alleged, the prevention of excessive radiation. The nocturnal position of the leaf or leaflets may be classed under two heads:—(1) They are directed downwards, so that the under side is better protected than the upper side against the deposition of dew (*Biophytum sensitivum*, *Oxalis acetosella*, *Robinia pseudacacia*, *Hedysarum gyrans*, *Impatiens noli-me-tangere*, etc.); (2) They are so placed that the upper side is better protected than the under side against the deposition of dew (*Colutea arborescens*, *Trifolium repens*, *Impatiens glandulifera*, etc.). This difference is usually correlated with a difference in the disposition of the stomates on the two surfaces, as is well seen in the two species of *Impatiens* named; but there are exceptions to this rule. Geotropism probably also plays some part in producing the vertical nocturnal (nyctitropic) position of leaves and leaflets.—*Bot. Zeitung*, 1897, 1te. Abtheil., p. 71.

Preserving Plant Colours.

A. F. Woods describes a method of preserving the green colour of plants for exhibition purposes which appears to be similar in principle to the coppering of green peas. Air is removed as completely as possible from the surface and intercellular spaces of the plants by immersion in 90 to 95 per cent. alcohol, or an air-pump may be employed. The plants are next immersed in dilute glycerin (5 per cent.), to which a bluish tint has been imparted by means of copper sulphate or acetate. The copper combines with the chlorophyll, forming copper phyllocyanate, which is practically insoluble in any ordinary preservative medium except strong alcohol, and is not affected by light. Any access of copper salt may be dissolved out by a mixture of dilute glycerin and formalin, which may also be employed with advantage as the preservative medium.—*Botanical Gazette*, xxiv., 206.

Artificial Fermentation. Professor E. Buchner has succeeded in obtaining from yeast-cells a substance which produces alcoholic fermentation without the presence of any living organism, in cane, grape, fruit, and malt sugars. It has, however, no effect on mannite or milk-sugar. The ferment, which he calls zymase, has the properties of albuminous bodies. It is not identical with protoplasm, though nearly allied to it, and the author regards it as belonging to the group of genuine proteids.—*Bot. Centralbl.*, lxxi., 1897, p. 38.

Parasite of Rabies. Dr. A. Grigorjew believes that the exciting cause of hydrophobia is not a bacterium, but a body belonging to the *Protozoa*. He has isolated from animals suffering from rabies a body with slow amœboid movements and exhibiting extension of pseudopodes. Its action may even be modified by the presence of bacteria.—*Centralbl. f. Bakteriol. u. Parasitenkunde*, 1te. Abtheil., xxii., 1897, p. 397.

Bacillus of Whooping Cough. Dr. H. Koplik has isolated from the sputum of whooping cough patients an anærobic bacillus which grows very luxuriantly. It is a mobile rodlet, 0·8 to 1·7μ in length, and from 0·3 to 0·4μ in breadth. It has some resemblance to the diphtheria bacillus.—*Centralbl. f. Bakteriol. u. Parasitenk.*, 1te. Abtheil., xxii., 1897, p. 228.

Effect of Sunlight on Tubercle Bacilli. Dr. Migneco states that not only direct but diffused sunlight is prejudicial to the development of tubercle bacilli. They do not resist sunlight longer than from twenty-four to thirty hours if the layer of sputum be not too thick. —*Arch. für Hygiene*, xxv., 1897, p. 361.

Antherozoids of Zamia. The discovery of motile antherozoids in *Salisburia* and *Cycas* has been followed by an equally remarkable one in another genus of Gymnosperms. Mr. H. J. Webber states that in *Zamia integrifolia* there are formed within the pollen-tube, near its basal end, two cells, one in front of the other. Each of the cells thus formed develops into a motile antherozoid, two being formed in each pollen-tube. They are surrounded by a spirally-arranged band of cilia, developed from a centrosome-like body within the cell. The mature antherozoids pass into the secondary embryo-sac or archegone through an orifice in the extremity of the pollen-tube, the watery contents of the pollen-tube furnishing the necessary water for their locomotion. They are of comparatively enormous size, quite visible to the naked eye, about 258-332μ by 258-306μ; they have no free tail. The nucleus is very large, and is surrounded on all sides by a thin layer of cytoplasm. The antherozoids rotate, the cilia continuing to vibrate for a considerable period after the rotation has ceased.—*Botanical Gazette*, xxiii. and xxiv., 1897.

Influence of Dark Heat-Rays on the Growth of Plants. By growing plants beneath a concentrated solution of alum, Herr N. H. Nilsson has tested the effect on their growth of the dark heat-rays as compared with that of ordinary sunlight. He gives the following as the more important of the results uniformly obtained. The epidermal cells are larger, and their walls are more wavy, the outer and the radial walls being thinner. The amount of hairs is reduced, the palisade-cells are shorter in the radial direction, and the intercellular spaces in the palisade-tissue are larger. With regard to the size of the leaves, the size of the stomates, and the absolute size of the spongy parenchyme, different species showed different results. —*Sitzber. Bot. Verein Lund.*, from *Bot. Centralblatt*, lxxii., 1897, p. 21.

Culture Medium for Protozoa. Schardinger has succeeded in cultivating the mycetozoon *Protomonas spirogyræ*, Borzi, pure and free of bacteria in the following medium :— About 30 grammes of hay are suspended in 1 litre of water, 1 to 1·5 gramme powdered calcium hydrate added, the whole well shaken and the mixture heated in the oven for twenty-four to thirty-six hours. It is then filtered, the calcium precipitated in the filtrate by phosphoric acid. The filtrate is mixed with equal parts bouillon, alkalised with soda, and employed as usual with the addition of 1 to 1·5 of agar. —*Pharm. Centr.*, xxxviii., 507.

Inoculation for Yellow Fever. According to Dr. Domingos Freire the preventative inoculations with the modified form of cultivations of the *micrococcus xanthogenicus* have been highly successful. Since 1883, 13,000 persons have been inoculated, with a subsequent mortality from yellow fever of only 0·4 to 0·6 per cent., in spite of violent epidemics of the disease in Brazil, to which the individuals, mostly newly arrived in the country, were exposed. An interesting account of the bacteriology of the micro-organism is given in *Comptes rendus*, cxxv., 614.

New Electrical Generator. H. N. Warren describes a "powerful" electrical generator, the positive element of which consists of several plates of porous compressed graphite, one quarter of each being rendered active by immersion in solution of platinic oxalate and, after drying, ignition in an atmosphere of hydrogen gas. When the finely-divided platinum surface so obtained is brought into contact with a solution of ferrous sulphate, atmospheric oxygen is readily induced to oxidise the iron present to the state of a ferric salt. A rod of amalgamated zinc is employed as the negative element. The exciting solution is a strongly acidified solution of ferric sulphate, and when the circuit is completed, a powerful current is at once set free, continuing until the ferric salt is completely reduced. On withdrawing the zinc, the active platinum surface of the carbon attracts more atmospheric oxygen, so that the ferrous salt is re-converted, enabling the action to be renewed when required.—*Chemical News*, lxxvi., 200.

Coffee Extract. In the course of a series of lectures on ordinary beverages, Bardet gives the following process for making a concentrated coffee essence :— Put a pound of freshly ground coffee into a large funnel and pour upon it three litres of boiling water. Collect the percolate and set aside, then pass more boiling water through the marc until a total percolate of five litres is obtained. Evaporate this second percolate on the water-bath down to half a litre, add the reserved portion, and leave on the water bath for twenty minutes. To this extract add 10 per cent. of glycerin.—*Bull. Gén. de Thérapeut.*, cxxxiii., 22.

Composition of Gunpowders. Sodium nitrate is now extensively used in the preparation of gunpowders, one of the chief reasons being that weight for weight it contains more oxygen than potassium nitrate. According to Merle, the following powders are manufactured with sodium nitrate :—Diorrexin contains potassium nitrate, 42·78; sodium nitrate, 23·16; sulphur, 13·4; charcoal, 7·49; sawdust, 10·97; picric acid, 1·65; moisture, 0·55. Amid is a powder containing 38 per cent. of ammonium nitrate; it burns with a small flame, but possesses great force. Saxifragin contains barium nitrate in place of potassium nitrate; its force, however, is but slight. Blasting Powders: *Himley Powder* contains potassium chlorate, 45; nitre, 35; coal tar, 20; the tar is dissolved in benzene, mixed

with the salts, and the benzene then evaporated. *Michalewsky Powder* contains potassium chlorate, 50 per cent.; peroxide of manganese, 5 per cent.; and bran, 45 per cent. *Comet Powder* (American): Potassium chlorate, 15 per cent., and common resin, 25 per cent. *Augendre's Powder*: Potassium chlorate, 49 per cent.; sugar, 23 per cent.; potassium ferrocyanide, 18 per cent. JANITE: Nitre, 70 per cent.; sulphur, 12 per cent.; bitumen, 18 per cent.; picric acid, 0·4 per cent.; potassium chlorate, 0·4 per cent.; sodium carbonate, 0·3 per cent. AMIDOGEN: Nitre, 73 per cent.; sulphur, 10 per cent.; charcoal, 8 per cent.; starch or bran, 8 per cent.; magnesium sulphate, 1 per cent.—*Pharm. Centr.*, xxxviii., 503.

Cold Condensation Process.

Milk has been successfully condensed by removing the water in the form of ice rather than steam, care being taken to allow the ice to form on the surface only and to break the surface ice frequently, so that fresh liquid is presented to the cold air. As the bulk of ice increases the broken mass is gradually submerged. The product is finally standardised, and it is said to be fairly representative of milk freed from the bulk of its water. It is free from cooked flavours and has a milk aroma which is true to the milk from which it is prepared. Moreover, it mixes easily with water, and cream will separate from the mixture in the same manner as from untreated milk. B. F. McIntyre is of opinion that the same process can be employed with advantage for condensing liquids containing nutritive peptones and albuminoids, solutions possessing peculiar odours and flavours, or very dilute solutions of active constituents. It is stated that peptones have thus been reduced in bulk, and fresh meat juice condensed to a syrupy consistence without change. Fruit juices and coffee extract can also be concentrated without the slightest impairment of the quality of their flavours, and with proportionate concentration of flavour, whilst aqueous malt extract can be condensed with but slight loss of active diastase in the conversion of starch. A solution representing twice its bulk of malt, and containing about 35 per cent. of maltose sugar and extractive, was found to have a diastasic strength equal to the conversion of four times its weight of starch.—*Journal of Pharmacology*, iv., 294.

Groundnut in Chocolate.

Bilteryst frees the substance to be examined from fat and sugar, and macerates for twenty-four hours in a 5 per cent. chloral hydrate solution. The characteristic elements of the groundnut kernel can then be readily recognised under the microscope. The chemical examination is conducted as follows:—Extract 50 grammes of chocolate with carbon tetrachloride, and after distilling off the solvent determine the refraction of the fat in the oleorefractometer. Cacao butter has a refraction of −190, arachis oil +30. The fat of a chocolate adulterated with 50 per cent. of groundnut has a refraction of 70, while the fat of a chocolate containing 5 per cent. of groundnut showed 18. Groundnut marc, left after expression of the oil, can be detected by determination of the nitrogen. Chocolate contains 9 of proteins, cocoa 18, groundnut 20, and groundnut cake 45 to 47.—*Pharm. Centr.*, xxxviii., 508.

Crystallisation of Salts.

J. Leadbeater gives instructions for the crystallisation of salts on glass slides, which should be useful to anyone who requires preparations for the lantern or micro-polariscope. Such salts as barium nitrate, potassium chlorate and oxalate, microcosmic salt, sodium oxalate and nitrate, zinc or copper acetate, iron sulphate, and uranium nitrate should be dissolved in hot water to make saturated solutions, and the addition of a little sugar tends to fix the crystals more firmly to the slides. For lantern slides beer may be used as a solvent instead of water, and the sugar can then be omitted. Phthalic acid, benzoic acid, and other compounds insoluble in water must be dissolved in alcohol. The glass plates must be perfectly clean and the solutions may either be applied with a camel-hair brush or poured on in the same way as collodion when used to coat photographic plates. After draining slightly, lay the slides perfectly flat for crystallisation to take place, taking care, of course, to protect them from dust. Photo-engravings representing slides of potassium ferrocyanide and ferricyanide, ammonium chloride, magnesium sulphate, and borax illustrate the paper, and show that the process, by which presumably the slides have been prepared, recommended yields satisfactory results.—*Spatula*, iv., ii.

Cottonseed Oil Reaction.

Halphen finds that the following test gives a reddish coloration with cottonseed, but not with any other vegetable oil. Equal volumes of the oil to be tested, of amylic alcohol, and of carbon disulphide containing 1 per cent. of sulphur, are introduced into a test tube, which is then plunged, to one-half or one-third its length, into a boiling brine bath. If at the end of ten or fifteen minutes no coloration is observed, another 1 C.c. of the carbon disulphide solution of sulphur is added, and again at the end of a similar length of time a third quantity of the same reagent. If at the conclusion of the test no red or yellow coloration is obtained, cottonseed oil is not present in any appreciable proportion.

Spontaneous Emulsions of Fatty Oils.

Gad found, in 1878, that when a drop of rancid oil was placed in a solution of sodium carbonate an emulsion was formed, without any mechanical interference. The author has resumed his investigations of the subject, and has determined the amount of free acid necessary to produce a spontaneous emulsion with various oils. Thus, a good emulsion is formed with olive or colza oil containing 9 per cent. of oleic acid, in a solution of 0·6 per cent. of anhydrous sodium carbonate. If 1 per cent. of sodium chloride is used as well the best results will be obtained with oil containing 3·6 per cent. of free acid in a solution of 0·01 to 0·06 per cent. of anhydrous sodium carbonate. In certain cases the presence of bile facilitates the emulsion.

—*Bullet. Com.*, xxv., 467, after *Rev. des Sci. Med.*

Fat Globules in Milk.

According to a note in the *Times*, Storch, a competent Danish investigator, has lately adduced evidence which favours the revival of the theory that a delicate membranous envelope exists around the fat globules of milk. The theory is that the violent concussions induced by churning cause the rupture of these delicate membranes or bladders, and thus facilitate the running together of their oily contents to form butter. In the face of fresh evidence, however, the belief in the existence of the envelope declined, and the theory gained ground that the globules of fat suspended in milk are really naked and that when they become aggregated into large granules in the process of churning they run together in much the same way as two globules of quicksilver on contact one with the other unite to form one homogeneous globule. Storch now claims to have demonstrated the existence of a "slimy albuminous membrane" around each fat globule as naturally held in milk, by staining them with a solution of picrocarmine; the colourless globules being then seen through the microscope as if they were surrounded by a narrow, faint-red border. The average thickness of the membrane is calculated to be about one-twentieth of the diameter of the globule. The globules as a whole consist of 72·5 per cent. of pure fat and 27·5 per cent. of albuminous membrane.

STRASBURG AND ITS SCHOOL OF PHARMACY.

Among the many interesting relics of past times for which the ancient city of Strasburg is distinguished, there is a house that has especial interest in connection with the history of pharmacy, as the business of an apothecary was carried on there as far back as the year 1268. It is situated at the corner of a street leading out of the cathedral square, and bears the sign of the Golden Stag, as shown in the accompanying illustration.

From an old register, kept since 1678, of the assistants employed at this establishment, it appears that in 1732 the German chemist Marggraf was for a time engaged there in that capacity, and that early in the present century another of the assistants was Emanuel Merck, the founder of the chemical manufactory at Darmstadt. These circumstances are illustrative of the intimate connection existing at that period between the practice of pharmacy and the development of chemistry, as well as the industrial applications of the science. Concurrently with the change that had taken place in the art of medicine during the seventeenth century there had been a corresponding change in pharmacy. The herb garden had been largely supplemented by the chemical laboratory as a source of materia medica and, in the preparation of medicines, various chemical operations had been introduced in addition to the use of the pestle and mortar and the decoction or confection pots, which were the chief appliances of the ancient apothecary. Pharmacy had, in fact, become a branch of applied chemistry before the close of the eighteenth century, and many of those engaged in that occupation also contributed very largely by their researches to the extension of chemical knowledge. In that respect French pharmacists took a distinguished position.

THE HIRSCH-APOTHEKE—DATE, 1268.

But notwithstanding the important achievements of French pharmacists during the eighteenth century, the conditions under which the business of apothecaries was carried on in France as well as in other countries continued to be essentially the same as those prevailing in the middle ages.

In regard to education the principle that the instruction necessary for the exercise of the pharmaceutical art should be mainly founded on the study of chemistry, had been officially recognised; but there was no public institution where that important principle was practically carried out. Few universities had chemical laboratories at that time, and those were not adapted for the special requirements of pharmacy.

It was not until the year 1803 that a change was made by the French legislature passing a law relating to the practice of pharmacy and authorising the establishment of pharmaceutical schools at Paris, Montpellier, Strasburg, and eventually in other towns. Those three schools were empowered to examine candidates and to confer qualification to practice pharmacy. They undertook the duty of teaching the theory and practice of the art, also to watch over the business, to promote its development and to report abuses to the authorities. Each school was required to provide at its own cost for at least three courses of experimental lectures upon botany and the natural history of medicinal agents, pharmacy, and chemistry. The course of study extending over three years. The fee for each year's attendance at lectures in Strasburg was about thirty shillings, and the fee for the examination was forty-eight pounds.

The control of the practice of pharmacy in Strasburg, prior to 1803, had been in the hands of the local medical college, which was empowered to grant the degree of master of pharmacy. On the passing of the above-mentioned law professors were appointed, but premises were not provided for the delivery of lectures, etc, and it was not until 1835 that provision was made for that purpose. Shortly after that time Jean François Persoz was at the head of the School; Nestler, professor of pharmacy; Kirschleger, of botany; Oppermann, of toxicology; and Oberlin, of materia medica. Associated with them were Schäuffele, Emil Hecht, Adolph Heydenreich, and Emil Kopp. Through their united efforts the school was eventually provided with a suitable building by the town Council.

In 1848 Persoz was elected a member of the National Assembly, and his place was filled for a time by L. Pasteur until 1852, when A. Loir was appointed professor. On his removal to Besancon in 1855 Karl Friedrich Gerhardt took his place, and was succeeded at his death in 1856 by Jacquemin. From 1851 to 1856 Béchamp was assistant professor.

In 1867 the income of the School amounted to upwards of two thousand pounds, and the outlay was about eighteen hundred pounds. At the end of 1869 the professorial staff consisted of Oppermann, Kirschleger, Oberlin, Jacquemin, Schlagdenhaufen, Fleury, Schmitt, Strohl and Cauvet. The nature of the curriculum is shown by the syllabus of the session extending from April to July comprising inorganic chemistry for the newly-entered students, physics for those of the second year, organic chemistry, pharmacy, materia medica, and the course of medical natural history for the first and second year students. The only lectures to be attended in the third year were those on toxicology. Besides these lectures, which each occupied two hours every week, there were demonstrations and practical exercises conducted by the assistant professors and three hours of laboratory work on three days of the week. On the first five days of the week the museum of drugs belonging to the School was open to students for inspection, and occasionally

botanical excursions were made in the adjoining country. Candidates for examination as apothecaries of the first class were at that time required to have had three years' practical experience, and then to have studied for three years at one of the higher schools of pharmacy, the cost of the curriculum and diploma amounting to about fifty-five pounds. Apothecaries of the second class were required to have had six years practice and to have studied one year at one of the higher schools or eighteen months at a preparatory school. The fees amounted to about twenty pounds, but the diploma only qualified for the practice of pharmacy in the department where the examination was passed.

As a consequence of the war in 1870, pharmaceutical instruction in the Strasburg School of Pharmacy was interrupted for several months until in the following year provisional arrangements were made by the apothecaries of the town for resuming the work, and it was thus continued until the autumn of 1872 when the present University was founded. In the original plan there had not been any intention of establishing a pharmaceutical institute, but the efforts made in that direction were successful, and in 1873, Friedrich August Flückiger was appointed professor of pharmacy.

Most of the teachers connected with the Strasburg School of Pharmacy commenced life as apothecaries. One of the exceptions was Gerhardt, who was a native of Strasburg, and being intended by his father to take charge of his white-lead factory was sent to Leipzic to study chemistry under Erdmann. After serving for a year in a Lancer regiment, he spent sometime in Liebig's laboratory at Giessen, and then went to Paris, where he graduated, and through the assistance of Thenard and Dumas was appointed Professor of Chemistry at Montpellier. In 1844 he returned to Strasburg, and took the degree of Master of Pharmacy, which subsequently enabled him to obtain the appointment of Professor at the School of Pharmacy, after the failure of the chemical school he opened in Paris had left him in reduced circumstances.

It is of interest to note that when Gerhardt took the degree of Master in Pharmacy at Strasburg, the subject of his thesis was the formation of ether, and he then put forward the view now held as to the nature of this process, which was subsequently established by Williamson.

During the time that Pasteur was connected with the Strasburg School of Pharmacy he carried out the investigation by which he ascertained the relations of racemic acid and tartaric acid, thus opening up a line of research which has since been productive of very important results. Another investigation commenced during the same period eventually led to a solution of the difficulties surrounding the identification of the cinchona bases, which had been for many years matter of dispute.

Detection of Artificial Silk.—Artificial silk is obtained from nitro-cellulose by passing collodion through very minute apertures and drying, and is naturally an extremely combustible material. Before it can be employed for textile purposes this dangerous property is modified by means of a reducing agent, after treatment with which it loses its properties of deflagration and combustibility. The presence of this body in the fibre enables the admixture of artificial silk with the natural product to be easily detected. Artificial silk dissolved in strong sulphuric acid gives deep yellow liquid which, on the addition of a solution of diphenylamine sulphate, gives a deep blue colour. The test may be applied directly to the fabric, a piece of which plunged in the reagent will become blue if containing artificial silk, but remains colourless with the natural production.—*Annales de Chim. Analyt.*, ii., 121.

HOLIDAY VISIT TO ALUMINIUM WORKS AT FOYERS.

BY JOHN H. FISHER,
Pharmaceutical Chemist.

It is well enough known, I dare say, that for rugged natural beauty and grandeur, for awe-inspiring majesty, for turbulence, noise, and tumult, accompanied by loveliest landscape and magnificent scenery, the Falls of Foyers, in Inverness-shire, are without rival or even equal in the United Kingdom. It may not be so well known, however, that when a year or two ago the British Aluminium Company decided that by electrolysis alone could they hope satisfactorily to obtain the metal, the Falls of Foyers were considered by their engineers to be more suitable than any other falls in the United Kingdom for providing the dynamic power. Yet such is the case. And so by a most ingenious, elaborate, and expensive arrangement of dams and sluices and conduits, an enormous power is obtained from a comparatively small volume of water.

An important and most valuable industry has thus been introduced into Scotland, and at the same time, despite the croakings of croakers and prophesyings of minor prophets, the cataract at Foyers is in no appreciable manner diminished, nor is the beauty of the spot in any way marred.

Huge cargo boats filled with alumina, prepared from bauxite in the works at Larne, in Ireland, are constantly arriving at the Foyers Pier on Loch Ness, *viâ* the Caledonian Canal. Very much smaller boats suffice to carry the finished product in the shape of ingots to Staffordshire, where it is converted into all manner of useful articles, varying as the proverb has it, from a needle to an anchor.

Elaborate, costly, and prolonged experiments are continually being carried on with a view to discovering the advantages as well as disadvantages of the new metal in relation to commerce. From the time experiments were made by Oersted in 1824, and Wöhler in 1827, to more recent times, when Bunsen, Henry St. Clair Deville, and others made investigations, vast discoveries have been made concerning the nature and properties of the element. But much must be discovered still ere aluminium can occupy its proper position among the valuable metals. For example, a very much cheaper process of manufacture must be found out. Expense, by far too great, has hitherto been incurred in all the tried processes. Separation from its principal ores, bauxite, emery, corundum, and cryolite, is a comparatively cheap and easy process. It readily forms double salts with any or all of the ordinary metallic salts. To reduce these salts to the oxide of aluminium is also a comparatively cheap and easy matter. It is at this stage where chemical ingenuity breaks down. The metal and the oxygen are so firmly knit together that alumina may be polished and made so hard that, with the exception of the diamond, there is not its fellow upon earth. It can cut its way through glass like the chisel through cheese. To separate those bondfellows the most powerful dynamos are necessary, and even then as is the weight of aluminium deposited at one anode, so is very nearly the weight of carbon consumed at the opposite anode of the battery. In short, at the present time it needs a Niagara Fall in Canada and a Foyers Fall in Britain to disjoin the two.

Beautiful, precious, and most useful as aluminium may be in those compounds which form the ruby, garnet, sapphire, turquoise and topaz, the time has yet to come when it shall be common as iron and steel, and as widely used as copper and silver are now.

But it is also necessary that the metal be produced in a condition of almost absolute purity. So little as even one or two per cent. of its natural allies, silicon or iron, is sufficient to greatly impair and mar its best qualities. Freed from either of these impurities it is more tensile than steel and as ductile as silver or gold. At a

temperature of 460° C. it is capable of bearing a strain of one ton to the square inch. When unannealed it may be beaten or drawn out into leaves as thin, or threads as fine, as either silver or gold.

Water, salt or fresh, has no effect whatever upon it. The stronger inorganic acids, sulphuric or nitric, which act so rapidly on iron, copper, zinc, or indeed upon all other metals with the exception of gold and platinum, roll harmlessly along an aluminium bar like water on the back of a duck.

Atmospheric air, cold or hot, even with the fumes of sulphuretted hydrogen superadded, which more or less quickly tarnish articles of gold and silver, spend their energies on aluminium in vain. It heeds them not at all. It is non-magnetic. Its specific gravity varies from 2·56 to 2·71, according to the method whereby it is treated after manufacture, *i.e.*, cast, hammered, rolled, or drawn. The specific gravity of annealed iron is 7·8.

It is apparent, therefore, that a metal possessing such an abundance of good qualities is certain to have a splendid future. Indeed, when in addition to its good qualities one bears in mind that it is scattered all around, thick as the sand upon the sea-shore, or limitless as the air, the wonder is that its future should not have become merged into its present.

The chemist who discovers an easy and cheap method of obtaining the metal will live for ever. The employment of aluminium in commerce to the extent that iron, steel, and silver is now used will be the feature not of a generation, but of a century.

DISPENSING IN THE "SERVICES."

Whether it be due to our descent from the Vikings of yore, to our sea-girt shores, or, as is more probable, to the general tone of boyish literature, certain it is that the love of travel is implanted strongly in the Anglo-Saxon youth, and probably there is scarcely one pale-faced apprentice employed in the most unromantic task of rolling out pills who does not occasionally indulge in day dreams of travel or adventure. From such as these inquiries are occasionally received as to the prospects of employment offered by the public services of the country, and it is to them in particular that the following notes may prove useful and interesting. It is perhaps hardly necessary to say that in the case of a youth with a prospect of either purchasing or succeeding to a fairly good business, it is most unwise, from a financial point of view, to harbour or encourage any such ideas, other than obtaining a few years' experience in a high-class Continental pharmacy; for the old proverb that "A rolling stone gathers no moss" certainly holds true in respect of those who follow pharmacy as a profession.

The Army.

It is much to be regretted that the Army and Navy do not offer more reasonable advantages to those who by Nature look forward to a life of assistantship as a life-long drudgery, and who rebel against the conventual life which this entails. Some years ago dispensers were entered as such in the army with the honorary rank of lieutenant, but the last such entries were made at the time of the Crimean war, and although the same commissioned rank is still obtainable, the only road to it lies in the acceptance of the modest shilling and enlistment as a private in the Medical Staff Corps. The recruit first proceeds to the large hospital at Netley, a handsome building facing Southampton Water. Here he goes through a course of ambulance drill and instruction in hospital duties. It is, however, generally understood that if a competent dispenser enlists, his term of menial duty and rank is much curtailed, and ere many months have elapsed he dons the stripes and becomes a compounder. The corps is allowed a liberal number of non-commissioned officers, and promotion is obtained by a regular gradation from corporal to sergeant, staff-sergeant, then sergeant-major (with rank of warrant-officer), and finally, if fortunate, to quartermaster, with honorary rank as licutenant and captain. Of this commissioned rank some thirty-five are employed on full pay, at home and abroad, their duties being largely those of storekeepers, with custody of medicine, clothing, etc., at the larger military depôts. In these larger hospitals the dispensing duties are performed by a sergeant, assisted, if necessary, by other non-commissioned officers; and in the smaller hospitals by a ward-master, who has previously satisfied a board of medical officers as to his competency, after undergoing a six months' course of training.

The Navy

Unsatisfactory as this state of things undoubtedly is to the qualified chemist, the conditions under which compounding is performed in the navy are much worse, as ultimate promotion ceases with the rank of chief petty officer, and the conditions of life are utterly unsuited to those who have been accustomed to elementary comforts and refinement. As this article, however, would not be complete without some notice of this class, we give the following particulars:—Youths of twenty-one to twenty-five years of age are sent, on entry, to the hospital at Haslar, Portsmouth Harbour, where a course of instruction is given in dispensing, bandaging, nursing, etc. On passing out of this course the attendants are drafted to other hospitals, where they are employed in nursing duties until appointed to ships. After five years' service the attendant is promoted to steward and, provided his conduct has been uniformly good, ultimately to wardmaster of hospitals, with the rank of chief petty officer. The stewards are employed in dispensing, under cover given by the medical officers, both afloat and also, in sick quarters, ashore, both at home and abroad. As the pay of a steward is about 3*s.* 9*d.* per day, and his ration amounts to another 1*s.* 6*d.* per day, it may be assumed that both economy and efficiency would be promoted by the appointment of qualified and competent dispensers to most of these establishments on shore.

Naval Hospitals.

The only qualified dispensers employed by the Government are a small class of about fifteen men serving in the more important Naval hospitals at home and abroad. Applications for the appointment must be made, in the first instance, to the Director-General of the Medical Department of the Navy. Candidates must on entry be under twenty-five years of age, and possess the Major or Minor qualification of the Pharmaceutical Society of Great Britain, or the certificate of the Pharmaceutical Society of Ireland. They must also be able to satisfy the Civil Service Commissioners both as to general character and also as to their physical fitness for service on foreign stations. They have next to attend, as vacancies occur, and undergo a competitive examination, lasting two days, in pharmaceutical chemistry, materia medica, recognition of chemicals and drugs, and in practical pharmacy.

This examination is certainly severe, and requires also a knowledge of therapeutics, as the following questions will show:—

1. What is understood by the term "tolerance" as applied to certain drugs? Discuss the subject fully, and give examples, entering into details in each case.

2. In what forms and for what purpose is alcohol employed in medicine? Give approximately the percentage of spirit contained in different alcoholic beverages.

One cannot help hoping that samples of the latter were provided during this portion of the examination. If the candidate is successful, he is sent to one of the larger hospitals, where he is provided with rooms and 5*s.* 6*d.* per day pay, including allowances.

In conversation with some of these dispensers an endeavour was made to ascertain the causes of a certain amount of dissatisfaction, and it was found that the privileges and advantages enjoyed are not those which the outside public usually associate with Government appointments. Five years is certainly a long time to wait for an increase of pay, especially when the dispenser has to bear the expense of servants, food, fuel, gas, and even his gas fixtures. But more serious by far is the grievance that in after years, should he die after twenty or thirty years of service, many of them spent in unhealthy climates, there is no pension or gratuity for his widow or children, and that even the cost of his hospital maintenance and burial has to be borne by his estate. The duties are very varied, comprising those of chemist, analyst, and storekeeper. Those portions of the day which are not occupied by dispensing, etc., are taken up with filling medicine chests for ships of the Fleet and preparing those multitudinous accounts, etc., which Government departments delight in. Very few indeed of those who enter pass successfully through the required forty years of service, and then enjoy with a yellow skin and jaundiced liver a few years of pensioned existence.

Prison Service.

To those who object to foreign service, the prison service of England and Wales offers appointments for holders of the Minor qualification. The age limit is from twenty-four to thirty, and the candidate is not only examined as to physical fitness, but his character both past and present has to bear the strictest scrutiny. The salary commences at £105, and rises by yearly increases to £125, with quarters and other small emoluments. Free uniform resembling that of the chief warder is provided. In some of the smaller prisons the duties of chief warder and compounder are combined, the qualification of the latter consisting in his having previously served as hospital sergeant in the Marines or Medical Staff Corps. Applications should be addressed to the Prison Commissioners, Whitehall.

Poor Law Dispensers

The qualification required for the office of poor law dispensers is fixed by the Local Government Board, and until some two years ago was wisely limited to holders of recognised certificates of competency, viz., licentiates or assistants of the Apothecaries Society, and those possessing the legal qualification of either Great Britain or Ireland. In 1895, however, the authorities decided to recognise the certificates granted by a board of Army Medical Officers to non-commissioned officers of the Medical Staff Corps and who had retired from the Service. The unfair competition thus created by admitting a body of men pensioned and thus virtually subsidised by the State, cannot but be deplored, and it is hoped that the efforts of the Council of the Pharmaceutical Society to obtain a modification of this order may be successful. The pay of assistant-dispensers under the Poor Law Boards is approximately £75 to £100 per annum, and of dispensers from £100 to £140.

Eucaine Hydrochloride in Affections of the Larynx, Nose, and Ears.—Eucaine hydrochloride solution does not cause retraction of the nasal mucous membrane, and although it causes a slight smarting when applied to the nose and larynx, it is much better borne than cocaine, and many patients who experience vertigo and nausea after cocaine are unaffected by eucaine. Martin has employed eucaine hydrochloride for these cases side by side with cocaine salt, and always with success. Consequently he considers it preferable to cocaine.—*Bull Gén. de Thérap.* (sec. Pharm.), ii., 575.

PRACTICAL PHARMACOGRAPHY.

CAPSICI FRUCTUS.

Capsicum Fruit; Piment des Jardins, Piment rouge, Fr.; Spanische Pfeffer, Schotenpfeffer, Ger.; Chile, Pimiento, Sp.

The fruits of *Capsicum minimum*, Roxb. (*C. fastigiatum*, Bl.) are more commonly known in English commerce as chillies or bird-pepper than by the Pharmacopœia name of capsicum, which is generally applied to the much larger fruit of *Capsicum annuum*, Linn.

Macroscopic Characters.—The fruits are of an orange-red colour, oblong-conical, obtuse, 12-18 Mm. long, and about 3-5 Mm. in diameter. The pericarp is thin, smooth, shining, and brittle; the fruit is normally two celled with axile placentation, and contains several obovate or ovoid flat seeds of a reddish-yellow colour, containing an embryo coiled like the figure 6, and surrounded with horny albumin (Fig. I., *c*). Both the pericarp and the seed are intensely pungent. The cup-shaped calyx, with five indistinct shallow triangular teeth, and with the pedicel attached, is sometimes found remaining on the fruit, but is more frequently detached. The calyx is 3 or 4 Mm. in diameter, and about 4-5 Mm. long. The slender pedicel, if not broken, is about 2½ Cm. long and 1 Mm. in diameter.

Fig. I.—Capsicum Fruit.—*a*, Longitudinal section of fruit of *Capsicum minimum*. *b*, Transverse section of same, showing curved band of sclerotised cells of endocarp. *d*, Epidermal cells of outer seed coat, showing thickening of cell-walls and cuticular capsaicin cavities. *c*, Section of seed, showing embryo.

Microscopic Characters.—The pericarp consists of three layers. The hard outer layer or epicarp is composed of a row of cells, which, viewed on the surface, are irregularly four-sided and porous (Fig. III., A), but in transverse section are seen to have their outer walls considerably thickened; below this layer there are four or five rows of suberized collenchymatous cells (Fig. II., 1 *b*). The mesocarp consists of several rows of thin-walled polygonal cells, and the endocarp of an interrupted layer of sclerotised oblong cells with sinuous thick walls, which are connected with the mesocarp by large thin-walled cells (Fig. II., 2, 4, 5, and Fig. III., B). Where the walls of these cells join the endocarp the cells of the latter are not thickened, but are thin-walled, hence in the transverse section the

bowed and interrupted appearance of the endocarpic layer (see Fig. I., *b*, and Fig. II., 2). The cells of the three outer layers of the pericarp contain colouring matter and require clearing with alcoholic

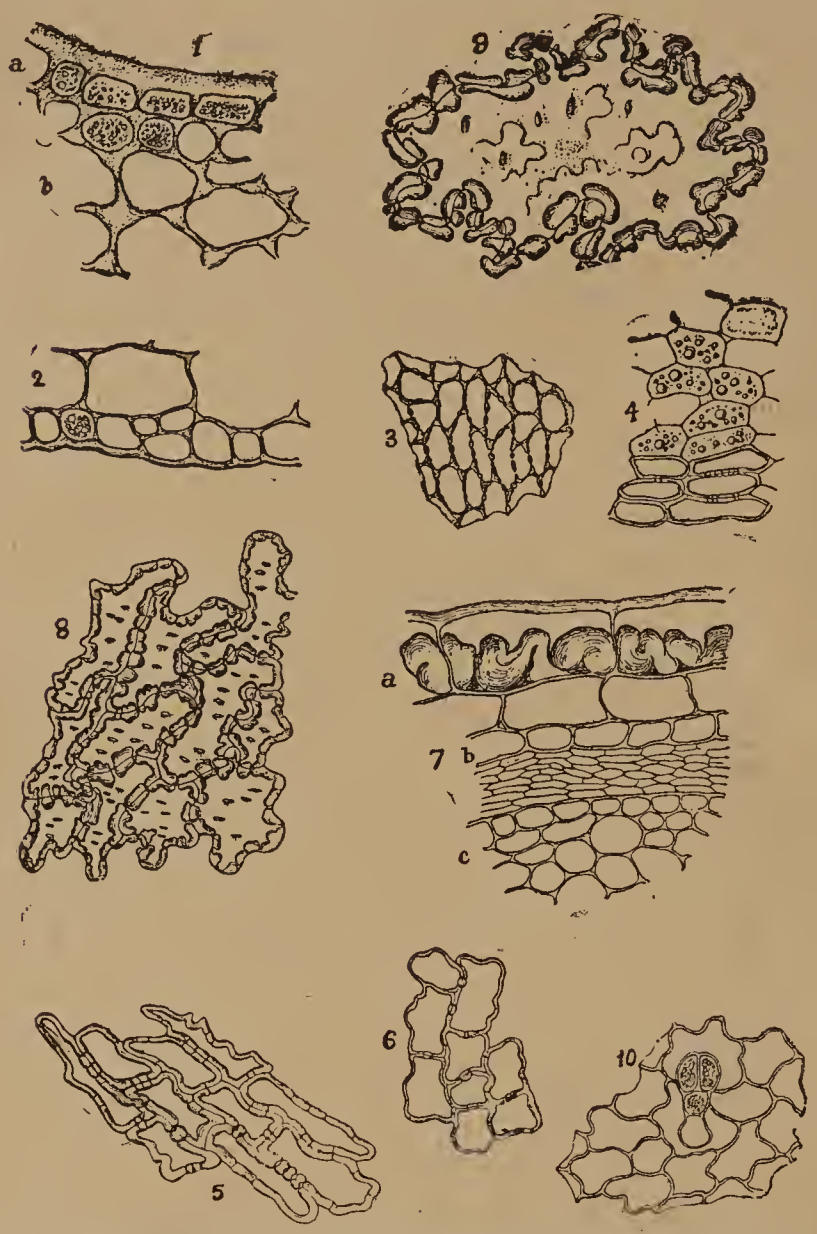

Fig. II.—Capsicum Fruit.—1, Epidermal cells of epicarp, with collenchymatous cells beneath. 2, Stone cell layer of endocarp, with large cells above it, seen in transverse section. 3, Surface view of epidermal cells. 4, Surface view of stone cell layer of endocarp. 5, Stone cells alone, in surface view. 6, Surface cells of epicarp of *C. minimum*. 7, Transverse section of seed coat, with portion of endosperm at base. 8, Epidermal cells of outer seed coat, surface view. 9, One cell of ditto highly magnified. 10, Epidermal cells of calyx, showing gland.* After Moeller.

solution of potash before their structure is clearly visible. The capsaicin is found in minute swellings in the epidermis of the mature

Fig. III. A.—Capsicum Fruit.—Surface view of epidermal cells of epicarp, more highly magnified than in Fig. II., 3. After Hassall.

fruit (Fig. I., *d*), in the form of colourless crystalline plates. Its formation is described by Tschirch and Oesterle ('Anatomischer Atlas' I., p. 14, taf. 14, fig. 14-17). The testa of the seed consists of very characteristic cells which form a layer of irregular thickness,

Fig. III. B.—Capsicum Fruit.—Stone cell layer of endocarp in surface view, more highly magnified than in Fig. II., 5. After Hassall.

those at the edge of the seed being much narrower and longer in the radial direction (Fig. I., *a*, *b*, *d*). The base and lower part of

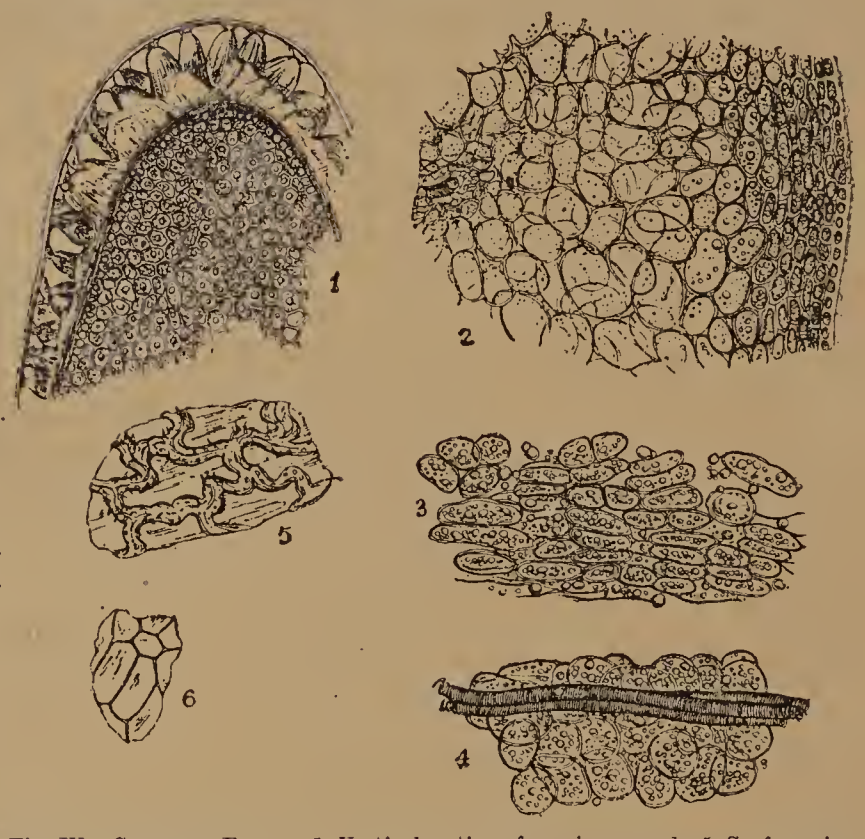

Fig. IV.—Capsicum Fruit.—1, Vertical section of capsicum seed. 5, Surface view of epidermal cells of testa. 6, Cells of endosperm. 2, Transverse section of fruit, showing fibro-vascular bundles in cortical parenchyma. 3, Parenchyma surrounding seeds. 4, Spiral vessels of mesocarp. After Hassall.

Fig. V.—Capsicum Fruit — *ep*, Surface view of epidermal punctated thick-walled cells. *co*, Collenchymatous cells. *c'o'*, Ditto, surface view. *en*, Thickened cells with undulated outline of porous endocarp. *m*, Thin-walled cells of mesocarp. *sc*, Thickened cell of seed-coat. *s'c*, Ditto, surface view After Collin.

the sides of these epidermal cells are remarkably thickened, and when seen in the direction of the surface present a curiously con-

* The drawings in Fig. II. are after Moeller, those in Fig. III. are after Hassall. With the exception of No. 6, which is definitely named by Moeller *C. minimum*, it is uncertain whether the drawings are taken from *C. annuum*, *C. tetragonum*, or *C. minimum*, as Continental authorities consider there are no distinctive characters between these three. In any case, Hassall's figures will be more easily recognised as characteristic of *C. minimum* than Moeller's figures of the same cells.

torted appearance which is not so evident in the lateral view of the cells or endopleura (Fig. II., 7*a* and 9; Fig. IV., 1 and 5). Beneath these is a layer of thin-walled cells and a denser layer of smaller strongly compressed thin-walled cells (Fig. II., 7*b*). Immediately beneath is the inner coat of the seed, which consists of a single layer of quadrate cells external to the endosperm (Fig. II., 7*c*), the cells appearing polyhedral in shape from a surface view.* In the powder the characteristic features are the irregularly oblong thick-walled porous cells of the epicarp of the fruit (Fig. III., A, and Fig. V., *ep*) and the similar cells with wavy margins of the endocarp (Fig. III., B), the contorted very thick-walled cells of the outer seed coat (Figs. II., 9, IV., 5, and V., *sc*, and *s'c'*) and the orange-red colouring matter soluble in oil, alcohol, or ether, etc., contained in the parenchyma of the epicarp.

LEGAL HINTS FOR CHEMISTS.

The Stamp Acts.

(*Continued from page 196.*)

RECOMMENDATION is the most fruitful cause of liability to the duties imposed by the Stamp Acts, and it is under this head that most of the revenue collected under the Acts is derived. One cannot examine the words of the Statute relating to recommendation without being struck by the completeness of the charge, and the thoroughness with which possible avenues for evasion have been guarded. A careful perusal of the actual words will convince most readers that there are very few devices in the art of "pushing" which are not covered.

> "Which have at any Time heretofore been, now are, or shall hereafter be, by any public Notice or Advertisement, or by any written or printed Papers or Handbills, or by any Label or Words written or printed, affixed to or delivered with any Packet, Box, Bottle, Phial, or other Inclosure containing the same, held out or recommended to the Public by the Makers, Vendors, or Proprietors thereof as Nostrums, or Proprietary Medicines, or as Specifics, or as beneficial to the Prevention, Cure, or Relief of any Distemper, Malady, Ailment, Disorder, or Complaint, incident to or in anywise affecting the Human Body."

The only loophole of escape appears to be "verbal recommendation" which is not contemplated by the foregoing words. The practical value of such a method of escape to the pushing medicine vendor would naturally be very small, but to the trained and qualified chemist who takes a sufficiently high view of his personal professional qualification, it may seem that this omission from the Statute is a delibcrately drawn distinction between the vendor of nostrums and the legitimate dispenser of medicines, a line of demarcation, in fact, between the mere tradesman and the professional man. The whole language of the Act may be said to favour this point of view. It is as though the Legislature had said, "The object of this Statute is to impose certain duties on quack medicines, and its provisions will only fall upon Apothecaries, Druggists, and so forth when they imitate the tactics of quackery or lend themselves actively to its propagation."

The point may seem ultra-academic to somc, but at any rate it is worth, at least, a passing consideration.

PUBLIC NOTICE OR ADVERTISEMENT may be defined for the purposes of the Act as being any form of words, written or printed, exposed in a public place or exhibited in such a manner as to be accessible to the public gaze. "Written or printed" would be held to apply to words painted on a window front, as well as to enamel letters affixed in a similar position. TYPE-WRITTEN announcements also could not escape on the ground that they were neither written nor printed—all would constitute public notices if exposed in a public manner. The favourite vehicles of publicity are handbills, show-cards, almanacks, price lists, and newspaper announcements. The practice of using that portion of the daily newspaper termed the "agony column" for advertising purposes is a growing one, and it might be supposed that because that column usually bears the heading "Personal" it would be possible to devise a veiled recommendation capable of evading the consequences (from a stamp duty point of view) of public advertisement. There lies no hope of evasion, however, in this direction. Take a case—

> "MARY.—So sorry, dear, you have Influenza. Why don't you try 'Vita'? It has marvellous recuperative porperties, and has enabled me to quite regain my strength. You can get it at Smith's, 2, Bunhill Street, Camford.—DAISY."

This would bring "Vita" within the charge, notwithstanding the advice is ostensibly tendered for "Mary" in a portion of a periodical marked "Personal." It is accessible to the general public and is, in fact, intended to inform them that "Vita" is beneficial for influenza. An advertisement, then, does not cease to be public because it is headed "private" or labelled "for X only" or similar words.

We have it on the authority of Mr. Alpe, however, that circulars addressed exclusively to the medical profession would not be regarded as public advertisements. As Mr. Alpe reflects the practice of the Revenue Department in the administration of the Stamp Acts, this dictum has all the force of law, but, *strictissime*, exclusiveness when applied to so large a portion of the public as the medical profession cannot be distinguished from publicity. Perhaps the manner of addressing, concerning which nothing is said, may be an important factor in guiding the Department when dealing with medical circulars. The question also arises as to how far a vendor might utilise the post office for approaching a selected number of possible buyers without coming within the scope of the words "public notice or advertisement." A claim to exclusiveness might be urged, perhaps, if the circulars were enclosed in letters, but even if that claim were allowed a recommendation thus conveyed would fall within the description "written or printed papers."

Some time ago it was sought to establish the principle that the words of the Statute did not contemplate anything which was not "affixed to or delivered with" the medicine. On referring to the actual clause given above it will be seen, however, that the disjunctive "or" separates "public notice or advertisement," "printed papers or handbills," from "any label or words . . . affixed to or delivered with," etc., making each a separate ground for liability. This reading was upheld in the High Court.

Recommendation of a medicine as a nostrum, proprietary, or specific may be effected in a variety of ways. The proprietor, maker, or vendor may make public the opinions of a third person as to the merit of the article, or quote medical testimony of the efficacy of the ingredients composing the preparation; both acts constitute recommendation within the meaning of the Statute if an ailment is mentioned. For instance, the following testimonial would render the medicine referred to a chargeable article :—

> "Dear Sir,—For many years I have been a sufferer from indigestion, and sought in vain for relief till I tried your Stomachic Mixture, etc., etc."

It may be stated also that the fact of the testimonial being a real or a manufactured one would not affect the question. Examples of dutiable announcements might be multiplied almost *ad infinitum*, but a few will suffice to explain the sort of thing to be avoided :—

1. "Don't despair. There is hope for Dyspeptics. Send for a bottle of A's Golden Remedy."

This is held out as a nostrum or proprietary, and though no direct mention is made to any human complaint, there is a pretty obvious implied recommendation that the medicine is likely to benefit persons suffering from a certain disorder. The announcement is, therefore, a dutiable one on two grounds.

2. Anti-Snuffle—the popular winter Specific gives speedy relief.

Again no ailment is mentioned, but the article is advertised as a specific, and must, therefore, be stamped. "Specific" in itself contains the idea of cure or relief, and should be struck out of the vocabulary of those who wish to avoid stamp duty.

3. "Soda and sermons the day after." No need for unpalatable remedies. Tak X after the Club Dinner. It banishes headache and is the best known live tonic.

In this case an ailment is mentioned and renders the preparation liable.

Retailers ought not to forget that considerable responsibility attaches to them in the sale of preparations which may have been rendered liable by public notices issued by proprietors or makers. 43 George III., c. 73, sec. ii., imposes a penalty of £20 upon any person who receives for sale a liable but unstamped preparation, and who does not, within 10 days, either return the same whence it came, or give information of the offence to Somerset House. There is reason to believe that this responsibility is not generally known, or there would be greater reluctance shown in stocking new preparations. Proprietors are human, and like the rest of humanity, they do not know the *fin du fin* of the Stamp Acts. Hence it is conceivable that, though innocent of any intention to transgress, they may in an unguarded moment publish a dutiable notice of the existence of which a retailer is absolutely ignorant. There is no bliss to be extracted from this species of ignorance, and as knowledge at £20 a lesson is somewhat expensive, a note of warning seems not inappropriate.

* This layer of cells is not well shown in Moeller's figure, as it should be eparated from the endosperm. (See Tschirch, 'Anat. Atlas,' taf 4, Fig. 23.)

Shop Notices, comprising show-cards, counter bills, placards, etc., frequently bring about liability. A case is recorded showing the extreme care necessary in such things. A tonic mixture was made liable by reason of a card which had been in the window for many years, and probably did not refer to the mixture at all. The magistrate convicted; the defendant being unable to prove that the article sold was not the article referred to on the card. The case is interesting, inasmuch as it shows that the authorities need not establish identity between the placard and the vended article. In several instances in which fines have been imposed no label was affixed to the bottle or packet, or any indication given that the medicine corresponded with the incriminating notice.

Labels.—Assuming that nothing in the way of dutiable announcement has otherwise been made, the wording of his labels calls for the careful consideration of the chemist. Many persons have inadvertently stumbled in using common names in the possessive case. This, as we have already discussed, constitutes a claim to proprietorship, and is fatal. The Revenue authorities do not, however, deal harshly with first offenders of this kind, they suspend the principle of "once liable, always liable," and allow the unwitting transgressor to amend his label. It probably costs him £1 to escape the prosecution to which he rendered himself liable, but the experience is valuable, for he is led to consult headquarters before using subsequent labels. The vendor's name, then, should not be in the possessive case. Next, it is imperative that all reference to an "ailment" should be eschewed, "ailment," of course, including distemper, malady, disorder, or complaint. Now in practice certain curious anomalies occur as to the interpretation of the foregoing words. What is a legal "ailment"? Having regard to the terms of the Act, and the words "incident to or in anywise affecting the human body," there would appear to be no human peculiarity or deviation from perfection, which is not included. If this were so the position would be clear. But in their desire for liberal administration of the law, the authorities have provided a number of pitfalls called concessions. Abrasions, freckles, sunburn, insect bites or stings, chapped hands, and such accidental effects are not considered to come within the term "ailment." Weaknesses, too, as nervousness, langour, or depression are likewise deemed exempt, providing the cause is not specified; and the same exemption extends to personal failings in the nature of baldness, dandruff, scurf, disagreeable breath, or smelling feet. Corns, however, have been held by a London magistrate to be "ailments" of the body, and a preparation recommended for the cure of corns to be liable to stamp duty.

The degree of uncertainty occasioned by these conceded exemptions may be judged by the following examples:—An article may be held out as being beneficial for relief in cases where there is want of nerve power, but if that condition of body or mind is described by the word "neurasthenia," the same article becomes liable. A cure for chapped hands may be sold without licence or stamp, but a cure for chilblains may not. Abrasions are exempt, but wounds have yet to be pronounced upon. Though dandruff and scurf and blemishes may not be ailments, mishaps will occur to those who reason that a similar interpretation should be given to "skin affections." Pimples may be removed by toilet preparations without payment of a contribution to the Revenue, but one cannot without liability say of any other kind of preparation that it clears the skin of blotches. Similarly, hoarseness is not a malady but a cold is; a clergyman's sore throat is not, but sore throat without the modification is. The particular line of reasoning adopted by the Administrators of the law in arriving at these fine distinctions is not always apparent, but there is a rough kind of consistency in their decisions, and it may be assumed generally that there is no desire to bring within the charge articles which would be outside if it were not for the "pushfulness" of individual vendors.

The names of preparations for the cure of non-ailments do not involve liability. Thus it is not dutiable to say of a preparation that it is a tonic, or stimulating or invigorating, or that it is an aperient, a digestive, a stomachic, or a restorer. But care must be exercised in the manner of saying it. For example:

VEGETABLE DIGESTIVE PILULES.

Invigorate and Increase the Power of Digestion.

Dose: Two after Dinner for Indigestion.
J. Bell, Edinburgh.

would be without objection, but the following would be chargeable with duty:

VEGETABLE DIGESTIVE PILULES.

Most Valuable for Indigestion and Acidity.

Dose: Two after Meals.
J. Bell, Edinburgh.

For indigestion is a complaint and "most valuable" has all the force of "beneficial."

ANTISEPTIC DRESSINGS AND SURGICAL ACCESSORIES.

Purified Gauze.—100 parts of gauze (15 by 15 meshes to the square centimetre) are soaked for several hours in warm water, then wrung out, washed thoroughly, and boiled for twenty-four hours in water containing washing soda 2, soap 1, water, *q.s.* The gauze is then wrung out, washed with water, and soaked for twenty-four hours in chlorinated lime solution; again washed, soaked for some hours in dilute hydrochloric acid, then washed in running water until every trace of chlorine or of acid is removed. It is then dried. To medicate this gauze, either an atomiser is used to spray the solutions upon it, or it is immersed in them and then dried.

Carbolic Gauze (Lister).—Purified gauze, 100; resin, 60; phenol, 5; hard paraffin, 70. The melted liquid is poured on the unfolded gauze, which is then folded and left under a weight for two hours at a temperature of 30 C. It is also made of 10 per cent. strength.

Carbolic Gauze (Bruns).—Purified gauze, 100. Impregnate with a solution of resin, 48; castor oil, 5; phenol, 12; alcohol, 95 per cent., 85. Press until the whole weighs 225, and dry in the air for twenty-four hours.

Salicylated Gauze (Thiersch).—Made 4 and 10 per cent. respectively. Purified gauze, 100; salicylic acid, 4, 8, or 12; alcohol, 95 per cent., 45 or 68; distilled water, 100 or 70. Press until the weight is 225, then dry.

Salicylated Gauze (Bruns Fils).—The same strength as above. Purified gauze, 100, impregnated with a hot solution of salicylic acid, 6 or 12; resin, 1·25 or 2·5; castor oil, 1·25 or 2·5; alcohol, 95, 141·5, or 133. Press to obtain 225 parts and dry in the air.

Salol Gauze, 5 Per Cent.—Purified gauze, 100. Moisten with the following solution:—Resin, 30; alcohol, 95 per cent., 90: ether, 10; glycerin, 15. Unfold and powder evenly with salol in fine powder 5.

Benzoic Gauze.—Made 5 and 10 per cent. Purified gauze, 100. Moisten with hot solution of benzoic acid, 6 or 12. Resin, 1·25 or 2·5; castor oil, 1·25 or 2·5; alcohol, 95 per cent. 141·5 or 133. Press until weight is 255, then dry.

Boric Acid Gauze.—Purified gauze, 100; boric acid, 12; hot distilled water, 138. Press to obtain 225 parts and dry.

Thymol Gauze, 2 Per Cent.—Purified gauze, 100. Moisten with thymol, 2; resin, 5; spermaceti, 50; alcohol, 90, 150. Heat with pressure for several hours and dry in the air.

Iodised Gauze, 10 Per Cent.—Purified gauze, 90. Place in a wide mouth-stoppered jar, heat to 100° C. Then take iodine, 10, wrap in blotting paper, and drop in jar. Heat until the gauze is uniformly impregnated.

Iodoform Gauze, 10.—Purified gauze, 100. Moisten with the following solution. Iodoform, 10; ether, 70. Wrap in parchment paper, press, and dry in the air in a dark place.

Iodoform Gauze, 6 Per Cent.—Purified gauze, 6. Moisten in a solution of alcohol, 95, 120; iodoform, 6; resin, 24. Press and dry in a dark place.

Billroth's Hæmostatic Gauze.—Purified gauze, 100. Moisten with pressure with the following mixture:—Resin, 30; alcohol, 90 per cent., 90; ether, 10; glycerin, 15; iodoform, 25; tannin, 25. Dry in the dark. Or the iodoform and tannin may be dusted on the gauze moistened with the other ingredients.

Iodol Gauze, 10 and 20.—Purified gauze, 100. Moisten with one of the following solutions:—Iodol, 10 or 20; alcohol, 90 per cent., 10 or 17; glycerin, 10. Dissolve the iodol in the alcohol warmed to 50° C., then add the glycerin. Add the solution to the gauze, wrap in parchment paper and press; after six hours unfold and dry.

(To be continued.)

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

THE NEW BYE-LAWS.

The following bye-laws, having been read three times at meetings of the Council of the Pharmaceutical Society, confirmed at a special general meeting of the Society, and approved by the Privy Council, now take the place of the former Bye-laws, 11 to 24 inclusive, of Section X. :—

11. Prior to September, 1900, persons desiring certificates of competent skill and qualification to be registered as Chemists and Druggists under the Act, 1868, shall be examined in their knowledge of the Latin language, in English Grammar and Composition, and Arithmetic, which Examination shall be called the First Examination. Persons intending to present themselves for this Examination shall give to the Registrar notice in that behalf and pay to him a fee of Two Guineas not less than 14 days prior to the day which has been appointed for the holding of the said Examination. All persons who pass the said Examination shall be registered as "Apprentices or Students."

After August, 1900, persons desiring certificates of competent skill and qualification to be registered as Chemists and Druggists under the Act, 1868, shall deliver to the Registrar on behalf of the Board of Examiners a certificate of having passed an Examination in English Grammar and Composition, in the Latin language, and in one Modern Foreign language, and also in Algebra, Arithmetic and Euclid, conducted by any or either of the examining bodies which shall have been previously approved for the purpose by such regulations as are specified by the last preceding Bye-Law, and shall pay to him a fee of Two Guineas, whereupon, if the Board of Examiners shall so see fit, they shall be registered as "Apprentices or Students."

12. Persons intending to present themselves to the Examiners for examination in accordance with the Charter and the Statute, 1852, or the Act, 1868, and having been registered as "Apprentices or Students," shall be examined in the translation and dispensing of Prescriptions, in Botany, in Materia Medica, in Pharmaceutical and General Chemistry, Physics, and Posology, and in their knowledge of the Law relating to the Sale of Poisons, which Examination shall be called the Minor Examination.

13. Persons desiring certificates of competent skill and qualification to exercise the business, or calling, of Pharmaceutical Chemists shall produce to the Registrar evidence of having been previously registered as Chemists and Druggists, and shall be examined in more extended knowledge of Botany, Materia Medica, Chemistry, and Physics, or any two of them, which Examination shall be called the Major Examination.

14. Persons who shall tender themselves to the Examiners for Examination, under the provisions of the Act, 1868, excepting only those specified in the next following Bye-Law, shall be examined in the Minor Examination.

15. Persons entitled to be registered as Chemists and Druggists on passing a modified Examination, who shall tender themselves to the Examiners for examination under the provisions of the Act, 1868, shall be required to pass the Modified Examination, which the Council of the Pharmaceutical Society, with the consent of the Privy Council, have declared to be in their case sufficient evidence of skill and competency to conduct the business of a Chemist and Druggist, as the same is set out in the Schedule hereto, or such other modified Examination as may in like manner be declared such sufficient evidence.

16. The Examiners may grant or refuse to such persons as have tendered themselves for the Minor Examination and the Major Examination respectively, Certificates of competent skill and knowledge and qualification; and lists of such persons shall be delivered by the Examiners to the Registrar.

17. All persons desiring registration as Chemists and Druggists shall in respect of an examination, to take place prior to September, 1900, pay a fee of Five Guineas, and shall in respect of an examination, to take place after August, 1900, pay a fee of Ten Guineas, and shall in either case pass the Minor Examination or the Modified Examination, whereupon they shall be registered accordingly.

18. Persons desiring registration as Pharmaceutical Chemists under the Statute, 1852, shall pay a fee of Three Guineas and pass the Major Examination, whereupon they shall be registered accordingly.

19. Persons intending to present themselves for examination in the Major, the Minor, or the Modified Examination shall give to the Registrar notice in writing of their intention in that behalf on or before the fifteenth day of the month immediately preceding that in which the Examination is to take place.

20. All notices of intention to attend for examination shall be to attend on the next occasion of the Examination being held, and all fees in respect of examination and registration shall be payable on the giving of notice of intention to attend for examination, and in no case shall any fee paid in accordance with the Bye-Laws be remitted or returned.

21. All persons shall, at the time of giving notice of intention to present themselves for the Minor Examination, satisfy the Registrar that they have attained the full age of twenty-one years, and have been registered as "Apprentices or Students," and that they have for three years been practically engaged in the translation and dispensing of prescriptions.

22. Persons who have attended and failed to pass an examination shall not be entitled to attend on any future occasion unless and until they shall have given renewed notice of intention to attend an examination, and shall have paid fees as follows :—

(a) In respect of a Major Examination, Two Guineas;

(b) In respect of a Minor Examination, or a Modified Examination, Three Guineas;

(c) In respect of a First Examination, One Guinea.

23. Persons who have given notice of intention to attend an examination and have failed duly to attend at the time appointed for the same, shall not be entitled to attend on a future occasion unless, and until they shall have given renewed notice of intention to attend an examination, and shall in each case have paid a fee of One Guinea,—or if the persons shall have proved to the satisfaction of the Council or the Board of Examiners (by production of medical certificates or otherwise) that the said failure was occasioned by unavoidable and proper causes,—One Shilling.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Potassii Permanganas.—In making this salt the black oxide, MnO_2, is oxidised by the potassium chlorate in presence of potassium hydroxide to manganic anhydride, which combines with the potassium oxide to form the green manganate—

$$KClO_3 \begin{cases} KCl \text{———} KCl \\ 3O \end{cases}$$

$$3MnO_2 \text{———} 3MnO_3$$

$$6KHO \begin{cases} 3K_2O \text{———} 3K_2MnO_4 \\ 3H_2O \text{———} 3H_2O. \end{cases}$$

When the fused mass, which is green from the presence of potassium manganate, is boiled in water the green colour changes to red, and the solution becomes alkaline, while a precipitate of hydrated manganese peroxide is formed. The formation of the peroxide is due to a rather curious case of mutual oxidation and reduction, one portion of the manganate being oxidised to permanganate at the expense of another, which is thereby reduced to the peroxide. To simplify the explanation of this change remember that MnO_3, manganic anhydride, becomes permanganic anhydride, Mn_2O_7—

$$2MnO_3 + MnO_3 = Mn_2O_7 + MnO_2.$$

Since manganic acid is divalent, while permanganic is univalent, some of the potassium appears as hydrate—

$$2K_2MnO_4 \begin{cases} 2K_2O \\ 2MnO_3 \end{cases} \begin{cases} K_2O \text{———} K_2O \\ K_2O \end{cases} \text{———} 2KMnO_4$$

$$K_2MnO_4 \begin{cases} MnO_3 \begin{cases} O \\ MnO_2 \text{———} MnO_2 \end{cases} \\ K_2O \text{———————} K_2O. \end{cases}$$

By comparing the formulæ of manganates and permanganates it will be seen that the manganic and permanganic radicles have the same formula, MnO_4, (K_2MnO_4 and $KMnO_4$), but the former is bivalent and the latter univalent. The formulæ for the corresponding anhydrides are consequently

$$MnO_3(H_2MnO_4 - H_2O = MnO_3) \text{ and } Mn_2O_7(2HMnO_4 - H_2O = Mn_2O_7),$$

which explains why the *per*-manganates are so called in relation to the manganates. The permanganate of potassium, formed by boiling the manganate solution, is re-converted into manganate of potassium at a certain stage of concentration if the alkaline solution containing the free potassium hydroxide be evaporated. Before attempting to crystallise, therefore, the hydroxide of potassium is converted into carbonate by a current of carbon dioxide (or sulphate by neutralising with sulphuric acid). In the official tests the reaction with alcohol is typical of the effects of potassium permanganate in *neutral* or *alkaline* solution. In such cases hydrated manganese dioxide, MnO_2xH_2O, is produced as a brownish precipitate; while in *acid* solution the reduction of the permanganate is carried a step further, *i.e.*, to the state of monoxide, MnO, but this oxide never appears in the presence of acid, for the corresponding salt (*e.g.* $MnSO_4$) is formed, and a clear solution results. This explains why titrations with permanganate are carried out in acid solutions, since in the clear solution obtained under these conditions, the pink tint of excess of permanganate is at once visible when the reaction is completed. Moreover, the oxidation reactions in acid solution are more definite and quickly completed. It will be seen also that the oxidising capacity of $KMnO_4$ is greater in acid solution, $2KMnO_4$ yielding five available atoms of oxygen ($K_2O,2MnO,5O$), while when MnO_2 is formed, only three are utilised in oxidation ($K_2O,2MnO_2,3O$). The quantitative test with ferrous sulphate may easily be calculated by the aid of this knowledge, for each atom of oxygen is capable of oxidising two molecules of ferr*ous* to ferr*ic* sulphate in presence of sulphuric acid.

$$2FeSO_4 + SO_4 \begin{cases} H_2 \\ O \end{cases} = Fe_2 3SO_4 + H_2O$$

Since $2KMnO_4$ yields five atoms of available oxygen it is obvious that 316 grammes ($2KMnO_4$) will oxidise 2780 grammes [$10(FeSO_4,7H_2O)$] of granulated ferrous sulphate, and

$$5 : 44 :: 316 : 2780$$

Saccharum Lactis.—If acetic acid or essence of rennet be added to milk, it "curdles," that is, the casein separates in curds or clots, enclosing the butter fat. The filtrate from this curdy precipitate is known as the whey, and contains chiefly milk sugar and inorganic salts. The sugar occurs to the extent of about 5 per cent., or rather less, in cows' milk. Powdered milk sugar is used in pharmacy on account of its dry, gritty nature. It has no tendency to absorb moisture or become lumpy like powdered cane sugar; hence it forms an admirable material for the dilution of potent drugs in the form of powder, as, for instance, in pulvis elaterini compositus.

Saccharum Purificatum,—Sugar is used in pharmacy for its flavouring and preservative properties. It is important to note that *dilute* solutions of sugar readily ferment or undergo putrefactive decomposition, while *saturated or nearly saturated* solutions, such as form the basis of the official syrups, may be preserved indefinitely under proper conditions. This fact is not to be attributed to any specific action, of an antiseptic nature, of sugar upon the lower organisms, but rather to the physical conditions prevailing in strong sugar solutions which possess strong osmotic properties, and consequently seem to disturb the vital functions of the protoplasm of the moulds and bacteria. Such strong solutions are physically unfitted for their growth, although containing a substance which, in a dilute form, provides an efficient nutrient medium. Sugar also retards the oxidation of ferr*ous* salts, and is used with this intention in ferri carbonas saccharata (q.v.), and the three official iron syrups. When solutions of cane sugar are boiled with dilute acids hydrolysis occurs and a product obtained which was originally named "invert" sugar. This name originated from the fact that the dextro-rotatory action of the sucrose solution was changed to lævo-rotatory in the hydrolysed product, which is now known to consist of equal proportions of dextrose and lævulose. The total rotatory effect of the "inverted" solution is, however, lævo-rotatory, because the specific rotatory power of lævulose is greater than that of dextrose. This inversion with acids is common to the members of the sucrose group of sugars, each variety yielding two molecules of glucose. Cane sugar yields dextrose and lævulose, maltose two molecules of dextrose, while milk sugar yields dextrose and galactose, another member of the glucose group. The members of the glucose group as well as maltose and milk sugar reduce Fehling's solution, while cane sugar does not. Note that the name glucose is applied commercially to the syrupy product obtained by boiling starch with dilute acid. This consists chiefly of dextrose, and is sometimes used as a pill-excipient. In chemistry the name glucose refers to the *class* of sugars having the formula $C_6H_{12}O_6$, and possessing other properties in common. The reducing properties of sugars, such for instance as their action on Fehling's solution, is due to their aldehydic or ketonic nature. Just as ordinary acetic aldehyde which contains the group $-C{\cdot}O{\cdot}H$. easily takes up an atom of oxygen and forms acetic acid, *e.g.*, when it reduces an aqueous solution of silver nitrate,

$$CH_3-C\langle \begin{matrix} O \\ H \end{matrix} + O\,H_2 + (NO_3Ag)_2$$

$$= CH_3-C\langle \begin{matrix} O \\ OH \end{matrix} + 2Ag + 2HNO_3$$

so dextrose, to which is ascribed the formula—

$$CH_2(OH)-[CH(OH)]_4-C{\cdot}O{\cdot}H,$$

may be oxidised to the corresponding acid, having the formula—

$$CH_2(OH)—[CH(OH)]_4-C{\cdot}O{\cdot}(OH).$$

The actual products obtained by the oxidation of the sugars vary widely, according to the conditions, and it is obvious that there is plenty of room for isomerism, both in the sugars and their decomposition products. This makes the subject one of considerable complexity, and any further discussion would be out of place here. The student who wishes to pursue the subject is recommended to read the section on sugars in *recent* editions of text-books of organic chemistry, since much of our knowledge is due to researches carried out within the last few years. The ozazones formed by reaction with phenyl-hydrazine are particularly important, since they provide a method for the separation and identification of sugars in complex mixtures, such as urine.

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THE NEW BYE-LAWS.

All friends of pharmaceutical progress in Great Britain will have read with interest our brief announcement of the fact that the Privy Council had approved of the new Bye-laws. The news arrived literally at the moment of going to press, and time and space did not permit therefore of the matter being referred to otherwise than in the briefest possible manner. It appears desirable, however, that the exact bearing of the new Bye-laws should be explained, now that they have the force of law, and to that end they are reprinted at page 471. It will be remembered that the amended Bye-laws were read for the first time on July 7 last, confirmed at a special general meeting of the Society held for that purpose on Wednesday, August 4, and are now actually in operation, though the changes they were designed to effect will not be completed until nearly three years hence.

The most important change effected is undoubtedly that in reference to the First examination. Dr. THOMAS STEVENSON, the Government Visitor, in his last report on the Examinations in London, spoke of the proposal to raise the standard of this elementary examination with satisfaction, observing that it would be a most desirable step in the interests of the public. The step is now taken, and though up to July, 1900, the examination will be conducted as at present, subsequent to that date it will be discontinued, the requirements of the Boards of Examiners will be extended, and proof that those requirements have been complied with must be forthcoming from some outside examining body. That is to say, before candidates will be permitted to present themselves for the Minor examination they must deliver to the Registrar a certificate of having passed an examination in English grammar and composition, Latin, one Modern Foreign Language, Algebra, Arithmetic, and Euclid, conducted by some examining body which shall have been previously approved for the purpose. It may be taken that the requirements will assimilate to those of the General Medical Council, and any youth who proposes to enter pharmacy after the present date should be strongly advised, for his own sake, to pass an examination that will meet those requirements forthwith, rather than content himself with acquiring a minimum of what may be termed scholastic information. Preference should be given to an examination, the syllabus of which includes elementary natural science, a subject which many will regret to see omitted from what will henceforth be required from pharmaceutical students.

Next in order of importance amongst the changes effected by the altered Bye-laws comes the increase in the fee payable by persons desiring registration as Chemists and Druggists. Candidates presenting themselves for the Minor examination up to July, 1900, will pay a fee of five guineas only, but those presenting themselves for the first time after that date will be called upon to pay ten guineas. A third important change is one that comes into effect immediately, and it is entirely in favour of candidates desiring registration as Chemists and Druggists. Formerly, those who had attended and failed to pass an examination were required to pay a reduced fee of three guineas only, if they attended for re-examination within twelve months of the date of the examination in respect of which the original fee was paid. After the expiration of twelve months the fee of five guineas again became payable, but in future the reduced fee of three guineas will be payable on all occasions upon which a candidate presents himself for examination after the first.

Reverting to the increase in the amount of the registration fee, it may be observed that the change has been resolved upon in the interests of the public and of candidates themselves, and is an eminently desirable one in so far as it will doubtless tend to the protection of the public and the advancement of pharmacy as a profession. It may be anticipated that candidates will present themselves in a much better state of preparation in future, and if the increased fee should have any effect in limiting the number of the "pharmaceutically unfit" or in checking the overcrowding of our ranks that at present prevails, the benefit to the public, no less than to the craft, will be incalculable. The interests of the public must ever occupy the first place in considering such matters as this, for, as so well pointed out by Mr. J. H. BEAL in his paper on "The Relation of the Pharmacist to Pharmacy Law" (see *ante*, p. 420), the only foundation for the legal regulation of pharmacy is the public good. Pharmacy is a restricted calling simply because, as a business, it may prove dangerous to the public welfare if improperly conducted or if conducted by unqualified persons. In fact we may fitly apply Dr. STEVENSON's remark in this connection, and say that the advance in the registration fee is a step "most desirable in the interests of the public,' for such it undoubtedly is.

THE NINTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

WE have received from Dr. AMALIO GIMENO, of Madrid, a provisional programme of the arrangements which have been made for holding an international congress at Madrid, from April 10 to 17, 1898, under the patronage of His Majesty ALFONSO XIII. and Her Majesty the QUEEN REGENT. The President of the Organising Committee is His Excellency the Minister of the Interior, and the Under Secretary of that department is Vice-President. The President of the Executive Section of the Committee is Dr. JULIAN CALLEJA, Professor of the Faculty of Medicine, and the Vice-President is the Marquis DEL BUSTO, Senator and Physician to His Majesty the King and to her Majesty the Queen Regent.

As General Secretary of the Congress, Dr. GIMENO desires to make known the fact that in accordance with the decision of the last Congress, held at Budapest in 1894, that the next Congress should take place in Madrid, the Organising Com-

mittee is now issuing printed forms for giving notice of adhesion and of communications to be read, together with copies of the regulations as to membership, etc., and other information relating to the Exhibition which is to be held during the Congress. Invitations are being sent to all who are likely to be interested in the work of the Congress, with the assurance that the Madrid authorities will accord a most cordial reception to their guests. From these documents it appears that considerable progress has been made in the work of organisation, and a hope is expressed that the efforts of the Organising Committee to discharge honourably the engagement entered into at Budapest may meet with such a response as will make this ninth International Congress a brilliant success.

DISPENSING IN THE "SERVICES."

THE article on this subject, published at page 466, has been prepared with a view to answering the many queries on the subjects referred to that are addressed to the Editor from time to time. The moral to be derived from a careful study of the matter appears to be that registered chemists who respect their best interests will carefully avoid the "Services." The army and navy are, of course, practically barred to registered men, and the qualification of the average dispenser in those services can only be described as miserably insufficient. However, soldiers and sailors enter the army and navy with the idea of holding their lives at the service of their country, and if those in authority choose to risk the lives and health of men in the dispensary rather than in actual warfare, it is not clear how anyone else can profitably interfere.

Naval hospitals offer employment to but a scanty number of registered chemists, and in this case the authorities, curiously enough, go to the opposite extreme in the matter of qualification. Not content that candidates should possess the Minor or Major qualification of the Pharmaceutical Society, the DIRECTOR GENERAL of the Medical Department of the Navy, or some other authority, has recently decided that they must be re-examined. The subjects of examination are pharmaceutical chemistry, materia medica, and therapeutics, recognition of chemicals and drugs, practical pharmacy, etc., the examination in the last named subjects being *vivâ voce*. As a test of special knowledge, therefore, the examination is far from being a mere matter of form. Seriously, however, even the DIRECTOR-GENERAL or other responsible authority might be satisfied with the fitness of candidates who have already been much more thoroughly examined than is possible at the hands of the Civil Service Commissioners. What suffices to protect the general public must be, at least, sufficient for patients in naval hospitals.

As regards the prison service of England and Wales, it must be admitted that the temptation in that direction is none too great. Even the offer of a free uniform "resembling that of the chief warder" will fail to overcome the scruples of many who may consider the restrictions of the ordinary pharmacy much less irksome. And, considering the surroundings amid which the prison dispenser must work, much greater inducements should be held out to attract dispensers of a good class. As for Poor-law dispenserships, they may soon be only a vague recollection as far as registered chemists are concerned, for the action of the Local Government Board in recognising certificates granted by a board of Army Medical Officers to retired army compounders, puts the latter in a position to compete unfairly with those who know anything about the work to be done. This tendency to belittle the importance of the pharmaceutical qualification is much to be regretted, and it is to be hoped that no opportunity will be lost by our readers of bringing pressure to bear upon members of Parliament and others who may be able to call attention to the matter on a suitable occasion.

PROPOSED UNIVERSITY OF WESTMINSTER.

THE hesitation manifested by the late and present Governments in dealing with the questionable need for a teaching university for London is said by the *British Medical Journal* to have produced a very natural feeling of impatience among those who are deeply concerned to place university education in the metropolis on a better footing. Apparently this feeling of impatience is shared to some extent by our contemporary, for it has felt impelled to voice the ideas of some of those who have taken an active part in preparing an alternative plan to that of creating a teaching university in London. For, though it is expected that a Bill with the latter object may be brought forward at an early date, and though the Government has given a conditional pledge to pass that Bill into law, it is felt that such opposition may arise as will prevent the Government giving effect to that promise.

Federation of teaching institutions of university rank in London is the alternative plan proposed, the basis of the proposed university to be the Faculties. Thus, the Royal Colleges and other colleges and medical schools in London would be invited to organise themselves into a Faculty of Medicine; and in like manner Faculties of Art, Science, Theology, Law and Music would be organised from competent teaching institutions. Great freedom, both in respect to present organisation and future development, would be left to the Faculties, but only students of constituent colleges would be admitted to the examinations for the degrees of the university. To avoid any possible confusion as to the source of the degrees that would be granted to the new university, and any encroachment by the latter upon the established reputation of the University of London, it is proposed to call the new institution the University of Westminster.

It is stated that the proposals embodied in this scheme have already secured the support of representative members of the teaching staffs of the chief colleges and medical schools, and it certainly appears to offer an easy way out of the main difficulties that have presented themselves in the consideration of plans for the reconstitution of the existing University of London, which exists exclusively for the purpose of conferring degrees and makes no other provision for ensuring systematic education. Attempts have been made to conciliate the supporters of the existing University, and it is felt that the policy of conciliation has been carried very far, but as there appears to be a rooted dislike in certain quarters to any change in the condition of the existing university, under the circumstances the risk remains of again having the proposed Bill pushed out of sight. Whether or not this alternative scheme will develop beyond the preliminary stage remains to be seen. If, however, it should prosper it may be that Mr. CARTEIGHE'S dream of having the Pharmaceutical Society included as a constituent part of a teaching university may not be so very remote as might appear at first sight.

ANNOTATIONS.

The Present Number of the Journal contains a greater number of pages than any former issue, and this week's contents will, it is believed, compare favourably—as regards variety, interest and practical utility—with those of any former issue of the Journal which is especially devoted to pharmacy. It is, of course, only natural that this should be so, the very numerous readers of the Journal—some six thousand of whom are also part proprietors—being as much entitled to decide and ask for what they prefer in their weekly paper as those responsible for the conduct of the Journal are willing to provide whatever is asked for in reason. At the beginning of the year now rapidly drawing to a close we remarked that a fairer prospect than ever then disclosed itself of ways in which the craft might be assisted through the medium of the Journal, and that if the efforts made were but supported by those on whose behalf they were made, there was every prospect that both the Journal and its readers would have gone far towards realising their newer ideals before the close of another twelve months. The time mentioned has almost elapsed, the efforts made have been well supported, on the whole, by those on whose behalf they have been made, and we venture to assert that the result, as manifested in the pages of the Journal, is generally satisfactory.

A Trade Journal, which is also a scientific journal and an official organ to boot, must ever of necessity be difficult to produce with complete satisfaction to all parties concerned, and perhaps the least satisfied persons at present, as regards the *Pharmaceutical Journal*, are those who constitute the editorial staff of the paper. For the ideals placed before them by the conductors of a journal, who endeavour conscientiously, and without ceasing to discharge the trust reposed in them to the utmost of their ability, are apt to be even more unattainable in practice than those of their most captious critics. There are doubtless numerous readers who pay no attention to the workmanship so long as they are suited with the matter, but the labour involved is equally great whether the matter to be published is interesting and attractive to the general reader or otherwise. In fact, the more purely technical an article is, the more care and anxiety are involved in preparing it for press. But the comparative dissatisfaction referred to has no connection with the nature or amount of the work involved; it is due rather to the impossibility of dealing to advantage with all matters of interest to readers in the space and time available each week. Whilst, on occasion, there is room and to spare for everything worthy of inclusion, at other times the proverbial difficulty of getting a quart into a pint-pot has a very disheartening influence. As it is, however, no pains are spared to make the best of such opportunities as present themselves, and the result is, perhaps, not far short of the best attainable under the circumstances.

Readers may Assist Greatly by not expecting too much. For example, the reports of meetings of local associations are often unavoidably subjected to condensation. What has been said at those meetings may be of very great interest to those in the respective districts, but of little or no importance to the rest of the country. In such a case objection ought not to be taken to the substitution of matter of more general interest in place of part of the provincial reports. The words "ought not" are used advisedly, for objection is sometimes taken, and in most instances altogether without reason. Lectures delivered and papers read at meetings of chemists may deal with subjects that are novel to some or the whole of those who are privileged to listen to them; but not infrequently the facts quoted have been recorded in one form or another in these pages, and if fresher matter is forthcoming it would obviously be undesirable to reject it for the sake of a more or less stereotyped compilation. Care should also be taken to send reports, etc., to the Editor promptly, as the delivery of an unusually large amount of "copy" on the morning of the day the Journal is made up for press is not calculated to ensure those communications receiving the attention their senders may consider they deserve. Finally, all communications for the Editor should be addressed to 17, Bloomsbury Square, W.C., and not to the publishing address. The advantage of this has been referred to in the Journal quite recently, but notwithstanding that fact more notices and letters have gone astray during the past week than usual. Much time and trouble will be saved for everyone concerned if our plainly-worded instructions to correspondents are duly consulted by those to whom they are addressed.

The Proposed General Index to the Journal is at present in somewhat greater demand, a fair number of orders for copies having been received during the past week; but a very much larger number of subscribers will yet be required, and the attention of readers who have not yet intimated their desire to possess a copy is directed to the particulars and order forms, printed at page 115 of our advertising columns.

The Sheffield Pharmaceutical and Chemical Society supports other local associations which are desirous of taking part in an educational conference, for at a Committee meeting, held on November 16, it was resolved that with a view to placing elementary pharmaceutical education on a uniform and satisfactory basis throughout Great Britain, it is desirable that a conference be called, composed of delegates from local associations, to deal with the matter, in accordance with the views expressed in the *Pharmaceutical Journal*, of October 23 last, and that the President of the Pharmaceutical Society should be requested to preside at that Conference. The terms of the resolution, it will be observed, correspond with those adopted by the Plymouth and Nottingham Associations, and also with those in the motion of which notice has been given by Mr. William Kirkby at Manchester.

The North Stafford and District Chemists' Association, of which Mr. John Averill, J.P. (Stafford), is President, intends to hold a general meeting at the Copeland Arms Hotel, Stoke-on-Trent, on Thursday, December 2, at which Mr. Weston Poole will read a paper on the advantage to all chemists of joining the Pharmaceutical Society and a local association. Mr. Edmund Jones, Hon. Secretary of the Association, also proposes to move that in view of the apparent apathy of so many chemists and druggists towards the Pharmaceutical Society, which was founded and exists for the benefit of the trade, the Association should suggest as the best means of increasing, popularising, and consolidating the Society: (1) That the Society should admit all present associates to the rights and privileges of membership, and entitle them to assume the title of pharmaceist or pharmaceutical chemist, and be eligible for election as members of the Pharmaceutical Council, on payment of an annual fee of one guinea. (2) That the present "Minor" be divided into two parts, the first part to be called the "Intermediate" and the second "Final"; the qualifying fee to be divided between these two examinations. (3) That there shall be an interval of not less than three years between the passing of the Preliminary examination or registration as Students, and the "Intermediate"; and one year at least between the "Intermediate" and "Final." Entries for the

"Final" not to be admitted under the age of twenty-one years (4) That apprentices or students who have passed the Preliminary, or its equivalent, be admitted as students of the Pharmaceutical Society on payment of an annual fee of 5*s.*, which would entitle them to receive the *Pharmaceutical Journal*, the receipt of which would probably tend to create greater interest in the Society and pharmacy generally. (5) That the present terms, "Minor" or "Major," be substituted by the terms "Intermediate" and "Final" respectively; that an "Honours" examination be established, carrying with it "Fellow of the Pharmaceutical Society;" that all present holders of the Major diploma be admitted as "Fellows."

Carbolic Acid Suicides continue to be as numerous as ever, but despite the protests of coroners, juries, and the medical press generally, it appears hopeless as yet to anticipate that the favourite poison will be scheduled as a poison. If in time the higher classes in Society should resort to this means of terminating a tedious existence—just as they have adopted the bicycle habit and other customs that originated with their social inferiors—perhaps a little more attention might be paid to the matter officially, and all the more surely if a bishop or some connection of a Privy Councillor happened to imbibe the fatal draught. Seriously, it seems useless for juries to attach riders to their verdicts, or for coroners to transmit them to the Privy Council. What ought to be done is for each member of each jury to communicate with his local Member of Parliament, detailing all the facts and taking care to remind him of the matter from time to time. Then, in the fulness of time, the abundance of questions asked in the House of Commons might prove too much even for the calm superiority of permanent officials, whose love of authority appears to be gratified by their ability to persist in rejecting what is almost universally demanded, so long as it concerns a class of persons who are unable readily to make their influence felt.

The Local Government Board seems content that the indigent poor should have their medicines compounded by individuals not fitted for the duty, and in the same way the Privy Council appears quite callous with regard to the sufferings of those members of the lower classes who are driven by a momentary impulse to throw their lives away, and resort for that purpose to the poison which is most readily obtainable. It is well known that such an impulse frequently passes away entirely when difficulty presents itself in the way of procuring the poison, and there is no reason to think that the case would be otherwise were carbolic acid scheduled and only sold under proper restrictions. To urge that scheduling this toxic liquid would interfere with its free use as a disinfectant is simply misleading, for in the first place it would be difficult to find any place—however remote—where a chemist and druggist is not near, and secondly, it is more than doubtful whether carbolic acid possesses any value whatever as a disinfectant. Besides, it has been possible to schedule the article in Ireland, and the most skilful and hardened official can hardly contend that what is poisonous in Ireland is not so in Great Britain. Of course it is freely recognised that Ireland can lead the way on such occasions, because to the obtuse official mind a little Irish opposition counts much more than an overwhelming amount of British support. Nevertheless, we hope to see this matter logically determined, sooner or later, and sooner rather than later.

Seismograms and Telegrams served Professor Milne as the subject of a lecture at the Camera Club recently, and he showed how in the instruments which are used for recording earthquake movements the necessary records are obtained by photographic methods on bromide paper. The lecture was illustrated by a number of lantern slides, which dealt mainly with the effects of earthquakes in Japan, and the results of experience gained in consequence of a systematic observation of their movements. Professor Milne stated that the seismogram was ahead of ordinary telegrams, for it could give information from anywhere in about sixteen minutes. He could now give them the dates of some earthquakes which would be verified by-and-by when the telegrams came. There was one which, he judged from the nature of the disturbance, had taken place in Borneo. Generally speaking, they could tell how far away the place was at which the disturbance took place, but not the place itself, though it was possible to judge approximately.

The New Pharmacopœia may be expected next spring, as after the General Medical Council has expressed approval of the complete printed draft now before it, two or three months will probably be occupied in a final revision, so as to ensure the connection of any minor errors that may remain. It was intended from the outset that the work should appear in 1898, and Dr. Attfield has kept well within his estimate of four years as the time required to produce the complete work. In regard to the imperial character of the work, every colony and dependency has done something in the matter, and we understand that, in addition to securing the recognition of substances likely to be used only locally, it will be found that the suggestions of those colonies and dependencies have had a marked influence on the body of the Pharmacopœia.

Two Curious Minerals indeed are those mentioned by the Berlin correspondent of the *Standard*, in a recent issue of that staid and respectable organ. M. Czernik, a Russian chemist, is said to have examined two minerals from the Caucasus, with very noteworthy results. One of them is described as a kind of coal, "the ashes of which contain a considerable quantity of the new element, helium, along with several rare and precious earths used in the manufacture of incandescent mantels." But much more curious is the other mineral, which is called cerite, and is said to consist "mainly of the new element, argon." The most remarkable thing, observes the *Standard* correspondent, is that these two new elements have never before been found in minerals in a pure state, but only in chemical combination with other elements. Even more remarkable, however, are his statements regarding them.

The Chemists' Assistants' Association will hold its conversazione at the Portman Rooms, Baker Street, W., on Thursday, December 2, when dancing will commence at 9 o'clock. Hall Woolnoth's band will be in attendance, and tickets (single, 3*s.* 6*d.*; double, 5*s.* 6*d.* each) may be obtained of Mr. Chas. E. Robinson, Hon. Secretary, 180, New Bond Street, W. "Cinderella" dances have also been arranged for November 18, 1897, February 3, 1898, and March 28, 1898.

The Proposed Pharmacy Bill has been discussed at several centres this week, reports of the proceedings at Sheffield, Nottingham, and Bristol, on Wednesday, having arrived just in time to be published in this week's Journal. A very long report of a meeting held at Glasgow on Tuesday has, unfortunately, arrived too late for insertion, but it may be stated that it was unanimously agreed that all chemists and druggists should be eligible for membership of the Pharmaceutical Society, and that a modified examination for assistants is not desirable.

DENTAL NOTES.

Cataphoresis.

Never resort to cataphoresis in the case of a tooth in which any arsenical compounds or other injurious drugs have been placed, as the electric current may cause them to penetrate the tooth and result in untold trouble.—F. F. Fletcher in *Dental Digest.*

To Renovate Dirty Wax.

The wax should be melted in hot water, and the dirt scraped from underside when cool. Melt again in clean hot water, adding a teaspoonful of sulphuric acid when it comes to boiling point.—Dr. Wright in *Ohio Dental Journal.*

Repairing Rubber Plates.

To ensure perfect adaptation of parts in repairing rubber plates, warm a sheet of wax and lay it on a flat surface, then press the teeth into the wax, adjust them properly, pour and proceed as usual. Soft plaster may be used instead of the wax.—Dr. Wright in *Ohio Dental Journal.*

Modelling a Plate.

Let the wax model represent as accurately as possible the finished plate. Make the surface of the wax smooth with blowpipe flame, and when cold polish with light and rapid strokes with the dry fingers. Then varnish the wax with thin shellac. This will give the plate such a smooth surface that no scraping will be necessary, only scouring with felt wheels and polishing.—Dr. Buzzell, *Ohio Dental Journal.*

Cleaning Files.

To clean files used in rubber work, hold them in the jet of steam which escapes from the top of the vulcaniser when the pressure is above fifty pounds.—*Dominion Dental Journal.*

Tough Plaster Casts.

Plaster casts may be made so tough that they will bear the driving of a nail into them without cracking by immersing them in a hot solution of glue for a sufficient time to permit it to permeate the entire mass.—*Scientific American.*

On Taking Impressions.

In taking an impression where there are teeth remaining, the teeth should be lubricated with glycerin, vaselin, or oil.

A Useful Alloy.

An alloy of bismuth, 48 parts; cadmium, 13; and tin, 19; melts at the remarkably low temperature of 200° F. It is frequently useful in the dental laboratory.

Aristo-Paraffin Wax for Root Canals.

Hickman prepares this by mixing aristol with melted paraffin, and heating until the mass assumes a dirty yellow colour. After drying the cavity a roll of the substance is inserted and touched with a heated root drier, or other pointed instrument. This melts the composition, which then fills the canal by its capillarity. It may be forced up through the apical foramen if necessary. Where the foramen is large aristo-paraffin will not produce sufficient irritation to cause or continue an abscess, but will be gradually absorbed by the tissues, between sixty and seventy cases of abscessed roots have been treated in this manner with but one recurrence after one to three years' standing.—*Dental Cosmos.*

Toothache Drops.

Mix phenol, camphor, chloral hydrate, menthol, and glycerin, equal parts. Powder the camphor and chloral separately, mix, and when liquefied add the menthol, then the phenol and glycerin heated together.—*Western Druggist.*

Keeping Properties of Nitrous Oxide.

A case is recorded in the *Dental Cosmos* in which a cylinder of nitrous oxide gas which had been in stock unopened for nineteen years gave satisfactory results when the gas was used to produce anæsthesia.

PHOTOGRAPHIC NOTES.

The Dansac-Chassagne Process of Photography in Natural Colours, which was exploited by Captain Abney and Sir H. Trueman Wood, has been shown in actual working, not only in England, but also in most of the principal cities on the Continent, and the general impression seems to be that it cannot in any way uphold the claims that were made for it. One German writer stigmatises it as a swindle, whereas another suggests that some clever person has been showing some ordinary colouring process under the name of Dansac and Chassagne.

Joly's Process of Producing Photographs in Natural Colours, which was first mentioned about 1894, has at last been put within the reach of all. The Natural Colour Photography Company, Limited, of 36, College Green, Dublin, are now prepared to supply one screen for taking the negatives and five screens for viewing the positives for the sum of five guineas. This process is practically founded on the three-colour sensation theory, which was first propounded by Clerk Maxwell in 1861, and some of whose results are still to be seen at the Cavendish Laboratory, Cambridge. The ordinary method of producing such photographs is to use three coloured light fitters, and to make with them three negatives representing the primary colour sensations—red, green, and blue-violet, and positives from these negatives are either projected by means of three lanterns or viewed by the eye in a kind of stereoscope as has been placed on the market by the Krōmskōp Syndicate Company. Professor Joly, however, rules glass with very fine parallel lines of the three colours alternately, the positives being also viewed or projected through similarly ruled screens. He thus makes one negative do the work of three, as in the older processes. The results are extremely beautiful if not projected on too large a size by the lantern.

Acetylene, the New Illuminant, seems likely to be in considerable demand this winter, not only for the optical lantern, but also for studio work. Hess has pointed out that it is soluble in ammonia and water, and under pressure acetone will take up from thirty to thirty-five times its bulk of acetylene. Under increased pressure no less than two hundred and fifty volumes are absorbed, and metal flasks of a capacity of 5 litres have been made in which 1000 litres of acetylene can be readily stored without undue pressure, and on the liquid being drawn off by a siphon the gas is given off and the fluid may be returned to the factory to be recharged.

A New "Lichtpaus" Paper, or printing paper, has been placed on the market by the company which has acquired Schering's business. We have not, unfortunately, in English, any word which exactly expresses the meaning of "lichtpaus," but it is generally applied to those processes in most of which iron salts are used and which are employed by engineers and draughtsmen to copy their plans on. The new paper, which is called the Duplex-positive paper, is exposed for about three minutes in the sun under a drawing, and can then be either dabbed all over with a greasy turpentine ink, dried, and well washed, when the exposed part washes away, carrying with it the ink, and leaving the unexposed lines black and clear; or else it may be merely washed in water and the lines then blackened with gallic or tannic acid. From the nature of the paper it is obvious that an iron salt—probably ferric chloride—is used in conjunction with formaldehyde, the latter making gelatin insoluble in water, but on exposure to light in contact with the iron salt the formaldehyde is reduced and the gelatin becomes again soluble.

The Röntgen Rays have proved a valuable source of copy to the lay press, and curious and wonderful have been some of the reports received about their action, and what they would and would not do. The latest and most improbable story is that a Baltimore (of course U.S.A.) physician has been able, by placing an ordinary photograph on a plate and exposing the same to the action of the X rays, to obtain radiographs of the internal organs of the human body just as good as if the body itself had been there. Of course in the face of this the up-to-date physician will now merely sit at home in his laboratory, place photographs of his patients below the Crookes' tube, diagnose the case, and prescribe. But will the photograph pay the customary fees?

TRADE NOTES AND FOREIGN NEWS.

Manufacture of Calcium Carbide.—According to the *Chemical Trade Journal* the authorities at Geneva, Switzerland, who control the electric light plant at Vernier have decided to utilise the idle hours of their plant by manufacturing calcium carbide. The dynamos are driven by turbines operated by abundant water power, and in order to reduce manual labour charges, the pulverising of the coke, mixing the lime and carbon, and other operations are performed mechanically. From the time the crude material is received until it comes from the furnace but one man's labour is required, most of the operations being automatic. Special attention is paid to the use of good material in order to obtain a good product for the production of acetylene for car lighting. Each furnace will take 500 horse-power (6000 amperes at 57 volts), and are probably the largest used for the manufacture of calcium carbide. The daily production is expected to be about six tons, which can easily be increased.

German Sparkling Wines.—The largest champagne businesses in France have for some time been partly in the hands of Germans, and this fact, according to the British Vice-Consul at Cologne, has made it all the easier for German firms to manufacture sparkling wines to such perfection that they rank almost equally with French champagne, the same method of manufacture being adopted in Germany as in France, while the price of the German product is considerably lower than the French. In the manufacture of sparkling wines, all sorts of grapes can be used, but the early and late Burgundy and Klebroth are considered the best. They are pressed immediately upon being gathered, and the must is then put into casks to ferment. Then a number of different wines are mixed together, forming a *cuvée*, to ensure a larger number of bottles of one class, and bottling is proceeded with, each bottle of wine receiving a certain amount of sugar to produce a second fermentation, developing carbonic acid and alcohol. The bottles are placed in a cellar until the sediment forms at the bottom, which, however, takes several years, but when it is effected the position is altered, so that the sediment leaves the bottom and forms on the cork, frequent shakings of the bottle being necessary to accomplish this. When the sediment adheres to the cork the bottles are uncorked, the carbonic acid carrying off the sediment in the operation. A fixed dose of liqueur is given to each bottle, which are then filled up with wine and re-corked. A chief point in the making of sparkling wine is the preparation of the liqueur, upon which depends the characteristic properties of the wine, each sort requiring a special composition, according to the taste of the consumers and the price. The preparation of the liqueur is the secret of the manufacturers.

The Growth of Chemical Laboratories in Germany.—The first chemical laboratory established in Germany, according to a recent Blue Book, was that founded by Liebig in 1825 in the University of Giessen, he at that time having only nine students attending his lectures. This example was followed in 1840 by Bunsen in Marburg, by Wöhler in Göttingen in 1842, and by Erdmann in Leipzig in 1843. Towards the middle of the century laboratories were also established at Breslau, Greifswald, Heidelberg and Königsberg. While there are some very fine chemical workshops and laboratories in other parts of the world, no country seems to have paid so much attention as Germany to their construction from the point of view of the advancement of science, and within the last few years new buildings on the most perfect plan have been built in Freiburg, Tübingen, Giessen, Göttingen, Heidelberg, Kiel, Königsberg, Greifswald, Halle, Munich, Erlangen, Leipzig, and Jena. Some idea of the amount of money expended on these buildings may be gathered when it is known that the Kingdom of Prussia alone spent over £300,000 in one year on buildings for chemical research. This expenditure it is claimed has been of enormous benefit to German industry and trade, inasmuch as she now exports in large quantities numerous articles of commerce, such as potash, soda, saltpetre, sugar, and colouring stuffs, which a few years ago were imported from other countries. The moral of this story of the Blue Book is pointed out by the President of Queen's College, Cork, who thinks that the establishment of scientifically constructed and scientifically worked chemical laboratories in Ireland, in which young men should be taught to investigate scientific problems and not merely drilled for examinations, could not fail to bring about results similar to those science has produced elsewhere.

EXTRACTS FROM CONSULAR REPORTS.

Ginseng and Quinine.—The production of ginseng is the chief industry of Song-do (Corea). The country in the immediate vicinity of the city is given up almost entirely to the cultivation of the plant, which is highly esteemed as a tonic by the natives and also by the Chinese and Japanese. The seedlings are planted in rows in raised beds and are protected from wind and rain by a reed thatching some three feet in height. During the earlier stages of its growth the plant has to be frequently transplanted, and it requires from six to seven years to reach maturity. The ginseng gardens are from one to two acres in extent and are carefully fenced in, and in the centre an elevated mat-shed is raised for the watchman, who has to observe particular precautions as the plant reaches the later and more valuable stages of its growth.

"Red" Ginseng, so-called, is only made at Song-do, and is especially prepared for the foreign market. The roots of the plant are placed in wicker baskets, enclosed in earthenware pots with holes in the bottom, and then set over boiling water and steamed for a period of from one to four hours, according to the age of the plant. Two catties of the "white" or natural ginseng are required to make one catty of the clarified product.

The "White" Ginseng is largely consumed by the Coreans, who have the greatest faith in it as a cure for all forms of disease. It is generally consumed by them in the form of broth. The roots having been well stewed, the Corean epicure wraps a napkin round them, squeezes dry, and then drinks the juice.

Quinine, however, is superseding the use of ginseng amongst the natives, equally magical properties being attributed to it. The drug has been largely introduced into the country by missionary bodies, who reward the native disseminators of their religious literature by supplying them with quinine at cost price, so that they are enabled to live on the profits of its sale.

Pharmaceutist Immigrants to the Argentine Republic during the years 1894, 1895, and 1896, according to a table prepared by Consul W. A. C. Barrington, numbered 15, 10, and 19 respectively. The number of doctors was 11, 9, and 27, while the photographers seeking to establish themselves in the Republic numbered 17, 16, and 32. Immigrant apothecaries seem to have been most numerous in 1895, when 16 sought to settle in the country, being an increase of 7 on the previous year, but in 1896 there was a reduction of 5, the number being only 11.

The Number of Out-patients treated at the Seychelles Island dispensary decreased from 5916, in 1895, to 2368, in 1896, or less than half. The large diminution is said to be owing to a new system inaugurated two years ago by Administrator Stewart, whereby those persons applying for free treatment at the dispensary have to produce tickets from the police showing that they are unable to pay for medicines or medical relief. Up to the present the system is said to have worked well.

The Seychelles Vanilla Crop of 1896 was the largest that has ever been grown in the colony, amounting to 63,000 lbs., valued at about Rs. 936,000. The cultivation of vanilla in the colony dates back about twenty years, and is only now beginning to be thoroughly understood. The comparatively large output has given a fresh impetus to its cultivation, and a very large quantity has been planted. The Mexican system of allowing the vines to grow under trees nearly wild is at present in vogue, and is said to be a decided improvement on the old system of training the vines on artificial supports. The production of vanilla costs the planter Rs. 3 per lb., and the prices vary from Rs. 8 to Rs. 16 per lb. The average yield is about 200 lbs. an acre, and land can be bought at from Rs. 100 to Rs. 200 the acre. Administrator Stewart regrets that Seychelles is almost a *terra incognita*, because he believes the colony offers advantages not to be met with elsewhere for the investment of small capital of, say, about £1000.

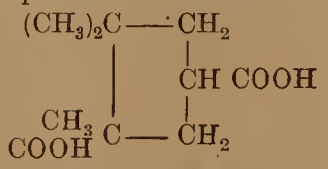
The Sulphur Production of the Island of Yezo (Japan) during 1896 amounted to 16,213 tons ; the output shows no decrease on the previous year, but the export from Hakodate, 7992 tons, valued at £22,649, is somewhat below that of 1895.

CHEMICAL SOCIETY.

At a meeting held on Thursday, November 18, at Burlington House, W., Professor DEWAR, President, in the chair, the minutes of the previous meeting were confirmed, and an official letter, conferring the honour of the Jubilee Medal upon the President, was read.—Professor DEWAR, after expressing the wish that authors should confine the reading of their contributions to fifteen minutes, announced a paper by A. W. Crossley, B.Sc., Ph.D., and W. H. Perkin, jun., F.R.S.,

ON THE DECOMPOSITION OF CAMPHORIC ACID BY FUSION WITH POTASH AND SODA,

Mr. CROSSLEY described the results of the experiments carried out, explaining the reactions from the standpoint of Perkin's formula for camphoric acid, which is—



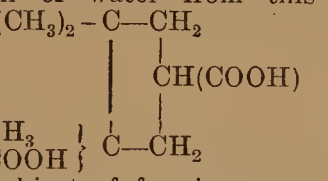
By fusion with potash no hydroxy-camphoric acid could be obtained, but a number of acids were formed, which by steam distillation were divided into two series. Among the volatile acids were acetic, iso-propylic, and iso-valeric. Attention was drawn to the interest attaching to the occurrence of the iso-propyl group among these products. Among the non-volatile acids, besides one or two the constitution of which was not determined, they obtained iso-propyl-succinic acid and an acid isomeric with camphoric acid melting at 119°-120°.—The next paper, by W. H. Bentley, B.Sc., and W. H. Perkin, jun., F.R.S., referred to the same subject, and was entitled

EXPERIMENTS ON THE SYNTHESIS OF CAMPHORIC ACID,

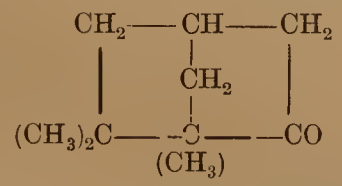
The attempts of the authors were directed to the preparation of a substance of the constitution ascribed by Perkin to camphoric acid, and with this object they prepared a substance of the following constitution :—

$$(CH_3)_2CH\text{-}CH_2\text{-}CH(COOH)\text{-}CH_2\text{-}C\begin{cases}OH\\CH_3\\COOH\end{cases}$$

It was hoped that by the elimination of water from this compound to obtain the substance—



but no substance having the properties of camphoric acid was obtained. Allusion was made to other experiments, one of which was the condensation of methyl acrylic ester with sodium methyl malonic ester, with the object of forming camphoronic acid. Discussion was invited upon both papers, taken together.—Dr. KIPPING, in criticising the paper, expressed the opinion that the facts did not favour Perkin's formula for camphoric acid.—Dr. FORSTER pointed out that if this formula be accepted for camphoric acid, then camphor must have such a formula as—



and it would be difficult to understand the production of cymene from it by the action of phosphorus pentachloride.—Mr. CROSSLEY, in replying, said it was somewhat unfortunate that this paper was read before the publication of Professor W. H. Perkin's work on sulpho-camphylic acid, which, he said, would go far to prove his formula.—A paper by FRANK CLOWES, D.Sc., and J. R. M. CAVEN, B.Sc., was then read. It dealt with

THE ACTION OF MAGNESIUM ON CUPRIC SULPHATE,

When magnesium is put into a copper sulphate solution the equivalent weight of copper is not thrown out, while a gas is evolved which is found to be hydrogen. The precipitate that occurs, moreover, is not copper but a basic cupric sulphate. Experiments were made at two temperatures and with solutions of two strengths. One temperature employed was the common temperature of the room, the other was that of the water bath, but care was taken not to boil the solution, as then a basic sulphate is always produced. A compound was obtained the analysis of which agreed with the formula $4CuSO_4,7Cu(OH)_2H_2O$, a substance previously described by Spencer Pickering. The hydrogen was collected by a special apparatus for the purpose; the magnesium was suspended by a silk thread over the liquid, and when the air became displaced by steam, was lowered into the liquid. During the reaction a green substance was produced, retaining the form of the magnesium, but at the end of the reaction it became a brown powder. By treating this with hydrogen chloride a colourless solution was obtained and metallic copper was left. The numbers obtained in several experiments were quoted; all these went to show that the hydrogen, cuprous oxide, and copper together represented the equivalent of magnesium used. For the estimation of the cuprous oxide a volumetric method involving the use of potassium permanganate was employed, but the details of this, although given in the paper, were, through lack of time, omitted from the reading. In the discussion following a member asked whether the purity of the hydrogen obtained had been tested.—Professor TILDEN commended the skill and care that had been given to this work, but deemed it scarcely worthy of so much attention. The only aspect of the subject that seemed to him of any interest the authors had left entirely unexplained, namely, "Why does not magnesium dissolve in a copper sulphate solution with the same readiness as zinc does?" On a little reflection it was easy to account for the production of the substances found. First, the magnesium displaces a quantity of copper, by which a magnesium copper couple is formed, and thus the hydrogen is accounted for. The magnesium hydroxide at the same time produced decomposes the cuprous and cupric sulphates, forming cuprous oxide and basic cupric sulphate. The explanation wanting was why magnesium alone should behave in this way. Professor Tilden stated, moreover, that these results had been arrived at already by certain other workers, and Dr. Gladstone had shown that in the gases produced by the action of magnesium on nitric acid there was a considerable amount of hydrogen.—Professor CLOWES explained that a more complete explanation in the printed paper would justify its publication. The same behaviour was shown also by zinc in a smaller degree, and, in reply to the question asked, it was stated that the hydrogen obtained was quite pure.—Mr. J. H. FENTON, M.A., next read a paper on the

PROPERTIES AND RELATIONSHIPS OF DIHYDROXYTARTARIC ACID.

By the oxidation of dioxymaleic acid with bromine the author has been able to obtain the acid in large quantities with ease, and was, therefore, led to undertake a new determination of its properties. At the outset he found that the melting point was 115° instead of 98°, and that no water was lost upon heating. Just as the sodium salt goes into sodium tartronate upon heating, the acid itself gives tartronic acid, and this constitutes an easy and convenient method of getting the latter. In order to throw light upon the constitution as to whether the acid must be represented by the

tribasic formula $OH\cdot C\begin{cases}COOH\\COOH\\COOH\end{cases}$, or the formula—

$$COOH\text{-}C(OH)_2\text{-}C(OH)_2\text{-}COOH,$$

titrations with alkali had been made; using phenol phthalein the author had found the acid approximately tribasic, but with methyl orange and sodium carbonate it came out dibasic. There were several possibilities, either replacement in the hydroxyl groups might take place, or the acid might be tribasic with analogy to phosphoric acid, or again, there might be a decomposition of the acid into carbon dioxide and tartronic acid. The last was found to be the case, the sodium salt being less stable than the acid itself, and when a small quantity of soda insufficient to neutralise the acid was added, it had the somewhat curious result of causing the evolution of carbon dioxide. When the titration was carried out at zero, normal results were obtained, the acid being strictly dibasic; only with the use of baryta water were the results slightly too high. The question whether dioxytartaric acid could be reduced to dioxy maleic acid was then attacked. The reduction was effective, but instead of dioxy maleic acid a fumaric form was obtained. The attempt was also made to dehydrate the acid by means of hydrogen bromide, when again a fumaric form of the acid was produced, while the distillate was yellow from the presence of bromine, and it was found that the reaction

$$C_4H_4O_6 2H_2O \quad + \quad Br_2 \quad = \quad C_4H_6O_8 \quad + \quad 2HBr$$

is reversible, and the remarkable fact taking place of the oxidation of hydrobromic acid by dioxytartaric acid.—Professor TILDEN inquired whether the conductivity or other physical properties had been determined. It seemed that an acid containing so much oxygen ought to be strong; in reply to which question Mr. FENTON

said the acid appeared to be very weak and the salts unstable, because so much ionised. He hoped shortly to make determinations of the physical properties.—The PRESIDENT then announced that as there was time to spare, another paper—not down for reading—would be heard, and called upon Mr. HOLLAND CROMPTON for his paper on—

THE MOLECULAR ASSOCIATION OF LIQUIDS AND OSMOTIC PRESSURE.

Mr. Crompton dealt briefly with controversial points that had been raised with regard to a paper of the above title which appeared in a recent number of the 'Transactions of the Chemical Society.' His discussion was entirely confined to mathematical considerations of the subject.—The meeting was then adjourned to December 2.

THE WORLD OF PHARMACY.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

A meeting of this Association was held at the Exchange, Stephenson Place, Birmingham, on November 17, under the presidency of Mr. H. JESSOP, when Mr. A. WATHES read a paper entitled

FOR AND AGAINST STANDARDISATION,

and gave the following results of investigations he had carried out:—

	No. of samples examined.	Highest.	Lowest.	Variation amongst themselves.
		Per cent.	Per cent.	
Acidum hydrocyanicum dilutum	5	2·29	1·68	·61 p.c. hydrocyanic acid
Extractum cinchonæ liquidum	4	4·20	3·10	1·1 p.c. alkaloids
Injectio morphinæ hypodermic.	5	4·03	3·58	·45 grains morphine in 1 fl. drm.
Liquor arsenicalis	5	·970	·847	·123 p.c. arsenious acid
,, arsenici hydrochloricus	4	·980	.863	·118 p.c. arsenious acid
,, calcis chlorinatæ	3	2·5	·46	2·04 p.c. avail'ble chlorine
,, calcis saccharatus	5	2·15	1·23	92 p.c. calcinum oxide
,, ferri dialycatus	5	4·94	3·31	1·63 p.c. ferric oxide
,, ,, perchloridi fortior	5	15·8	14·40	1·4 grain ferric oxide in 1 fl drm.
,, potassæ	5	6·56	5·60	·96 p.c. potass. hydrate
,, sodæ	4	5·26	4·16	1·2 p.c. sodium hydrate
,, sodæ chlorinatæ	5	4·19	·02	4·17 p.c. avail'ble chlorine
Syrupus ferri iodidi	5	3·5	3·1	·4 grains iodide of iron in 1 fl. drm.

In the discussion which followed, and in which Messrs. F. H. Alcock, F.I.C., H. S. Shorthouse, H. Lawton, F. Casson, J. Selby, and E. Osborne took part, Mr. WATHES explained that the samples were all purchased from first-class wholesale houses in the metropolis and the provinces, and might be regarded as typical samples. While he fully agreed with standardisation wherever it could be satisfactorily applied and properly carried out, yet he thought the above state of things practically proved it to be totally disregarded in many instances. He thought it would cause hesitation in recommending the standardisation of those drugs which took more time, skill, and costly apparatus in the assay.—Mr. ALCOCK said that some of the processes in the B.P. were misleading, and if the method of procedure were followed it would not give a correct result. Something more accurate on the subject of standardisation would be welcomed. Every preparation should be checked, and the strength marked on the bottle, and if a chemist could not make his simple syrup and lime-water he should take care they were of proper strength. Replying to a question as to the method he would suggest for estimating opium, he said that the morphia should not be precipitated but dissolved by means of acetic ether or some such menstruum. As a rule he recommended liquid to be dissolved in preference to precipitation.—Mr. WATHES said that he had estimated the morphine in the hypodermic injection by precipitation, and saturated morphine water. Votes of thanks were passed to Mr. Wathes for his paper, and to the Chairman for presiding.

MEETING OF DERBY CHEMISTS.

A meeting, organised by the P.A.T.A. to discuss the anti-cutting movement and the advisability of forming a local association, was held at the Royal Hotel, Derby, on Thursday, November 18. Amongst those present were Messrs. Dawson, Cope, Heath, Jones Hoare, Warrington, Pembleton, Harvey, Hefford (of Derby), Meyer, C. A. Bolton, Gascoyne, Eberlin (representing Notts.' Chemists' Association), and Mr. W. S. Glyn-Jones. The chair was taken by Mr. COPE, who said the question was important to them all. He had come to hear a description of the aims and objects of the P.A.T.A. He was strongly in favour of a local association.—Mr. W. S. GLYN-JONES spoke as to the aims and objects of the P.A.T.A., urging that the only effect of the recent opposition to their movement by the "cutters" was to strengthen their hands. Chemists were finding out that the Association was really hurting the cutters, and accepted that as evidence of their power, and were going more rapidly than ever. He urged them to form a local association. Such would be useful to rub off corners, besides taking up practical subjects for concerted action. It would be useful also for the Pharmaceutical Society as a means of ascertaining the views of local trade upon a new Pharmacy Bill or other important matters. The Pharmaceutical Society was always stronger where a good local association existed, and so it would be with the P.A.T.A.—Mr. C. A. BOLTON was glad to meet the Derby chemists, and hoped they would form a local association; great good had been derived by them at Nottingham from their association, which had been started in 1868. They at Nottingham had strongly supported the P.A.T.A., and had no reason to regret such support.—Mr. GASCOYNE also spoke in support of the P.A.T.A. and local organisation, as did Mr. Eberlin, the Secretary of the Nottingham Association, who advised them not to have too many meetings and always to have a good agenda for discussion.—A general discussion followed, in which most of those present took part, each speaker supporting the two objects for which the meeting had been called together.—A resolution in support of the P.A.T.A., and urging all proprietors to support it, was passed.—The meeting also decided to form a local association for Derby and district. The Derby chemists present were constituted into a provisional committee, with Mr. Dawson to act as convener.

SCHOOL OF PHARMACY.

Chemists, wholesale and retail, masters and assistants, together with students past and present, to the number of about 300, assembled in the Crown Room, Holborn Restaurant, on Tuesday last, at the Annual Smoking Concert, held under the auspices of the Pharmaceutical Football and Cricket Club, Professor J. NORMAN COLLIE, PH.D., F.R.S., in the chair. Amongst those present were Messrs. C. B. Allen, M. Carteighe, W. Warren (Members of the Council of the Pharmaceutical Society), A. E. Tanner (Examiner), E. N. Butt, F. H. Lescher (Auditors), C. W. L. Flux (Solicitor), G. Lansdowne (Surveyor), R. Bremridge (Secretary), T. Morley Taylor (President, C.A.A.), E. J. Eastes, J. W. Bowen, Rogerson, Weston, E. W. Hill, J. O. Braithwaite, Storey, Motley (Yokohama), Webb, T. H. Bateman, G. S. V. Wills, F. W. Short, J. S. Ward, Dr. B. H. Paul, Dr. Lapworth, Professor H. G. Greenish, and many others. On taking the chair Professor Collie expressed regret at and explained the reason of the absence of Mr. Walter Hills, the President of the Pharmaceutical Society, who was unable to be present.—A capital programme was then proceeded with, the artistes being for the most part well-known professionals, the only exception being in the case of Mr. James Epton, a "Square" man, who gave a banjo solo with good effect. After a short interval Mr. H. E. MATTHEWS, on behalf of the Pharmaceutical Football and Cricket Club, thanked Professor Collie for taking the chair that evening, and complimented him on the excellent manner in which he had fulfilled the office. He also referred to the keen interest that Professor Collie manifests in all that concerns the students at the "Square," not only in regard to work but in athletic and social matters generally; he was not simply a distinguished scientist but also a distinguished sportsman, and by his conduct in the chair on that occasion had almost gained the right to be called a distinguished chairman of a smoking concert. He (Mr. Matthews) asked all to be upstanding and to drink the health of the Chairman.—This toast having been drunk with musical honours, Professor COLLIE replied. He thanked all for the hearty way in which they had received the toast, and

assured them of the great pleasure it had given him to be present to take the chair on that occasion. The entertainment was a good one, and the good-fellowship was quite as good and enjoyable as the entertainment. As for his interest in the Football Club it was considerable; he had only just entered into the life of it, but he was very pleased with the life of the Club. He then went on to speak of the complicated problem of life and the necessity for teachers of science to remember that there is a human side of it. He was afraid there is a tendency on the part of scientific people to wrap themselves up entirely in their sciences and to neglect to acquire a knowledge of general information, the lack of which sometimes caused people to regard the most eminent scientists as men who know nothing. Professor Collie then gave an amusing case in point that happened recently to a party of learned British gentlemen visiting another continent.—Professor Collie then proposed a toast to the secretaries who had so kindly got up the concert. He coupled with the toast the name of Mr. T. E. Lescher, who, he remarked, had worked extremely well for the success of the evening's entertainment, as had also the other stewards.—Mr. T. E. Lescher thanked the Chairman for his kind remarks, and said that the secretaries, remembering the success of the previous year's concert, felt great diffidence in undertaking the work, but they had been well supported, and he particularly wished to thank the members of the retail and wholesale trade who had so generously supported them, and helped to bring the concert to so successful a issue.—Mr. Lescher then proposed the toast of the Pharmaceutical Football and Cricket Club.—Mr. J. Day, the Captain of the Football Team responded, with a bright and concise speech, in which he clearly showed that they are this year upholding the traditions of the "Square," referring more particularly to the match of Saturday, November 20, when the team met and made a draw with the Hon. Artillery Company's Team. The remainder of the programme was then gone through, and a very enjoyable "Smoker," the success of which was largely due to the untiring efforts and organising powers of Mr. Lescher, was concluded about 12 o'clock by the singing of "God Save the Queen."

EDINBURGH CHEMISTS' ASSISTANTS' AND APPRENTICES' ASSOCIATION.

The second meeting of the twentieth session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, November 19, at 9.15 p.m , Mr. George Sinclair, President, in the chair. A paper was read by Mr. Archibald Currie on—

The Ethics of Pharmacy,

but he commenced by remarking that pharmacy has no ethics. By that he meant that there are no generally recognised principles or rules of action on which one may base his conduct. Many pharmacists have a high code of ethics of their own, and to those all honour is due. But for a great part pharmacy is a chaos of conflicting interests—many of them self-interests. It was urged that a pharmacist ought to know his business thoroughly, beginning by laying the foundation of a good general education. With regard to his obligations to the public, they look, and with reason, for purity of material, accuracy of manipulation, and special knowledge, so that the danger to the public from the many powerful drugs he handles and dispenses may be minimised, and the abuse of certain poisons avoided. The toilette and perfumery department may form an elegant, pleasant, and profitable adjunct, but it should not usurp the place of more legitimate business. Then the stocking of "patents" might be a necessary evil, for as a man of business the pharmacist must keep what the public ask for; but, as they valued their professional standing, they should not obtrude them on the public notice. The pharmacist ought also to satisfy himself of the purity of his drugs, and to carry out intelligently and conscientiously the doctor's intentions in dispensing prescriptions.—Mr. J. Rutherford Hill then read a paper entitled—

What is a Poison?

After treating of the origin and derivation of the word poison, which apparently comes through the French from *empoesoun* or *pouison*, a word of very indefinite application, employed in Brittany, reference was made to the difficulty experienced by compilers of dictionaries in giving clear, explicit, and entirely satisfactory meanings of the term "poison." The same vagueness meets us when the term is employed in legal phraseology, though when we come to the use of the word in what may be called pharmacy law there is no difficulty whatever, as Clause 2 of the Pharmacy Act, 1868, says "The several articles named in Schedule (A) shall be deemed to be poisons within the meaning of this Act." The question as to their being poisonous or calculated to destroy life simply does not arise here, as it does in all other circumstances, and although it might possibly be proved that substances in the Schedule were perfectly innocuous, they would nevertheless be poisons within the meaning of the Act. On the other hand, a highly noxious substance, like, carbolic acid, is not a poison, simply because it has not yet been named in the Schedule. Then we have substances like liquid extract of ergot, which may be swallowed in large quantities without poisonous effects, but is included as a means of preventing crime. In Ireland ether has also been scheduled, as a means of arresting the local public evil, the ether tippling. In pharmacy law, then, it is easy to give an absolute and unmistakable and perfectly definite answer to the question "What is a poison?" At the same time, it has been very difficult to get this idea into the legal mind, which constantly and persistently asks the wholly irrelevant question, "Is this substance poisonous or calculated to destroy life?" The policy of the Act, 1868, is to protect the public by absolutely restricting in any quantity the sale of certain named substances to the public to the hands of registered chemists. Of course, it has to be admitted that there might be a quantity of scheduled poison so small that the Court would treat it as not existing at all. That is to say, it would be infinitesimal, and would come under the legal designation of *de minimis non curat lex*, so small that the law does not regard it. But this principle ought not to apply in any case where the presence of the substance can be clearly ascertained by the ordinary chemical and physical tests. Every chemist knows that where a substance is present in such quantity as to respond unmistakably to such tests it is present in more than an infinitesimal quantity, and therefore the principle of *de minimis non curat lex* does not apply.—Mr. J. Rutherford Hill next read a paper on—

Seidlitz Powders.

The name seidlitz, he said, is assumed by some writers to have been derived from the town seidlitz, in North Bohemia, where there is a saline spring which, one writer says, yields a water of similar composition to that of an ordinary seidlitz powder! That this is incorrect is manifest when we know that the natural seidlitz water salt contains about 84 per cent. of magnesium sulphate and 16 per cent. of sodium sulphate. Christison makes the probable suggestion that seidlitz is a corruption of Seignette, an apothecary in Rochelle, who in 1672 discovered a method of making tartrated soda by a process kept secret till it was discovered by Geoffroy in 1731. Hence this salt was called Seignette's or Rochelle salt. Martindale and Maben, in 1884, and Hoseason, in 1889, drew attention to the great variation in the composition of these powders as usually met with in commerce. To get rid of this undesirable variation an official formula was given in the Additions to the Pharmacopœia, 1890. The standard fixed was Rochelle salts, 120 grains; bicarbonate of soda, 40 grains in the blue paper, and tartaric acid, 38 grains, in the white paper. Recently a number of seidlitz powders came into my possession, and I have examined them to see how far they comply with the official standard. The results show that in these cases at least there is no improvement, and the fixing of a standard seems not to have had any effect at all. The following are the results of nine ordinary seidlitz powders and eleven double strong seidlitz powders:—

Ordinary Seidlitz.

Weight in grains.	Alkaline powder.	Tartaric acid.	Soda bicarb.	Rochelle salt.	Sugar.
B.P. standard ..	160	38	40	120	—
1	178	32	36	124	18
2	195	43	49	146	—
3	228	41	22	206	—
4	217	47	26	191	—
5	194	57	48	112	34
6	128	42	26	102	—
7	201	50	50	151	—
8	162	37	40	122	—
9	206	36	31	135	40
Average.....	190	43	36	143	30
Highest.....	228	57	50	206	40
Lowest	128	52	22	102	18

Three samples contained sugar, which was estimated by difference.

Double Strong Seidlitz.

Weight in grains.	Alkaline powder.	Tartaric acid.	Soda bicarb.	Rochelle salt.	Sugar.
1	447	27	94	353	—
2	316	37	79	237	—
3	340	43	51	289	—
4	218	52	55	163	—
5	274	29	41	233	—
6	282	32	42	240	—
7	256	30	77	128	51·
8	288	46	58	230	—
9	288	54	58	173	57·
10	316	53	52	221	43·
11	300	55	75	225	—
Average	302	41	62	227	—
Highest	447	55	94	353	—
Lowest	218	27	41	163	—

These results speak for themselves. No. 8 of the ordinary seidlitz is the only one that fairly answers to the official standard, and it seems to have been weighed, while the others were probably made by using a seidlitz measure, and even that must have been carelessly done. Some of the samples were swectened, as shown, with sugar. Of the double strong powders only one, No. 6, approached what is the generally acccpted standard, that is double the official quantity of Rochelle salt. No. 2 and 3 of the "double" powders contained appreciable quantities of lime, and had apparently been made from inferior cream of tartar. It is, perhaps, proper to add that with one exception the samples were got from so-called doctor's shops. Judging from the class of employés in charge of such places, it is highly probable that many of them are quitc ignorant of the fact that an official standard for these powders exists. This is but another evidence of the highly unsatisfactory condition of things pharmaceutical that prevails throughout the whole system of these places, and is an additional proof that pharmacy should be in the hands of pharmacists, not so much in the interests of chemists and druggists, as in the wider interest of public welfare and safety.

Late Flowers.

Mr. Hill also exhibited flowering specimens of *Ulex europœus*, *Geranium pyreniacum*, *Sonchus oleraceus*, *Stellaria media*, *Achillœa millefolium*, *Senecio viscosus*, etc., gathered on Arthur Seat, as evidence of the unwonted mildness of the season. He also mentioned that last week a crop of raspberries was gathered in a garden at Ardrossan in Ayrshire. Also that in Dean Cemetery, Edinburgh, there were to be seen some very fine specimens of mistletoe, *Viscum album*, growing on a species of Hawthorn. He also exhibited seedling plants of *Ulex europœus* showing cotyledons, ternary leavcs, and gradual transition to subulate leaves. The roots of the seedling plants bore many nodules of the nitrogen fixing bacteroids so common on roots of leguminous plants. A week ago *Stellaria graminea* was in full flower on Arthur Seat, but a single night with 7 degrees of frost had completely destroyed the delicate flowers.

NEWCASTLE-UPON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

A special meeting of this Association was held in the large hall of the Church Institute, Hood Street, Newcastle, on Wednesday evening, November 17, at 8 o'clock, when Mr. W. Lamond Howie, F.C.S., pharmaceutical chemist, London, gave his famous lantern lecture, "From Mont Blanc to the Matterhorn."—Professor Oliver, M.D., of Durham University College of Medicine, was in the chair, and in a few appropriate remarks introduced Mr. Howie. The lecture was not a public one, and climatic conditions were anything but favourable, yet members and their friends to the number of about four hundred responded to the Hon. Sec.'s circular. A representative company of pharmacists from the sister association in Sunderland was present by invitation, and included Mr. Chas. Ranken, F.C.S., President, and Mr. R. H. Bell, Hon. Sec. Apologies regretting inability to attend were sent by Messrs. N. H. Martin, Newcastle; John Harrison, Sunderland; J. P. Gibson, Hexham; J. H. Riddell, Hexham; and others. The lecture consisted of some 130 slides, and represented every type of Alpine scenery. The lecturer commenced in the French Alps, and by way of Mont Blanc brought his audience into Italy, and visited in turn Aosta, Milan, and the Italian lakes. The views of Milan Cathedral, if it were possible to specialise, were the best of the series. The tour finished up with the Matterhorn and a selection of views of Swiss scenery. The splendid scenic effects were contributed to in no small degree by Mr. John Watson's manipulation of the lantern. —Mr. Ranken, in moving a vote of thanks to the lecturer, expressed his gratification at the literary and artistic treat which his Newcastle brethren had afforded him in giving him an opportunity of being present at Mr. Howie's lecture.—Mr. A. Ernest Owen, sen., Vice-President, seconded, and after a few eulogistic remarks by the Chairman, the vote was carried with acclamation. A vote of thanks to Dr. Oliver for his kindness in taking the chair, moved by the Secretary, Mr. G. F. Merson, and seconded by Mr. T. Maltby Clague, President of the Association, closed the meeting.

MEETING OF SCARBOROUGH CHEMISTS.

A meeting of local chemists was held at the Albemarle Café, Scarborough, on Monday afternoon last to discuss the P.A.T.A., and also the advisability of forming a local association for the town and district. The meeting was highly representative, and Mr. John Whitfield was voted to the chair. He said it gave him great pleasure to meet so many of his fellow-craftsmen, and trusted it would not be the last time they would so meet. They were met to discuss an important subject that concerned the remuneration they received for handling a large proportion of the goods they sold. Proprietaries were undoubtedly increasing, and it appeared to him to be degrading that a body of men, who were supposed to be educated and enlightened, should sell their services so cheaply. He was glad to see that the P.A.T.A. was making a stout fight, and that chemists were evidently making themselves felt. He trusted, however, that no amount of profit would tempt them to encourage the sales of anything essentially of a quack nature, and as such often worthless, if not injurious. He called upon Mr. Glyn-Jones, who gave an exhaustive address as to the history of the movement. He urged that the good work already accomplished could be largely increased, but only in proportion to the amount of support received from the retail trade. He was glad to say that the only result so far which had followed the almost hysterical utterances of some of their opponents was a closing in of their own ranks. The Association had received almost more additions to their membership during the last week than in any similar period before, and it is evident that attempts made by the big cutters to create discord, and, if possible, a feeling of distrust amongst P.A.T.A. members and the trade generally, had only resulted in confirming their friends in their belief that a movement which hit the cutters so hardly, and which brought from that quarter so much bitter opposition, was, for that very reason, a movement deserving the fullest support of the trade. He laid particular stress upon the point that proprietary articles did not necessarily mean patent medicines, but that the term indicated the whole range of toilet and invalid preparations, mineral waters, and other goods, in which every pharmacist, however high-class his business, was concerned. He then urged the advisability of forming a local association for the district. He was anxious to see the drug trade well organised for the purposes of trade protection. Such local organisation did much to create an amicable feeling amongst the local chemists. It would be of the greatest assistance to the Pharmaceutical Society, and he always found that P.A.T.A. work was better done in towns where an association existed than elsewhere.—Mr. Cross then moved:—

> "That this meeting of the chemists of Scarborough and district expresses its strong approval of the aims and objects of the Proprietary Articles Trade Association, and urges upon all proprietors the advisability of their co-operating with the movement."

He said he had determined to give pioneer cutters no quarter. He would in future sell all proprietaries at bottom prices, except, of course, P.A.T.A. articles. The cutters would then find they could not cut his prices, and he was sure that if every chemist adopted the same course proprietors would soon join the P.A.T.A., for if no one made a profit on the article all would oppose its sale.—Mr. Foster seconded the resolution, but did not agree with Mr. Cross when he said the right thing to do was to cut. He thought they ought to sell nothing unless they made a fair rate of profit. As to the local association, he was sure such an organisation would foster a more friendly feeling amongst them.—Mr. Longdon thought that Mr. Cross was being misunderstood. He believed that it was not that gentleman's intention to cut below other traders, but not to be under-

sold.—Mr. CHAPMAN spoke in favour of the P.A.T.A. He was a great believer in combination, and was a member of the Council of the defunct Chemists' Association, which ought never to have died out. He said that if even the 3000 retail members of the P.A.T.A. were to refuse to stock any particular article it would soon have a marked effect upon the attitude of proprietors.—Mr. CLARE said he would be pleased to support the movement, and to help in the levelling up of prices rather than the levelling down. —Mr. GEO. WHITFIELD referred to the advertisement of the Sanitas Co., and urged those who had not already replied to that advertisement to do so.—Mr. RICHARD REYNOLDS, who was cordially received, said it gave him the greatest pleasure to meet the Scarborough chemists upon such an occasion. He sympathised with both objects the meeting had in view. They at Leeds, about twelve months ago, decided to support the P.A.T.A., and they were still as enthusiastic in its favour. As far as the retail trade was concerned he considered that it would be their salvation. He instanced the restrictions which were placed upon the price charged to the trade for iodine preparations, etc., and said that we might learn from others all round the value of co-operation in securing living profits. He hoped they would form a local association. The new Pharmacy Bill would soon be before the trade, and it would be of great advantage if it could be discussed at meetings of chemists locally.—Mr. BIRCH stated that he had very effectually reduced his sales of several important proprietaries, and was selling in their places articles upon which he made a profit.—Mr. JOHN WHITFIELD said it would be as well to have a resolution passed as to the local organisation. There had been a local association in Scarborough many years ago, and he had acted as its secretary. The commencing of the cutting tactics he thought was responsible for the decease of the former association, but he hoped that, now there was so much cause for combination, a Scarborough Chemists' Association would be formed.—Mr. LONGDON moved, and Mr. HILL seconded, that a local association for Scarborough and district be formed. This was unanimously carried, and the following gentlemen were requested to take the necessary steps to form an Association:—Messrs. Chapman, Clare, Cross, Gilchrist, Longdon, and Mr. Geo. Whitfield, the latter gentleman to act as Convener. Mr. Gilchrist was appointed by the meeting to act as Hon. Local Secretary for the P.A.T.A. As a result of the meeting every firm of chemists in Scarborough is now connected with the P.A.T.A.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

A well-attended meeting of this Society was held on Wednesday evening to afford the members an opportunity of expressing their opinions on the projected Pharmacy Bill. Mr. G. SQUIRE, President of the Society, occupied the chair, and there were also present Mr. G. T. W. Newsholme, Mr. J. B. Pater (Hon. Sec.), Mr. W. Ward, Mr. H. Antcliffe, Mr. S. Rhoden, Mr. Kirkby, Mr. H. Ibbitt, Mr. J. F. Eardley, Mr. J. Dale and Mr. J. P. Gambling, Mr. J. Preston, and others.—The PRESIDENT said the meeting had been called to consider the advisability of amending the Pharmacy Acts. The Council in London had for some time thought that something should be done in regard to an amendment, and he believed a favourable opportunity had now come to draft some Bill for presentation to Parliament. Several attempts had been made to amend the Pharmacy Act of 1868, and the last was in 1888, when the Curriculum Bill was presented, but thrown out, chiefly owing to the apathy of the chemists of the country. Now, he was glad to say, there was a wave of enthusiasm passing over the country, and the local associations seemed to be taking up the matter with great vigour. Numbers of amending clauses had been suggested. Some seemed to think that because the Council had decided to go to Parliament it ought to go in for a big Bill, and try and put an end to all the grievances of the craft, and so make pharmacy an El Dorado. That he did not think advisable. It would be better to go to Parliament with a Bill of one or two clauses than with one of half-a-dozen; some of which would most likely provoke opposition, and perhaps involve the rejection of the whole. If something were obtained, however little, it would open the way to a demand for more in a year or two. Let the Council go slowly, pegging away with a body of staunch supporters at its back, and no doubt they would get from Parliament many of the things needed by chemists. The first of the proposed amendments dealt with the consolidation of the Society. Every person on passing the Minor examination ought to be eligible for election as a member of the Pharmaceutical Society; that was the great thing. To make associates equal to members would draw more members to the body, and would be the means of strengthening the Society and its work. Each person who had passed the Minor would then be eligible for a seat on the Council, just as those were who were in business before 1868. The second subject to be dealt with was that of apprenticeship. It had been suggested, and he agreed with the suggestion, that it should be compulsory that three years should elapse between the registration of a student and his presentation for the Minor examination. That would be a great advantage to the students; it would induce them not to drift and put off the Preliminary until they grew too old, and would prevent them going to swell the ranks of the unqualified assistants who had built up the Stores. Those two clauses were, he thought, sufficient for the present. Many other clauses have been suggested, and some of them had his sympathy, though he did not think it would be wise to add them to the Bill. There was the subject of the curriculum. The Council of the Sheffield Society had dealt with the question of elementary examination, and something had been done regarding it. It had been suggested that a conference should be held of delegates from local associations, to consider some scheme by which locally elementary pharmaceutical education could be put on a more substantial basis. That would tend towards a curriculum. It was not known what would be decided as to the system of education to be pursued, but it was greatly to be desired that a conference should be held. It was also suggested that all members of the Society should be exempted from jury service. That was a large order, and he did not think the House of Commons would entertain it, for it would take a great number of eligible and competent persons off the jury lists. As to a distinction between the title of those who had passed the Minor and those who had passed the Major, he was in favour of that; and if the title of Member of the Pharmaceutical Society was not considered sufficient for those who had passed the Major, then he thought the title of "Fellow" would take a lot of beating.—The PRESIDENT then read over the Plymouth suggestions, which he had been discussing, and concluded by moving the following resolution:—

> "That in the opinion of the chemists of Sheffield and district it is advisable that the existing Pharmacy Acts be amended, and that the Council of the Pharmaceutical Society of Great Britain be requested to formulate a Bill for presentation to Parliament at the earliest opportunity, to amend such Acts as follows:—1. That all persons on passing the Minor examination be eligible for admission as members of the Society. 2. That the present name of student be continued, and that a term of three years should elapse between registration as a student and presentation for the Minor examination, and that the term registration shall mean the date of acceptance by the Pharmaceutical Society of the student's certificate of having passed the First examination or one taken in lieu thereof."

Mr. EARDLEY formally seconded the President's resolution, and the discussion was opened by Mr. WARD, who agreed that it was time something was done. Personally, he would like to sweep away the Act of 1868 altogether, and go in for a new Act, but he recognised the force of what the Chairman had said about not trying for too much at once. Such various interpretations had been put upon the 1868 Act that one hardly knew what to believe and what not to believe. It was, he agreed, necessary to consolidate the Pharmaceutical Society of Great Britain. If that had been done thirty years ago the profession would not have been landed into its present dilemma. It was greatly to be deplored that the profession had no direct Parliamentary representative, but how to get one he was not prepared to say. As regarded the Preliminary examination he was not prepared for making the candidate who had passed that an associate. Why not keep him as a student? The Preliminary had nothing to do with pharmacy; it was merely academical, and it would be better for those who had passed it to be considered only as students. He was thoroughly in favour of making Minor men members of the Society. Personally he saw no objection to admitting them as pharmaceutical chemists. At any rate the passing of the Major examination should imply fellowship of the Pharmaceutical Society. The three years' studentship ought, in his opinion, to include a compulsory curriculum. He did not think the craft would be able to get rid of the obnoxious jury service, but at the same time the relief was worth trying for. A law ought to be passed dealing with companies, who should be prevented by law from trading on the qualifications of other men, and so from participating in the profits of a trade which depended upon these men's qualifications. —Mr. PATER agreed with the suggestions of the President, but, like Mr. Ward, was of opinion that an entirely new Act was

needed. To try for too much, however, would be equal to courting failure. Before anything heroic could be attempted there would have to be a large increase of the membership, and on that account especially he was in favour of the admission of Minor men as members of the Pharmaceutical Society. It was striking a deadly blow at the Council, or at any rate it was paralysing the efforts of that body, if local associations would not give it their support in a matter like this.—Mr. WARD, supplementing his previous remarks, advocated the dividing of the Minor examination into two parts, one to be taken at provincial centres by written papers, the other, practical, in London. That would facilitate the passing of the examination, and should tend in the desired direction of increasing the membership of the Pharmaceutical Society.—Mr. J. PRESTON thought the question of making Minor men members was principally interesting to associates. It was said that the difficulty could be overcome by associates passing the Major; but he was afraid the Major examination of the past and the Major examination to-day were two very different things. It was to the interest of the younger men to take up this question, and he hoped they would fight manfully for an improvement in their position. In his opinion it was an injustice to associates that they should be left out of the Society, as it were, because they had not passed the Major; they might even be made eligible for offices and practical membership of the Society without taking the name of member or the style of "pharmaceutical chemist." On the suggestion of Mr. Preston, the discussion was confined to the first clause of the proposed resolution, viz., that referring to membership, and a motion in favour of this clause was introduced by Mr. EARDLEY.—Mr. G. T. W. NEWSHOLME seconded, and, speaking of previous Bills, said they had failed because they were overweighted with controversial matters. Ten years ago he went on the Council with the desire of getting Minor men made eligible for membership, and he found all his colleagues on the Council equally in favour of it. The Minor examination gave the legal qualification of a chemist and druggist, and conservative though he was, he thought that ought to be recognised by the Society. To-day there were 1600 pharmaceutical chemists who were members of the Pharmaceutical Society, 580 members who were chemists and druggists in business before 1868, 1620 associates in business, and 900 not in business. That was a very small total out of the 15,560 chemists in the craft. If all of those who had passed the Minor were at the back of the Council, or were admitted as members of the Society, a very large amount of good could be done. He thought they ought to be satisfied with agreeing on this point alone, as the other amendments suggested, however desirable, were small matters in comparison with the consolidation of the Society. To secure that, let other things be dropped, and let the local associations amalgamate to bring pressure on their local members of Parliament. That was the desirable thing. There was needed a simplification of title. At present there were too many varieties of description, and the consolidation of the Society on the lines suggested would enable that simplification to be made.—Mr. WARD thought Messrs. Eardley and Newsholme's motion did not go far enough, and he moved an amendment in favour of membership of the Society, on the lines suggested, being made compulsory for all persons passing the Minor examination.—Mr. IBBITT: Is the fee to be compulsory too?—Mr. WARD: Things would go on as they are.—Mr. IBBITT thought that in that case a title should be granted to pharmaceutical chemists, distinguishing them from companies altogether. His aim was that the qualification should be personal. He seconded Mr. Ward's amendment.—Mr. ELLINOR thought that the existing Act was sufficient, and that no amendment was needed. What was required was that all apprentices, all assistants, all registered chemists and druggists, and all pharmaceutical chemists should join the Society. Until, in that way, the membership of the Society was very largely increased, the craft could not expect much consideration from Parliament. Any demand in that direction on the part of the Society was always met by the question, How many do you represent? and then, of course, all the efforts were ignored. He agreed that all associates should be made members, but an Act of Parliament would be required for that. The first thing was to get more people into the Society in the way now open to them.—Mr. NEWSHOLME thought it would not be desirable to add the word "compulsory." Surely this was not the age in which to try to force people to join any organisation.—Mr. PRESTON thought the aim of the proposition was to remove a disability, not to impose one; why, then, make membership compulsory?—Mr. EARDLEY thought compulsion would be a good thing, but he recognised that there was no possibility of getting Parliament to compel people to join a society towards which they had to pay a subscription of a guinea a year. No society in the country had such a power.—The amendment found only five supporters, and was negatived. The resolution was then passed in the following form:—"That all persons having passed or passing the Minor examination be eligible for admission as members of the Society." The second part of the President's resolution was then discussed, viz., that relating to studentship.—Mr. EARDLEY thought the proposed term of three years was by no means too long—Mr. NEWSHOLME, while heartily in favour of the principle, thought it was undesirable to weight the proposed Bill even with such a small matter as this—Mr. PRESTON agreed with Mr. Newsholme, and suggested an amendment recommending the question of studentship to the Council for consideration in connection with future, not with present, legislation.—Mr. NEWSHOLME seconded the amendment, which was carried.—On the second part of the resolution there was no further discussion, and it was agreed to subject to Mr. Preston's amendment.—A vote of thanks to Mr. Squire for his services in the chair concluded the proceedings.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION.

On Wednesday evening a meeting of this Association was held at the Albert Hotel, Derby Road, when the proposed amendment of the Pharmacy Acts was under discussion. In the absence of Mr. R. Fitzhugh, J.P., President of the Association, Mr. F. R. Sargeant (Vice-President) occupied the chair.

THE EDUCATION QUESTION.

Mr. BOLTON said there was one matter of a non-contentious character which required no discussion. It was the agitation in reference to educational matters going on throughout the country. Some of their leading associations were discussing the question of getting elementary pharmaceutical education upon a distinctive basis throughout the whole of Great Britain. They in Nottingham knew something of pharmaceutical education, and they prided themselves that they had to some extent succeeded in forming a basis upon which their assistants could do a very large amount of work in preparing for their qualifying examination. Nottingham had been referred to in connection with this matter in the *Pharmaceutical Journal*, and he felt sure they in Nottingham would only be too pleased to do anything in their power to make the education throughout the country of a systematic character. He therefore proposed:—

> "That we cordially support the proposal to hold a conference for placing pharmaceutical education on one uniform basis throughout Great Britain, in accordance with the views expressed in the *Pharmaceutical Journal* of October 23rd last, and that the President of the Pharmaceutical Society be invited to preside."

Mr. RAYSON seconded the proposition, and the resolution was carried unanimously.

THE PROPOSED PHARMACY BILL.

Mr. BEILBY then said they must congratulate themselves as a Society on the recent visit of the Vice-President of the Pharmaceutical Society, not only because it was beneficial to them to hear the well thought out ideas of a man who held a high official position, but because of the interest which it had excited in the pharmaceutical world generally. It was a pleasure at the present moment to find that the Nottingham Association had excited considerable interest throughout the country more especially through inviting Mr. Newsholme to address them. They had distinctly scored as an Association by their first meeting. The columns of the *Pharmaceutical Journal* showed them that the Nottingham Association was looked upon as an excellent one. One correspondent referred to it as an ideal organisation, so that he did not doubt that in considering the propositions which had been put forward to amend the Pharmacy Act, if they had not exactly the eyes of Europe upon them, yet what they had to say and the decision at which they arrived would be noted, and have some effect upon other associations throughout the country. They were all coming round to the conclusion that as the Pharmaceutical Society was the only institution through which they had obtained whatever protection and privileges they now possessed, so they were all coming to see that in the future it was only through that institution they could obtain whatever extended protection or privilege they, as qualified chemists, required. When the Pharmaceutical Society put

orward suggestions and asked the associations to consider them, he certainly thought they ought to give them a very serious discussion. It was proposed that the examination which entitled a man to act as chemist and druggist should also entitle him to be enrolled as a member of the Pharmaceutical Society with all the privileges attaching thereto. No doubt the Major man would still continue to occupy a superior position in the Society, but that was only right having regard to the extra expense involved and the greater culture he had attained. He had a right to a title to distinguish him from the ordinary chemist and druggist, but the idea was to give to the ordinary man the qualification of a member of the Society. That was a matter upon which there would be no difference of opinion. They all saw that the weakness of the Pharmaceutical Society was that it was too aristocratic or oligarchical an institution, out of touch and sympathy with a large number of chemists. Consequently, when the Pharmaceutical Council wished to take any action on behalf of the trade it was met by two difficulties—it did not understand what the trade really required, and it had difficulty in impressing its ideas upon Parliament when the Parliament of the country knew that it only represented a section of the trade. He thought, therefore, that it was desirable that all chemists should be members of a Society that really represented them, and was thoroughly in touch with their requirements. The two first resolutions of the Plymouth Association seemed to express the idea that had been put forward by the Pharmaceutical Society itself—namely, that a Minor man should become a member of the Pharmaceutical Society and share its privileges. Another idea was that the privilege which the Major man had of being free from being called upon to serve on juries should also be extended to the chemist and druggist. That seemed to be only logical, resulting from the proposition that had gone before. He did not see why a Major man should have that privilege, while a Minor man was not entitled to it. The Major man often had an assistant whom he could leave in charge, while the man in a suburban district had not. The chemist was a useful man, and he ought to be content to serve upon a jury in the interests of the public so long as it did not occur too frequently. He made no proposition upon that part of the Plymouth propositions. Another suggestion was that there should be a period of three years between the registration of a student and his presenting himself for the Minor or qualifying examinations. That seemed to him to be a very useful suggestion, and one which would do a great deal towards preventing cramming for examinations, and would to a great extent secure that students should have undergone a distinct period of study in which the various subjects required for the Minor examination should be taught. He should like it to be added that those three years should be spent either in a chemist's business or in a School of Pharmacy, so as to ensure that the knowledge obtained should be not merely theoretical but practical. They might do something more besides those three resolutions. They wished to become members of the Pharmaceutical Society, to make it more democratic and representative of the whole of the pharmaceutical craft, but they wanted to do that mainly because the Pharmaceutical Society would be stronger to carry out their wishes and intentions. He thought their Association ought definitely to state some policy upon which the whole of the chemists were united, and that was one which was suggested at a previous meeting, and was summed up in the words "pharmaceutical preparations for the pharmacist." If they could be united upon that they would be successful ultimately in carrying it. The matter of chemists not serving upon juries would be regarded as a very serious concession by Parliament, but it would be a matter of trifling importance to chemists.—Mr. BOLTON having explained that the suggestions under consideration were the suggestions of the Plymouth Association, Mr. BEILBY, in order to bring the matter under discussion, proposed the first Plymouth proposition.—Mr. DAVIS said he did not think much of the idea, as it was giving a little bit too much to make an apprentice an Associate.—The CHAIRMAN remarked that at the present time a herbalist's son could attach the initials A.P.S. to his name, and the public did not know the difference.—Mr. BEILBY then withdrew the first proposition.—Mr. EBERLIN pointed out that there was no such recognised legal title (*sic*). Their students were already recognised in connection with the Nottingham Association. He proposed that the clause be adopted as it stood.—Mr. GASCOYNE considered that it would be quite a mistake to allow an apprentice to attach A.P.S. to his name. It was open to very great abuse indeed.—Mr. BOLTON supported the Plymouth resolution. He said the suggestion that the title of Associate would be abused was a bogey. He sincerely asked them to hesitate before they said they would not give the student some encouragement.—The CHAIRMAN said that was a strong point which Mr. Bolton had mentioned; they were not going to do what any other society did not.—Mr. ADAMS remarked that he thought only *bonâ fide* apprentices with qualified chemists should be entitled to be Associates.—Mr. BEILBY thought it would be better if they dropped that proposition altogether.—Mr. RAYSON shared the same view.—Mr. EBERLIN said it would bring students into touch with the Pharmaceutical Society by making them Associates. He thought it was a step in the right direction.—Mr. GASCOYNE remarked that what they had to consider was their own protection in the future, and not that of the apprentices. Personally, he had no objection to an apprentice being called an Associate, but he would repeat that it might be open to a very grave abuse. Upon being put to the vote, four voted for the first Plymouth resolution and seven against. It was therefore declared lost.—Mr. GASCOYNE, in proposing that registered pharmaceutical students should, on passing the Minor or qualifying examination, be entitled to assume the title of pharmacist or pharmaceutical chemist, etc., said that would only apply to those who passed in the future. He supposed that it was meant to be retrospective as well, but it was not stated. He thought it ought to be applied to all chemists now on the Register.—Mr. DAVIS seconded the proposition, which was amended as follows:—"That all registered pharmaceutical students having passed the Minor or qualifying examination be entitled to assume the title of pharmaceutical chemist or pharmacist."—Thus amended, the resolution was carried unanimously.—On the proposition of the CHAIRMAN it was unanimously agreed "That registered pharmacists should, on passing the Major or Honours examination, be eligible for election as 'Fellows of the Pharmaceutical Society.'"—Mr. RAYSON proposed that chemists be freed from service on juries. It was absurd, he said, that a chemist should be taken from business to serve on a jury, and that he should be summoned for his assistant, who might not be qualified, selling poison in his absence.—Mr. GASCOYNE seconded, remarking that it was a great inconvenience that a qualified chemist should be called upon to serve on a jury.—Mr. AGAR said he considered it was a perfect anomaly.—The resolution was carried unanimously.—Mr. BOLTON next proposed, "That it is desirable, in any new Act, that the Council should endeavour to make it compulsory that in all branch shops the qualified manager's name shall be prominently painted upon the premises and printed on the labels." It was very essential, he said, that they should have the names of those men placed prominently before the public, so that they might know who was responsible for mistakes when they happened.—Mr. SPENCER seconded the proposition, which was agreed to unanimously.—Mr. BEILBY moved a resolution in regard to pharmaceutical preparations, to the effect that the time had arrived when the Pharmaceutical Society should endeavour to extend the provisions of the Pharmacy Act in reference to the sale of poisons to compound preparations in the Pharmacopœia.—Mr. DAVIS seconded.—Mr. EBERLIN proposed "That there should be a schedule of purely medicinal preparations which shall be sold by registered chemists only."—Mr RAYSON seconded, and Mr. BEILBY having withdrawn his motion, Mr. Eberlin's was carried unanimously.

BRISTOL PHARMACEUTICAL ASSOCIATION.

A meeting of members of this Association was held at University College on Wednesday, November 24, Mr. B. ALLEN, President, in the chair.—The CHAIRMAN explained that the meeting was called by circular to discuss certain amendments to the Pharmacy Act, which, it was understood, the Council of the Pharmaceutical Society proposed to bring into Parliament. He then called upon the Hon. Secretary, Mr. KEEN, who referred to the large number of failures at recent Minor examinations, which had risen lately to something like 75 per cent. In discussing reasons for this state of things, he thought it was pretty clear that the causes were the deficient education, both general and technical, of the candidates. He hoped the amended Bye-laws would do something to remedy the matter so far as elementary education was concerned, but what was also wanted was a better system of organised technical education. He thought that the existing technical colleges, such as Bristol possessed, could be utilised, and was of opinion that students, after attending certain

courses of scientific subjects, should obtain certificates which would help them in their future career. He referred to the course of study necessary for the medical profession, and thought some such scheme might be brought about. Of course, it would increase the rest of the pharmacist's education, but perhaps in the long run that might be an advantage rather than not, by elevating the class and inducing such men to enter the ranks as would be above selling themselves for temporary gain to company pharmacy. As to the second proposition to be put before them, it aimed at consolidating the Society and doing something to induce every registered chemist to associate himself with the Pharmaceutical Society. If this change were made he thought there was a fair chance of getting a large increase in the number of members of the Society; then when the Council could say that it practically represented the whole trade they might expect to get legislation on other points affecting their interests. Mr. Keen quoted from the President of the Pharmaceutical Society's address at the annual meeting in the spring, showing that the Council was willing to go forward if it was assured of the sympathy and co-operation of the members generally.—Mr. G. T. Turner thought there were other matters relating to pharmacy—such as titles, company trading, the scheduling of poisons, etc., that needed legislation more than this small matter of consolidation of the Society, but upon its being explained that it was probably wiser to begin in this way, he proposed that it is desirable in the best interests of pharmacy that the Council of the Pharmaceutical Society of Great Britain should, without delay, take the necessary steps to introduce a Bill into Parliament providing:—

1. That all pharmaceutical students be registered at least three years before offering themselves for the qualifying examination.

2. That it should be compulsory for all such students to attend an organised course of technical instruction in the interval.

3. That in order to carry out these proposals it is desirable that a conference be held as suggested by the *Pharmaceutical Journal*.

4. That all students upon registration be eligible for election as Associates of the Pharmaceutical Society.

Mr. J. G. Plumbly seconded, and it was supported by Mr. Berry.—Mr. Cooper (Weston-super-Mare) thought there were practical difficulties about attending classes in country towns, but agreed with the clauses in principle.—The propositions were carried unanimously.—Mr. Isaac next proposed that all chemists and druggists be eligible as members of the Pharmaceutical Society, and hence qualified for election as members of Council. He thought it highly desirable to break down the dividing wall between pharmaceutical chemist and chemist and druggist, and thought it was very important that more men should join the ranks of the Pharmaceutical Society. This was seconded by Mr. Berry, and also carried unanimously.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

On Wednesday, November 17, Mr. B. Lomax (Curator of the Brighton Museum), gave his very interesting lecture "Reminincences of the Record Reign" before this Association. He drew a very graphic sketch of the various events and changes which have come under his personal observation during the last sixty years. Changes, social and scientific, and events which have become matters of history, yet, told by one who speaks with a personal recollection, gives those events, or the telling thereof, a far greater interest than could be obtained by reading history. The lecturer was accorded a very hearty vote of thank at the conclusion of his lecture.

Urotropine in Cystitis.—Urotropine is stated by Nicolaier to be very efficacious in the treatment of cystitis, accompanied by ammoniacal fermentation of the urine. It is given in doses of 7 grains dissolved in half-a-pint of water or aërated water, at first three times daily, and then twice or once a day. In daily doses of 15 grains it may be taken without harm for a long period. Under this treatment the urine rapidly regains its normal reaction and all the discomfort attending ammoniacal fermentation ceases. The remedy has given relief in cases where salicylates have failed, and is also useful in cystitis with acid urine. Urotropine is free from unpleasant taste, and is soluble in water, so that it is readily taken. It passes quickly into the urine, reactions indicating its presence being obtained fifteen minutes after taking a dose.—*Therapist*, vii., 69, after *Der aerztliche prak.*

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Advertisements and Orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

Articles and Reports sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

Correspondents should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for Illustrations should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Queries addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

Reprints of Articles cannot be supplied unless authors communicate with the Editor before publication of the articles. The right to reproduce all original matter and illustrations published in the Journal is strictly reserved.

LETTERS TO THE EDITOR.

On Advertising, Quackery, and Gullibility.

Sir,—Dr. Hooper says truly that "advertising has become a nuisance, and one very difficult to deal with, because the press is largely supported by it," and I would add that it is the more so in that the religious papers are the greatest sinners in this matter of quack medicines, advertisers apparently assuming that religious people believe all things—and, indeed, they are easily gulled—except on the question of price. Not long ago the editor of a religious weekly was written to respecting some lying wonder reported in his paper with reference to a notorious quack medicine, and he replied that he had tried the article and knew it to be good. If editors of religious publications try every quack medicine advertised in their papers, it would be a kindness to notify the fact to insurance companies. A quack advertisement will not be believed unless the lie be a big one—a little one is useless. Would it be possible for Dr. Hooper and a few other medical men to give public lectures on "Quacks and Quackery"?

November 19, 1897. Kent (116/30).

Sir,—In my former letter I referred to those glaring and grotesque advertisements that are to be seen everywhere and by everybody. But there are others of a more insidious character—traps intended to catch the doctors rather than the general public. These are in the form of samples, leaflets, pamphlets, books, diaries, and blotting-pads, and, as a specimen, I will take one within my own experience. Some time ago, a well-known firm sent me some "Diaries for Nurses," expensively got up and handsomely bound, with a request that I would place them in the hands of my nurses. On opening one, I found instructions to nurses, directions as to the management of patients with typhoid fever, and other diseases; but what struck me particularly was the fact that, in every page, the nurse was told to give one or other of the firm's specialties. I wrote to the firm and said I certainly should not give the diaries to my nurses, as they had been taught by eminent lecturers, and trained by experienced nurses in the wards of Guy's Hospital, and therefore required no instructions from advertisers; moreover, that it was the physician's and not the chemist's business to write prescriptions, and that the diary was clearly only an insiduous way of puffing and pushing their own preparations. It is, in my opinion, a gross insult to us, on the part of inventors of proprietary articles to attempt to teach us our materia medica and therapeutics by sending us prescriptions for diseases in their

pamphlets, books, and diaries, and even in their price-lists! A man who has spent several years in a London hospital and medical school, attended all the lectures, read all the standard works, watched the practice of our leading physicians in the general and clinical wards, seen diseases in all their forms and phases, and observed the effects not of drugs only, but of all other remedies, cannot possibly have anything to learn from persons who perhaps have never seen disease, and certainly have not studied it at the bedside in hospital wards.

D. Hooper, B.A., M.B., M.R.C.P.

9, Trinity Square, S.E., Nov. 19, 1897.

The Dignity and Status of the Chemist.

Sir,—So much has been written and said of late *re* the dignity and professional status of the chemist, that one feels impelled to supplement the long list of writers on this seemingly all-absorbing question. While reading recent letters in your valuable Journal the thought occurred to me that when the chemist applies himself entirely to his own business or profession, "call it what you like," he will then recognise the just status of himself. I do not wish to appear, "as from my writing some would think," facetious, but have a sincere desire to be plain matter-of-fact and quite understood. Time was when the chemist would have simply refused to prescribe and make up medicine for some poor woman whose child was ill and had been taken to his shop, but rather have sent her to the doctor, by whom he knew proper treatment would be given, and I say in all fairness to the chemist that the good doctor in his turn would not dream of dispensing his own prescription, but send her to the authorised dispenser. I believe there was a period when the chemist would not bedaub his windows and the walls of his shop with pictures illustrating the startling effect of some quack nostrum, or hang outside his door a fractured plate put together again by the aid of a cement to be obtained within at the rate of 3*d.* per bottle, emphasising the statement that it would mend almost anything, by the addition of a 56 lb. weight pendant from the lower half of the broken porcelain. Surely it is not dignity which prompts him to place in his window a tableau of a sickly wax figure reclining on a couch with hands uplifted to its temples as if in mortal agony, while from the opposite side approaches a nurse "the like of which was never seen," with outstretched arms holding between her fingers a lozenge which you are wished to believe the patient has ultimately taken; for another tableau is given which illustrates how much better they are; in fact you can see it for yourself by the all-contented smile which they now have, and on a dark background letters made of the same said lozenge indicating they are 13½*d.* per box. "Instant Relief." I am told we must go with the times and be progressive; with that statement I agree, but this is retrogressive, not progressive, for to be progressive as a chemist to my mind, "taking into account the amount of special training it now requires to obtain qualification," would be, while abstaining from such as the above, to endeavour to raise the general tone; while not losing any of our business capabilities keeping in touch with the Society, taking a more responsible view of the fact of our being members or associates of the Pharmaceutical Society, a Society to belong to which is a distinct honour, when we remember the names already associated with it, names which form a wreath of honour to our calling and the nation.

November 23, 1897. A. T. W. (117/15).

OBITUARY.

Melhuish.—On November 10, John Melhuish, Chemist and Druggist, late of Dartmouth Park Hill, London, N. Aged 77.

Adams.—On November 19, William Henry Adams, Chemist and Druggist, Stoke-on-Trent. Aged 54.

PUBLISHERS' NOTICE.

COVERS FOR BINDING.

Cloth gilt-lettered covers for binding the half-yearly volume of the *Pharmaceutical Journal* are supplied by the Publishers, at a charge, including postage, of 1*s.* 6*d.* each.

All Orders and Remittances should be Sent to the Publishers, 5, Serle Street, London, W.C.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

Cementing Tadpoles to China.—Try strong mucilage of acacia or solution of celloidin in ether. [*Reply to* J. A.—1/22.]

Book on Organic Chemistry.—Perkin and Kipping's work, published by W. and R. Chambers at 6*s.* 6*d.*, is a more suitable book than either of those you mention. [*Reply to* E. G. M.—1/13.]

Drug Specimen.—Apparently it is *Eupatorium triplinerve*, Vahl. (*E. ayapana*, Vent.), which possesses diuretic, diaphoretic, and anti-scorbutic properties, and is used in Brazil, Mauritius, the East Indies, and Java. [*Reply to* J. T. W.—1/8.]

Rose Cough Mixture for Children.—Ipecacuanha wine, ♏ 160; oxymel of squills, 1 fl. oz.; acid infusion of roses, 2 oz.; rose water to make 4 fl. oz. Dose: a teaspoonful every three or four hours. [*Reply to* A. M.—114/25.]

Theatrical Varnish.—If you mean "spirit gum" for fixing false moustaches, etc., you will find a saturated solution of sandarac in alcohol answer the purpose as well as anything. If this is not what you require please give more explicit information. [*Reply to* Ether.—1/6.]

Basis for Skin Medication.—Probably the most suitable preparation for your purpose would be the "gelante," or as it is now called "gelantum" of Unna. See *Pharm. Journ.* [4], iv., 417. If it is wanted quickly you can procure it in London, for as you will see, it takes some time to make. It is stated to have just the properties that you require. [*Reply to* W. H. D.—115/22.]

Ointment for Eczema.—This is an ointment of chrysarobin, with the yellow colour disguised with carmine. We cannot advise you as to whether it is good or not, for eczema is an affection which assumes many different forms requiring different treatment. Only a medical man is competent to form an opinion as to its treatment. [*Reply to* W. H.—114/37.]

Composition of Disinfectant.—It is believed that this preparation is obtained by the oxidation of turpentine and eucalyptus oil and possibly of other terpenes, by passing air continuously through them while floating on water maintained at a temperature of about 140° F. The body is supposed to owe its disinfectant properties to hydrogen peroxide, which is formed in considerable quantities during the process. [*Reply to* J. H. S.—115/17.]

Arsenical Fumes.—On heating together arsenious anhydride and an alkaline acetate, cacodyl, $As_2(CH_3)_4$, is formed, which, on contact with the air, oxidises, forming cacodylic acid, $As(CH_3)_2O(OH)$, and also cacodyl oxide, $As_2(CH_3)_4O$, and other compounds, all of which are very poisonous. Obviously it would all depend how much was inhaled, as to whether the inhalation would endanger life, but we should not advise you to experiment on the toxicity of the vapour. All such operations should be performed in a good fume chamber. [*Reply to* Arsenicum.—113/43.]

Baume Fioraventi.—This antiquated formula is still official in the Codex. It is, Venice turpentine, 50; elemi, 10: tacamahac resin, 10; amber, 10; liquid storax, 10; galbanum, 10; myrrh, 10; bayberries, 10; Cape aloes, 5; galangal, 5; ginger, 5; zedoary, 5; cinnamon, 5; cloves, 5; nutmegs, 5; dictamus flowers, 5; alcohol, 80 per cent., 300 parts by weight. Reduce the ginger, galangal, zedoary, cloves, cinnamon, nutmeg, and bayberries to coarse powder. Macerate them for 4 days in the alcohol. Add the amber in powder, and the other ingredients leave in contact for 2 days, then distil over a water bath until 250 parts by weight of distillate are obtained. [*Reply to* W. W.—115/7.]

Cements and Varnishes for Microscopical Slides.—It will not pay you to make these yourself, and probably the results you obtain will not be satisfactory. For ringing, nothing as a general rule is better than good tacky gold-size; for finishing Aspinall's enamels in various colours give excellent results. [*Reply to* J. D. S.—1/10.]

Charcoal for Pastilles.—Good willow charcoal is what is generally used. If a specially low ash is required dogwood charcoal may be employed, but it is much more expensive and, for practical purposes, no better. The cascarilla bark employed should be freshly ground and in as fine powder as possible. [*Reply to* C. J. A. H.—1/15.]

Solution of "Phenate of Soda."—Probably the solution de phenate de soude of the French Codex is what you require. This is made from phenol, 7; solution of caustic soda, sp. g. 1·332, 10; distilled water to make 100 fluid parts. Dilute the soda with about 50 of water, add the phenol and then enough water to make up the volume to 100 fluid parts. This, suitably diluted, is used as an antiseptic. [*Reply to* Kaska.—115/1.]

Mercury Separating in Barometer.—Unless you state exactly what form of mercurial barometer it is, we cannot well advise you. If, however, the mercurial column is much broken it is probable that air has entered the instrument, and that would, of course, render it incorrect. If only one or two small globules adhere to the glass, possibly a sharp tap just above them will cause them to fall. [*Reply to* Barometer.—115/5.]

To Clear Glycerin Jelly.—Melt the cloudy jelly (after noting its weight), turn it into a porcelain dish, add a little warm distilled water and the white of an egg. Then boil briskly until the albumin has all coagulated, and strain through a flannel bag previously moistened with boiling water. The liquid should be perfectly bright. Then evaporate to nearly the original weight, or to the desired consistence when cold. [*Reply to* J. D. S.—1/10.]

Determination of Potassium Cyanide.—It is not possible to tell what can be the cause of your low result in the volumetric analysis of the cyanide, unless you have got hold of a very old piece which is practically inert. Try with a fresh sample of the salt. The commercial article often contains much carbonate and cyanate, but not sufficient to account for the low figures that you obtain. [*Reply to* Countryman.—1/17.]

Iodocasein.—The author, Lepinois, who has had a wide experience with the albuminoids, does not venture to claim any definite chemical formula for his iodocasein, although the fact that the fairly constant proportion of combined iodine is in the ratio of three atoms of the haloid to one of albuminoid is not likely to have escaped his notice. Those who are most familiar with the albuminoids are the least ready to represent them and their compounds by hard and fast empirical chemical formulæ. [*Reply to* A Reader.—114/44.]

Calcium Carbide.—It would appear from information supplied to us that the trade for carbide is not likely to fall into the hands of pharmacists, but that it will probably go into the hands of the photographic dealers and makers of acetylene apparatus. Acetylene is a safe illuminant if used properly. To store calcium carbide a licence must be obtained from the local authorities under the Petroleum Acts, but you may store 5 lbs. in hermatically sealed vessels, each containing 1 lb., without licence. The published regulations of the Fire Insurance Companies are to the effect that carbide, acetylene, and liquid acetylene must be stored in a building at least 10 feet at the nearest point from every other building. Suitable valves or controlling devices must be placed inside the detached building, and a cut off provided between such building and the building supplied with the gas. The piping in the building must be provided with a safety valve so as to let the gas escape whenever the pressure exceeds 4 inches. The offices do not admit any liability for loss or damage caused by the explosion of acetylene gas occurring elsewhere than in the building which is or the contents of which are covered by its policy or policies. Full details of the Acts and regulations relating to calcium carbide may be obtained from the Acetylene Illuminating Company, 63, Queen Victoria Street, E.C. [*Reply to* Pharmacist.—113/38.]

Formulæ, Methods and Reactions.—Whether these will be reprinted in book form or not will depend upon the extent of the demand for the book. We are glad you have found the information useful in its present form. [*Reply to* P. D.—1/16.]

Camphorated Oil.—(1) In the case you refer to liniment of camphor was asked for. (2) Liniment of camphor need not be supplied when camphorated oil is asked for, but we think it is desirable for the sake of uniformity, that it should be so supplied. [*Reply to* Fiat Lux.—1/20.]

Change of Colour of Ointment.—With the ointment—hydrarg. oleat., 20 per cent.; ung. pot. iodid. aa ℥ss—the change of colour is doubtless due to the gradual absorption of the iodine by the large excess of oleic acid present in the oleate. At first, doubtless, mercuric iodide and potassium oleate are formed, then the former is slowly deprived of its iodine by the oleic acid. [*Reply to* J. M.—1/24.]

Reaction with Tannic and Gallic Acid.—Yes, you are quite right; these two bodies react differently in alkaline solutions with many copper and other metallic salts. There are already so many tests to distinguish the two acids that it is not desirable to add to their number. Your observation was, however, perfectly correct. [*Reply to* Feminæ.—1/23.]

Washing and Finishing Woollen Goods.—Your query with reference to the shrinkage of woollen goods while washing and finishing is one for a technical expert; possibly something is wrong with your plant or process. You would probably obtain satisfactory advice from the expert attached to one of the many technical colleges in Yorkshire or elsewhere. [*Reply to* G. W.—1/19.]

Heat of a Burning Pastille.—The temperature of the burning pastille will depend upon the rate of combustion, which in its turn is dependent upon the ratio of oxidisable matter and the oxidisant and their state of mechanical division; the more nitre that there is in the pastille in proportion to the charcoal, the quicker it will burn, and the greater will be the heat generated. This may be moderated by introducing some less readily combustible matter, such as very fine sandalwood powder. The "joss sticks" of the Chinese are stated to be composed of this, with a very little nitre and moulded round a strip of rush. Hence they smoulder very slowly, and do not give off much heat. One stick will burn for hours. [*Reply to* C. J. A. H.—1/15.]

Naval Dispenserships Examination.—The questions recently given in "pharmaceutical chemistry" dealt with the physical and chemical properties of official preparations; tests for simple salts, acids, and alkaloids; the determination of morphine and (volumetrically) of prussic acid, caustic soda, and iodine; the properties of such substances as chloral hydrate, chloroform, diastase, pepsin, and emulsin. They ought to present no difficulty to a chemist and druggist who has a thorough knowledge of the British Pharmacopœia. You can procure a copy of the questions and other particulars regarding the examination from Messrs. Eyre and Spottiswoode, East Harding Street, Fleet Street, E.C., for sixpence. [*Reply to* Dispenser.—1/4.]

Carbolised Sponge Tents.—The sponges selected for the purpose should be very fine, and must be carefully freed from all sand and other foreign matter by being well beaten. They are then washed freely, and immersed for a couple of hours in a 2 per cent. solution of hydrochloric acid; then washed free from acid, and again macerated for twenty minutes in a 10 per cent. solution of potassium permanganate, and again washed. After this they are bleached by immersion in a solution of hydrochloric acid, 1; sodium bisulphite, 3; water, 250. They are then plunged in boiling water, wrung out, dried, and finally macerated in a solution of phenol of the requisite strength for at least a week. To compress the pieces after sterilisation they are cut into cylinders and bound round with string while still damp, and then dried. [*Reply to* K. B.—1/9.]

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Anning, Austen, Bain, Balfour, Battle, Brown, Carteighe, Carter, Carver Clarke, Ferriday, Fisher, Forrester, Fullerton, Garman, Goodess, Grose, Hankinson, Henry, Hill, Hills, Hooper, Horsfield, Howards, Jackson, Jones, Keen, Knott, MacEwan, Mallett, Miller, Moore, Morris, Nesbit, Parry, Pater, Price, Raimes, Reynolds, Rimmington, Robins, Robinson, Roper, Russell, Savage, Sawer, Squire, Stevenson, Storrar, Tyrer, Umney, Vibert, Ward, Whitfield, Williams, Will, Wills, Wilson, Wray, Young.

THE NEW DUALISM IN CHEMISTRY.*

BY JAMES WALKER, D.SC., PH.D., F.R.S.E.
Professor of Chemistry in University College, Dundee.

There are probably some present here to-night who, if they recall their first instruction in chemistry, will remember that they were told that salts were supposed to consist of a basic oxide combined with an acid oxide—that sodium sulphate, for example, was composed of sodium oxide, Na_2O, with sulphur trioxide, SO_3, and had the formula Na_2O,SO_3. This dualistic mode of representing compounds had in many instances conspicuous advantages, especially in the formulation of salts containing oxygen, and in general, in all questions of oxidation and reduction. However, when the idea of atom-linking found general acceptance, this old method of representation was gradually given up, for it no longer had any obvious connection with the now prevalent theories of the ultimate constitution of chemical compounds. The atoms, according to the new theory, were supposed to be all linked together to form a sort of chain, and the formula of sodium sulphate was written

If this conception of the constitution of the molecule is correct, it is evident that there is no justification for dividing the oxygen of the salt into basic oxygen and acid oxygen, as was formerly done. The notion of the direct linking of atoms to form atomic chains dominates chemical theory to the present day, and the old dualistic mode of formulating compounds has practically vanished, persisting only in such common names as sulphate of soda, which recall the old division of the salt into the basic oxide "soda" and the acid oxide "sulphuric acid." But within the last ten years a new dualism has sprung up, and it is my object to-night to give an account of this theory and to show its practical applications in the understanding and the teaching of elementary chemistry.

In the language of the old dualism, a salt consisted of an electro-positive part of an electro-negative part, the sodium oxide and the sulphuric anhydride of our example. These parts were supposed to hold together because it was generally known that in electric phenomena opposites attract, and like repels like. There was also direct practical justification for this view. When a solution of sodium sulphate is electrolysed, it is found that round the negative pole caustic soda accumulates, and round the positive sulphuric acid. Here the salt has been split up into a basic or positive portion, which wandered to the negative pole, and an acid or electro-negative portion, which travelled to the positive pole. The caustic soda was supposed to be formed by the union of the basic oxide with water, thus, $Na_2O + H_2O = 2NaOH$, and the sulphuric acid by the combination of the anhydride with water, thus, $SO_3 + H_2O = H_2SO_4$.

If we consider this and similar cases of electrolysis, therefore, the old electro-chemical dualism seems to give a reasonable explanation of the facts, and in other instances, where the explanation has been less simple, it is still possible to apply the theory successfully and consistently.

It was precisely to account for the phenomena occurring in cases of electrolysis like the foregoing that the new chemical dualism was devised, and in the first instance it was not intended to have any direct bearing on chemical theory at all. According to it, sodium sulphate, when dissolved in water, splits up into an electro-positive portion and an elcctro-negative portion, but these are no longer supposed to be the basic oxide and the acid oxide, but the basic radical and the acid radical. Sodium atoms or ions constitute the positive part, the sulphate radicals, or sulphions, SO_4, constitute the negative part in our example. Faraday gave the name "ion" to the carriers of electricity, which move in a solution undergoing electrolysis. Electricity in an electrolyte can only move along with matter, as may easily be shown by the changes in concentration which occur round the electrodes, and not as in metallic conductors, where it moves without a material carrier. These different modes of movement of the electricity have been compared to water being carried in pails and water flowing through a pipe. When the ion carrying the electricity arrives at the electrode, it is there discharged, and may then either be liberated, as is the case with many metallic ions, or it may react with the water of the solvent, as also frequently happens. In our example, the sodium ions, when they arrive at the negative electrode, lose their charge of electricity and at once act on the water with formation of caustic soda and evolution of hydrogen. At the positive electrode the sulphions are discharged, and decompose the water with formation of sulphuric acid and evolution of oxygen, according to the equation, $2SO_4 + 2H_2O = 2H_2SO_4 + O_2$.

Although physicists had long been familiar with this conception of the ion, they did not conceive it to have an independent existence in the electrolytic solution. It is true that the positive ion was supposed to carry the positive electricity and the negative ion to carry the negative electricity, but the transference of the electricity to one pole from the neighbourhood of the other was assumed to be made by the different sodium sulphate molecules exchanging ions, so that by a sort of "ladies' chain" process, in which the ions constantly changed partners, two streams of ions steadily arrived at the opposite electrodes without any one ion having been for an appreciable time unpaired with an ion of the opposite kind.

The essential novelty of the state of a salt in aqueous solution introduced by Arrhenius, the originator of the new dualism, is that the ions are supposed for the most part to exist altogether free of each other, and to act independently, not only in electrolytic, but also in chemical processes. Common salt is conceived by him to exist at all times in aqueous solution, not as molecular NaCl, but as independent ions,—Na with a charge of positive electricity, and Cl with a charge of negative electricity. At first sight this seems to be directly at variance with our ordinary experience of the properties of sodium and chlorine. Metallic sodium when brought into contact with water at once decomposes it with evolution of hydrogen; chlorine we know as a greenish-yellow gas giving a yellowish aqueous solution. We must recollect, however, that Arrhenius does not state that ordinary sodium exists in solution; it is sodium highly charged with electricity according to Farraday's law that maintains an independent existence in the water. Now we know that an electrical charge often profoundly modifies the chemical properties of a substance. Aluminium does not attack water under the ordinary conditions, neither does mercury; but let aluminium be covered with a fine film of mercury so as to form aluminium amalgam, and it at once acts on water, even at the ordinary temperature, with evolution of hydrogen. A piece of sodium, when in contact with certain other metals, may be thrown into strong sulphuric acid without any violent action occurring. The electric charges assumed by metals when brought into contact with each other thus entirely change their chemical properties. Bearing this fact in mind, then, there is no inherent improbability of sodium and chlorine existing in a solution of common salt in the state of ions, so far as interaction between them and the solvent is concerned. We are still, however, so much accustomed to look at the sodium and chlorine as being firmly bound together, even in solution, that the conception of their leading an independent existence is strange and even abhorrent. But if we recollect that it is precisely salts in solution that we

* Inaugural Sessional Address delivered before the North British Branch of the Pharmaceutical Society, on Friday, November 26.

most often use for rapid chemical reactions, we must admit that their radicals are very freely interchangeable, and therefore but loosely bound together if bound together at all. A comparison of the sluggish actions of organic chemistry with the easy interactions of aqueous solutions of acids, salts, and bases will serve to illustrate this difference, the organic substances not being, as a rule, split up into positive and negative ions. The practical test to find out whether a substance is decomposed into ions or not in a solution is in all cases an observation of its electric conductivity. If the solution of the substance conducts well, there must be many carriers of electricity in it, *i.e.*, the dissolved substance must be to a considerable extent decomposed into ions. If the solution conducts feebly or not at all, we draw the conclusion that there are few ions present. As I have said, the extent to which a substance is decomposed into its ions is not only a measure of its conductivity, or *vice versâ*, but also of its chemical activity. Contrast, for instance, the immediate action of alcoholic solutions of the metallic chlorides (which are all good conductors) on the solution of a silver salt, with the behaviour of the solutions of the non-conducting so-called organic chlorides, say phenyl chloride. In general we find chemical activity, in the sense of readiness to undergo double decomposition, to go hand in hand with electrical conductivity, and the explanation given by Arrhenius is that the real carriers of the electricity are the free ions, which, in virtue of their freedom, are chemically active, since they have not to be separated from each other before they interact.

It is impossible for me in the time at my disposal even to indicate the various phenomena which have received a simple explanation from this one hypothesis of the existence of free ions in solution. Originally intended to account for the phenomena of electrolysis, it affords a basis for dealing quantitatively with numberless other magnitudes, and has thrown a light on the general behaviour of salt solutions, where all was formerly darkness and confusion. The fundamental assumption may appear to us distasteful, but on careful consideration we find it to be at variance not with the facts, but only with our preconceived opinions and interpretations of the facts. Anyone who has made himself familiar with the new mode of viewing the phenomena observed in solutions of acids, salts, and bases, finds it indispensable, and what I would venture to urge is its early introduction in the teaching of elementary chemistry. What the student first meets with in his practice is the behaviour of these very substances. Let a course of elementary theoretical chemistry therefore begin, not with the comparatively useless study of the elementary and compound gases, acquaintance with which is acquired only to be immediately forgotten, but with the properties of acids, bases, and salts. Let him understand solubility, crystallisation, double decomposition, precipitation, and he will have little trouble in finding his way through the new and unfamiliar field of chemical phenomena. The strain on the memory is slight at first, and the facts come under general rules. My own practice in teaching is to give a table of the common positive and the common negative radicals, indicating by symbols attached to them the number of electric charges that each possesses in virtue of Faraday's law. Thus, to take a few examples, we have

	Positive Radicals.			Negative Radicals.		
	$H^{\cdot}$	Hydrogen		OH'	Hydroxide	
Metallic radicals	$K^{\cdot}$	Potassium	Univalent	Cl'	Chloride	Acid radicals.
	$NH^{\cdot}_4$	Ammonium		NO'_3	Nitrate	
	$Ag^{\cdot}$	Silver				
	$Hg^{\cdot}$	Mercurous				
	$Hg^{\cdot\cdot}$	Mercuric	Bivalent	SO''_4	Sulphate	
	$Ca^{\cdot\cdot}$	Calcium		CO''_3	Carbonate	
	$Fe^{\cdot\cdot}$	Ferrous				
	$Fe^{\cdot\cdot\cdot}$	Ferric	Trivalent	PO'''_4	Phosphate	
	$Al^{\cdot\cdot\cdot}$	Aluminium				

In writing the formula of any compound of a positive with a negative radical, the student is told that tho number of dots in the positive portion must be equal to the number of dashes in the negative portion. The reason for this may be taught later. Each dot represents one charge of positive electricity; each dash represents one charge of negative electricity. As the solution of the compound is electrically neutral, the positive electricity must balance the negative electricity, and therefore the number of dots must equal the number of dashes. Once he learns his table and grasps this principle he makes few mistakes in writing formulæ, and I do not find such compounds appearing as CaCl and $NaSO_4$. He writes $Ca^{\cdot\cdot}Cl'_2$, $Na^{\cdot}_2SO''_4$, $Ca^{\cdot\cdot}_3(PO'''_4)_2$, $(NH^{\cdot}_4)Mg^{\cdot\cdot}PO'''_4$, etc.

Acids, bases, and salts in solution are defined as follows :—

Acid.....	Hydrogen, Acid radical.
Base.....	Metallic radical, Hydroxide radical.
Salt (normal)	Metallic radical, Acid radical.
Water	Hydrogen, Hydroxide radical.

Neutralisation is easily seen to be an interchange of radicals with formation of water, thus :—

$$\underbrace{\text{Hydrogen, acid radical}}_{\text{acid.}} + \underbrace{\text{Met. rad., hydroxide rad.}}_{\text{base.}} = \underbrace{\text{Met. rad., acid rad.}}_{\text{salt.}} + \underbrace{\text{Hydrogen, hydroxide rad.}}_{\text{water.}}$$

Acid salts, *e.g.*, $Na{\cdot}H{\cdot}SO''_4$, have hydrogen as part of the positive portion; basic salts, *e.g.*, $Hg^{\cdot\cdot}(NO_3)'(OH)'$, have hydroxyl as part of the negative portion. The relation between hydroxides and oxides, and between acids and their anhydrides, follows naturally. A few notions as to solubility complete the student's preliminary equipment, *e.g.* :—

All normal nitrates are soluble.
All salts of the alkali metals are soluble.
All chlorides are soluble except those of $Ag^{\cdot}$, $Hg^{\cdot\cdot}$, $Pb^{\cdot\cdot}$.
All sulphates are soluble except those of $Ba^{\cdot\cdot}$, $Ca^{\cdot\cdot}$, $Sr^{\cdot\cdot}$, $Pb^{\cdot\cdot}$.
All phosphates are insoluble except those of the alkali metals.
All carbonates are insoluble except those of the alkali metals.

Equipped with these and similar rules, and the principle that when two ions by their union can form an insoluble compound they do so when they meet in the same solution, the student in a very short time gains a practical command of his knowlege of solutions that enables him to apply it successfully to his ordinary laboratory work.

And here I would say a word in favour of the much-condemned test-tubing. Of course when the student learns his testing parrot-wise from a table, the knowledge, like all parrot knowledge, is educationally worthless, and it is no doubt the chief drawback of test-tubing that it lends itself so readily to be "crammed up" in this manner. But if test-tubing is properly studied, its educational value is, in my opinion, quite equal to that of the mock quantitative work now so often inflicted on the luckless beginner by those in authority in high places. Let the student add sodium hydroxide solution to solutions of all the common metallic salts in succession, note what happens, and tabulate his results; let him divide, say, the metallic radicals into those that give no precipitate, those that give white hydroxides soluble in excess, those that give white precipitates insoluble in excess, and those that give coloured precipitates, arranged according to their colour. Let him do the same with other reagents—ammonia, hydrochloric acid, sulphuretted hydrogen, ammonium sulphide, ammonium carbonate, and so on. He will thus acquire an easily remembered stock of reactions which enables him to detect the ordinary radicals independently of any book or table, and serves as material to exemplify the rules given in the theoretical portion of

his course. It is afterwards an easy step to analyse mixtures in an intelligent manner.

I am, of course, not claiming for the new theory the merit of conceiving salts as composed of an acid radical and a metallic radical—that mode of viewing salts is half a century old—but it brings the mode into prominence, and gives it a meaning that it did not formerly possess. It gives us in the degree of their dissociation a criterion of the strength of acids and of bases, and it has numberless applications to the problems that are met with in the ordinary practice of preparative and analytical chemistry. A few examples may serve to illustrate its use.

If we wish to prepare a pure specimen of sodium chloride we make a strong solution of the salt and pass hydrochloric gas into it, or add to it strong hydrochloric acid solution. The sodium chloride is at once precipitated, and is of a higher degree of purity than the specimen originally dissolved. The sodium salts of the aromatic sulphonic acids are often obtained pure from solution in a similar way. To the solution is added either strong brine or solid caustic soda. In either case the sodium sulphonate falls out. Another familiar example of a similar process is the salting out of soap. The theory of the process is in each case the same. It is a well-known principle of theoretical chemistry that if a substance is dissociated in any way whatever, the addition of one of its dissociation products diminishes the degree of dissociation, and this in the greater measure as the dissociation is slight. Now, in each of the above processes a substance is added which has one ion in common with the original substance, the degree of dissociation of the original substance is therefore diminished. The solubility of a salt in water seems to be regulated, not, as we might at first be disposed to imagine, by the total amount in solution, but rather by the amount of undissociated salt in solution. If we therefore increase the amount of undissociated salt in a saturated or nearly saturated aqueous solution, the solution will become supersaturated and the excess will fall out. Let us take the example of the purification of sodium chloride. In a strong brine the sodium chloride is dissociated to the extent of some 30 per cent. It is the remaining 70 per cent. of undissociated substance that determines the solubility. If now we pass gaseous hydrochloric gas into the solution, it dissolves, and, being highly dissociated, contributes both hydrogen ions and chloride ions to the solution. Now the products of dissociation of the salt are sodium ions and chloride ions. The addition of hydrochloric acid then means the addition of one of the products of dissociation, viz., chloride ions, and consequently the degree of dissociation of the sodium chloride is diminished, *i.e.*, the amount of the undissociated salt is increased. But if the solution is already saturated or nearly so with the undissociated substance, the saturation point will be passed as soon as the hydrochloric acid is added, and the excess then falls out. Similarly, the sodium salts of sulphonic acids, which are not very soluble, can be thrown out of solution by brine or by strong caustic soda. All these substances when dissolved in water yield sodium ions. The solubility of the sodium sulphonate is thus diminished when sodium chloride or sodium hydroxide is added, and a portion of the salt is deposited.

In the manufacture of ordinary soda soaps, the sodium salts which constitute the soap are dissolved in relatively too much water, and are contaminated with excess of glycerin and other substances. To purify them and get a curd soap, the solution is salted out, *i.e.*, salt is added till the soda soap separates out of solution as a hard curd. The sodium salts and the sodium chloride have the sodium ion in common, so that the solubility of the former is diminished on the addition of the salt, with the result that a large proportion separates out in a fairly pure state. Any other compound which gives sodium ions plentifully when dissolved in water will salt out a soap as well as common salt. Thus, if excess of a strong solution of caustic soda be used to effect the saponification, the soda soap separates out as saponification progresses. Here the sodium ions come from the caustic soda. Finally, it should be noted that soft soaps, *i.e.*, potash soaps, cannot be salted out with common salt. The reason is obvious: the positive ion of the potash soaps is potassium, and in adding sodium chloride we neither supply a similar positive nor a similar negative ion. Thus the solubility of the potash soap is not appreciably diminished, and it does not separate.

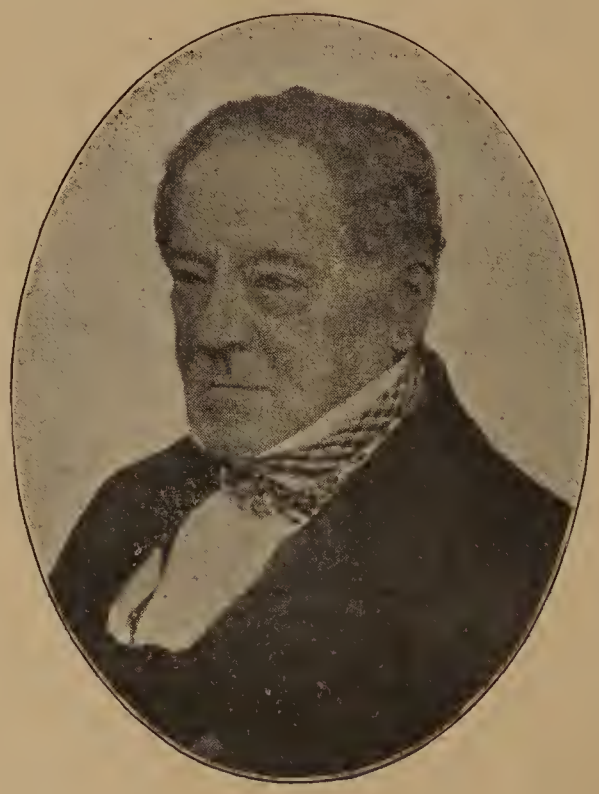
To give another example, in conclusion, of the application of the new dualism to practical chemical problems, I may refer to the theory of indicators. The ordinary indicators used in acidimetry and alkalimetry are useful in so far as they assume a different colour in acid, neutral or alkaline solution. The difference of colour is due to the ions of the indicator having one colour and the undissociated molecules another colour. Our ordinary indicators are, as a rule, feeble acids, and those chiefly used are litmus, methyl orange, and phenol phthalein. When phenol phthalein is in the undissociated state, *e.g.*, when it is a solid, it has a feeble yellow tint. When dissolved in water it is still colourless, for the extent to which it is dissociated into ions is so vanishingly small that the colour of the negative ion is not apparent. As soon, however, as we add a small quantity of a strong base, the acid is converted into a salt, and salts of weak acids are as much dissociated as salts of strong acids. Negative ions, then, are at once produced from the salt, and as they have an intense pink colour their formation is rendered evident. The addition of even a very minute portion of alkali over the point of neutralisation is therefore indicated in an unmistakeable manner. As weak acids do not combine readily with weak bases, phenolphthalein does not indicate well when a feeble base such as ammonia is employed. The end point is not sharp, as considerable excess of ammonia must be added before the unstable ammonium salt of phenolphthalein is formed to an appreciable extent.

Methyl orange is an example of a fairly strong acid indicator. Its undissociated molecules are red, its negative ions are yellow. When dissolved in water it dissociates partially so that both negative ions and undissociated molecules are present, with the result that the colour is intermediate between yellow and red, viz., orange. Being an acid, its positive ions are hydrogen ions. When, therefore, we add a small quantity of a strong acid to it we add one of the products of dissociation, viz., hydrogen ions, whereby its dissociation is greatly diminished, and the orange colour changed to red. When, on the other hand, an alkali, even a weak one, such as ammonia, is added, the methyl orange at once forms a salt with it, and the orange colour is transformed into the yellow colour of the negative ions which are produced from the salt. Methyl orange, then, is the proper indicator to use with strong acids and feeble bases. If the acid to be titrated is a weak one, like acetic acid, it has practically no effect on the methyl orange, which is then the stronger of the two acids, and instead of having its own dissociation greatly diminished, rather diminishes the dissociation of the other acid. A solution of sodium acetate or of sodium carbonate behaves, therefore, to methyl orange just as a solution of caustic soda would. Litmus is an indicator intermediate between phenolphthalein and methyl orange, and lacmoid is similar. These instances may afford some idea of the applicability of the hypothesis of electrolytic dissociation to ordinary problems of practical chemistry. It frequently gives a simple explanation of otherwise unintelligible details of chemical practice; in theorctical matters it is indispensable.

The Pharmaceutical Society and its Presidents.

THOMAS HERRING.—1851-52.

In June, 1851, William Ince retired from the chair and as George Waugh, the Vice-President, declined the higher office, Thomas Herring was elevated to the presidency. This pioneer pharmacist was born January 1, 1785. After being apprenticed to Mr. George Sothern, of Norwich, on coming to London he obtained an engagement with Messrs. Kirk, Hearon, and Co., in Bishopsgate Street. In 1815 the well-known premises at 40, Aldersgate Street, which bore his name, were opened, and there the business has been continued ever since. The firm was one of the first to recognise the necessity for improvement in certain galenical preparations, for though it is not unusual to represent the pharmacy of and before that date as being of a superior order, the statement is not consonant with facts. Mr. Herring was profoundly dissatisfied with existing medicinal extracts, and the whole class of vegetable powders then in vogue. A few retail pharmacists, equally dissatisfied, did their best to effect a change for the better, but obviously they had not the requisite machinery and apparatus at their command. It is to the credit of Thomas Herring that under his superintendence both these preparations were treated with unusual care, and that he succeeded in offering the fine, soft, impalpable powders which have replaced the former undesirable variety. Manual labour by means of the pestle and mortar can, and did, produce these powders in a genuine condition but the quality of brightness was of necessity absent. The example set was quickly followed, and there was a resolute attempt made that the zeal of the manufacturing chemist should be according to knowledge. Mr. Herring was elected a member of the first Council of the Pharmaceutical Society, and he continued to act in that capacity up to the time of his death. In 1851 he was elected President, and about that time gave important evidence before a Committee of the House of Commons in favour of Mr. Bell's Pharmacy Bill, when he demonstrated the need of reform in the conduct of the drug trade. He was a genial individual, and wonderfully energetic in his business relations. He died September 27, 1864, when he had nearly completed his eightieth year.



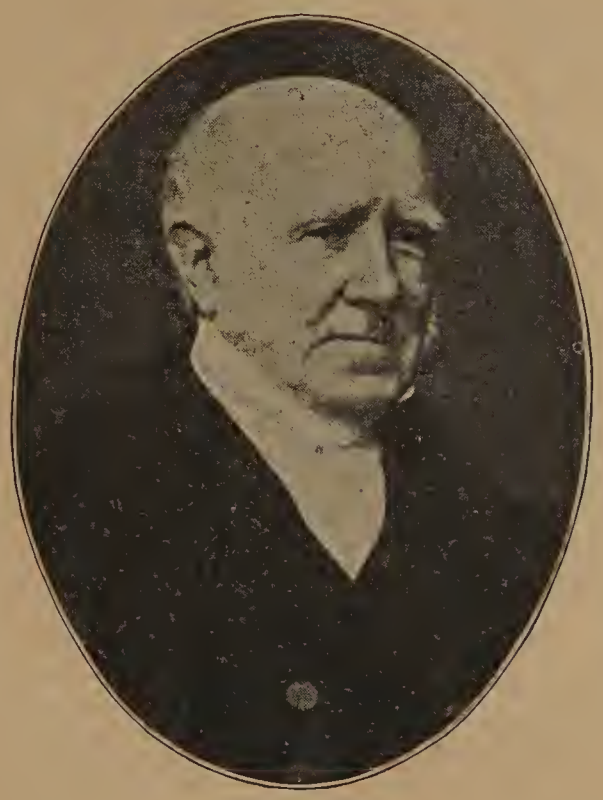
THOMAS HERRING.

At the date of Herring's election as President, the Society had existed just ten years, and the position and prospects of pharmaceutical chemists were very satisfactory as compared with the earlier aspect of affairs. But the question of medical reform was becoming very prominent, and it was felt that legislation in that direction must of necessity involve the regulation of pharmacy by Act of Parliament. It was hoped that the Government would introduce and carry a Bill dealing with the latter point, but so far the Secretary of State had done nothing beyond giving notice of a Bill for regulating the Sale of Poisons, the introduction of which was deferred on the ground of pressure of business. An Act for regulating the sale of arsenic was passed, but the sale of that poison was not restricted to any particular class or classes of persons, a proposal that the retail sale should be so restricted to medical men and chemists and druggists being incapable of realisation, inasmuch as since the apothecaries had abandoned the practice of pharmacy, no qualification had been required to carry on the business, and the term "chemist and druggist" had not then been legally defined. The pressing need of some such definition was now so strongly felt in the craft that, at the annual meeting of the Society, held in May, 1851, it was resolved that a petition should be presented to the House of Commons, in which it was pointed out that Great Britain enjoyed the unenviable distinction among civilised countries of having the practice of pharmacy totally without regulation. Though the Pharmaceutical Society had been established to provide a remedy for that evil, its purely voluntary nature prevented its efforts enjoying more than a moderate measure of success. It was urged, therefore, that legislation in the direction indicated was desirable, and that an Act should be passed for regulating the qualifications of pharmaceutical chemists.

Events then moved apace, for within a very few weeks Jacob Bell obtained leave to introduce a Pharmacy Bill into the House of Commons, and it was read a first and second time. The principle upon which this Bill was based was that everyone who practised the art of pharmacy should be a pharmaceutical chemist. It provided that a Register should be kept of all pharmaceutical chemists, assistants, and apprentices, and that everyone practising the business of a chemist and druggist should be entitled to registration as a pharmaceutical chemist, whether a member or associate of the Society or not. The Society's Board of Examiners was to be recognised; its Council empowered to make and alter bye-laws, subject to the approval of one of Her Majesty's principal Secretaries of State, and the examination might be dispensed with or modified in the case of those who were already apprenticed. After one year it was not to be lawful for any person not duly registered to exercise the business, or to use the title of "pharmaceutical chemist," or any name, sign, token, or emblem implying registration. Until the second reading of the Bill no intimation of opposition had been given; on the other hand, numerous petitions in favour of the measure had been presented. Opposition manifested itself, however, when Bell moved the second reading of the Bill, and it was found necessary to introduce several amendments. Thus provision was made for the appointment of a separate Board of Examiners for Scotland, and for all assistants, apprentices, and students then employed in the business to be registered as such and entitled to registration as pharmaceutical chemists when they

commenced to practise. Further, a clause was introduced to make registration permissive instead of compulsory in the case of persons already carrying on the business, and in the case of the widows of pharmaceutical chemists having the assistance of a duly qualified person. Finally, medical practitioners were entirely exempted from the scope of the Bill, whilst the term "pharmaceutical chemist" was defined to include "chemist and druggist," "dispensing chemist," and every other name denoting a vendor and dispenser of medicines. The Bill having been printed with these amendments, it was left to stand over till the next session of Parliament. It should be noted that the objections raised in the House on the second reading were in great measure based upon unwillingness to create a monopoly, and thus interfere with free trade in medicines, but though the result of this was that the stringency of the Bill was in some degree impaired, it was felt that even in its modified form it would establish the principle of a qualification in pharmacy, give a stimulus to education, and gradually but effectually raise the character of persons engaged in the business. The Bill was yet far from being through its troubles, however, as much more important and radical changes were made in it before it became law. It was duly re-introduced early in the session of 1852 and read a second time on March 17, when it was referred to a select committee which proceeded to take evidence from physicians, surgeons, and general practitioners, as well as from representatives of the Pharmaceutical Society. Evidence was also taken as to the pharmacy laws of France, Germany, Sweden, Finland, and other countries.

As the tendency of the evidence given was to show that the cultivation of pharmaceutical knowledge had been much neglected in this country, and that the interests of the public were deeply involved in the adoption of such regulations as would ensure a supply of qualified pharmaceutical chemists, the Select Committee was satisfied that there was need for legislation on the subject, but it was thought something short of what was asked for would suffice as a first measure. In fact, the free-trade principles then prevailing were too deeply rooted for the Committee to assent to the clauses which proposed to prevent unregistered persons from dispensing medicines and carrying on business as chemists and druggists. The parts of the Bill, therefore, which were thought to favour a system of trade monopoly, were remorselessly struck out, and the Bill became law on June 30, 1852, in its now familiar form. As a result, the original intention to include within the operation of the Act all chemists and druggists in the kingdom was frustrated, the most that was obtained being the recognition of those who had voluntarily acquired the status of pharmaceutical chemists, and protection of their title. Instead of the measure providing for the registration—as pharmaceutical chemists—of all chemists and druggists, and the examination of all who might in future assume a name, title, etc., implying qualification in pharmacy, it was reduced to an Act for confirming and amending the Pharmaceutical Society's Charter of Incorporation, and conferring an honorary distinction on members of that Society.



JOSEPH GIFFORD.

JOSEPH GIFFORD.—1852-53.

Meanwhile, Thomas Herring had been succeeded in the presidential chair by Joseph Gifford. There is but little of interest to relate of this individual. He was born on July 15, 1781, at Wellington in Somersetshire. At the expiration of his apprenticeship he came to London and managed the business of Mr. Kinnaird, of Holborn, after which he went into a wholesale house to learn that branch of trade. In 1804 he purchased a business in the Strand, eventually taking his nephew, Mr. Linder, into partnership. He is historically connected with the foundation of the Society, as he was called to the chair at the meeting held at the "Crown and Anchor" tavern for the purpose of considering Mr. Hawes's Bill, and he was an active member of the committee appointed on that occasion to watch and oppose its progress. The above committee constituted the first Council. Mr. Gifford died September 7, 1857.

During Gifford's year of office the chief business under consideration was the alteration and amendment of the Society's bye-laws. Though the majority of chemists and druggists in business were left outside by the provisions of the new Act, it was felt that steps should immediately be taken to remedy this, and the Council decided to admit all who could produce satisfactory evidence of proper qualification, without insisting upon the examination being passed. This desire to put a liberal construction on the Act, approved itself to the members of the Society, as manifested at meetings held in London, Liverpool, Manchester, Newcastle, Nottingham, Norwich, Bristol, Glasgow, Aberdeen, and Edinburgh. At Bristol the late G. F. Schacht even went so far as to suggest the establishment of annual meetings in the provinces for scientific objects connected with pharmacy, and that suggestion probably led to the formation of the British Pharmaceutical Conference.

At a special general meeting of the Pharmaceutical Society, held on December 8, 1852, two new bye-laws were unanimously agreed to, one admitting as members of the Society chemists and druggists who had commenced business on their own account after the date of the Society's Charter, and the other admitting associates as members if they had been associates prior to July 1, 1842. The effect of those bye-laws was, of course, to enable any person so admitted as a member to style himself "pharmaceutical chemist," that being the only title then recognised by the law. But after the bye-laws had been confirmed by the members and approved by the Secretary of State, objection was raised by a few individuals who contended that it was illegal to place any person on the Register of Pharmaceutical Chemists after the passing of the Act, unless they had previously been members of the Society or had passed the requisite examination. In spite of this opposition three persons were elected members in accordance with the new bye-laws, and the result of that action was that the Society became involved in harassing litigation, the Registrar being called upon to show cause why a *mandamus* should not issue commanding him to remove the name of the newly-

elected members from the Register. The Court of Queen's Bench decided that the new bye-laws were valid, but nothing would satisfy the unhappy mortals who thought otherwise except to carry the matter to the Court of Appeal, and not until May 30, 1855, was the decision finally given in favour of the Society. The most curious circumstance about this unfortunate chapter in the Society's history was that the person who was instrumental in raising the legal question had seconded the motion for confirming the new bye-laws at the special general meeting called for that purpose on December 8, 1852. The only object gained by his selfish and inexplicable opposition was to exercise a prejudicial influence on the advancement of the Society, but that, happily, was only fleeting in its effects.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, DECEMBER 1, 1897.

Present:

Mr. Walter Hills, President.
Mr. G. T. W. Newsholme, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Grose, Hampson, Harrison, Johnston, Martindale, Park, Savory, Southall, Storrar, Warren and Young.

The minutes of the last meeting were read and confirmed.

The Glasgow Conference.

The President said a very fine framed photograph had been received from the local Committee of the Glasgow Conference. It was an admirable group, and they were much indebted to the local Committee for having presented it.

The New Bye Laws.

The Secretary read the following letter from the Privy Council:—

Privy Council Office, Whitehall.
November 17, 1897.

Sir,—Referring to your letter of August 4 last, I am directed by the Lords of the Council to transmit to you, to be laid before the Council of the Pharmaceutical Society, the accompanying Order of Council (November 11, 1897), confirming and approving certain new Bye-laws of that Society.

I am, sir,
Your obedient servant,
(Signed) C. L. Peel.

Walter Hills, Esq.,
President of the Pharmaceutical Society of Great Britain, 17, Bloomsbury Square, W.C.

Restorations to the Register and to the Society.

The name of the following person, who has made the required declarations and paid a fine of one guinea, was restored to the Register of Chemists and Druggists:—

Hampden, Charles Burrows, Wanlip, near Syston.

Two persons were restored to their former status in the Society upon payment of the current year's subscription and a nominal restoration fee of one shilling.

Finance Committee.

The Secretary read the report of this Committee, which included a recommendation of the payment of various accounts.

The President, in moving that the report and recommendations be received and adopted, said there was nothing to which he need draw attention, except a payment of £35 from the General Benevolent Fund to the Orphan Fund, which was simply the interest on £1000 belonging to the Orphan Fund, which had been used by the Benevolent Fund during the year.

The report and recommendations were unanimously adopted.

Benevolent Fund Committee.

The report of this Committee included a recommendation of grants to the amount of £37 in the following cases:—

A registered chemist and druggist (78) who has had two previous grants. He is a paralytic. (Cheltenham.)

The widow (68) of an associate in business and subscriber, who had a grant last year. (Crawley.)

The widow (62) of a chemist and druggist, who has had two previous grants. (London.)

One case was deferred for further information, and one application was not entertained.

The Vice-President, in moving the adoption of the report, said the cases dealt with by the Committee were few and of the usual character. With reference to the application which had been declined, the applicant had had several grants already from the Fund, and as her circumstances were now much better than when she first came to the Society, it was thought that she should now try to do without a grant.

The report and recommendations were unanimously adopted.

Library, Museum, School, and House Committee.

The report of this Committee stated that the Curator's report had been received, and included the following particulars:—

		Attendance.	Total.	Highest.	Lowest.	Average.
October	Day		436	43	7	17
	Evening		22	5	1	1

Several donations had been received (*Ph. J.*, November 13, p. 430), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The report of the Librarian had been received, including the following particulars:—

		Attendance.	Total.	Highest.	Lowest.	Average.
October	Day		411	24	8	16
	Evening		113	13	2	6

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
October	221	104	117	£1 2s. 6d.

Several donations had been received (*Ph. J.*, November 13, p. 430), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended the purchase of the undermentioned books for the Library in Edinburgh:—

Piesse, 'The Art of Perfumery,' latest edition.
Coblentz, 'Hand-book of Pharmacy.'
Taylor, 'Medical Jurisprudence,' latest edition.

The President announced the receipt from Dr. De Vrij of letters written to him by Daniel Hanbury between the years 1851-75.

The President moved the adoption of the report and recommendations. He was sorry to say that he had been too busy to look through the letters so kindly sent by Dr. De Vrij, but hoped to be able to do so shortly, when he might be able to say something more about them. He had already thanked Dr. De Vrij for his kindness in presenting them.

Mr. Southall asked how these letters would be left.

The President said that had not yet been decided. Of course, they were the property of the Society, and would be open to inspection under suitable conditions.

The Vice-President suggested that the Society might be liable to a motion for injunction if the contents of the letters were published.

The President said the letters would be looked through before they were allowed to be seen.

The motion was then carried unanimously.

Law and Parliamentary Committee.

This Committee had held two meetings and presented a draft Bill (see p. 502) for adoption by the Council, subject to verbal alteration, and recommended that the Committee be authorised to take steps for its introduction in the next session of Parliament.

The President, in moving the adoption of the report, said the Council had before it a draft Bill which the Committee asked to be accepted, and for authority to take the necessary steps to introduce the same into Parliament during the coming session, subject to any alterations that might be deemed necessary after consultation with the solicitor. He had every confidence that the resolution would be received with practical unanimity. The Law and Parliamentary Committee was a very large one, and had come to an unanimous conclusion on the matter. It would be seen that the proposed Bill was a very simple one. It was one which would not arouse any great amount of enthusiasm, but would receive general support. The Committee had come to the conclusion after very careful consideration that in present circumstances it would be advisable to approach Parliament with a Bill of a non-contentious character. The principal object of the Bill was to consolidate the Society, and so make it stronger by furnishing a better means of having every interest in the Society thoroughly represented. In their moral life people spoke of the sins of commission, and the sins of omission, and in dealing with the Bill now before them, he would divide the remarks which he had to make under those two heads. He took it that the faults of commission in the present case were not very serious, and were such as would not be criticised very unfavourably. For the purpose of consolidating the Society, the Bill proposed to make chemists and

druggists eligible to membership without any restriction. As far as he could understand public feeling in the Society, he believed there were very few pharmaceutical chemists, members of the Society, who did not feel that it was of the utmost importance for the future usefulness of the Society that they should now face the matter, and open the doors of the Society without any hindrance whatever to all those who had passed the qualifying examination, and make them eligible for full membership. At the present time the number of associates was rather more than the number of pharmaceutical chemists, and was increasing in greater proportion. It was highly important that they should have the chemists and druggists in full accord with them in every department of their work. The only other points to which he need allude were, firstly, Clause 2, which asked for powers to make those associated with them as apprentices and student seligible for a new title, viz., "Student-Associate." There was considerable difficulty now experienced in making a clear distinction between the students who were so by reason of having passed the First examination, or having presented a certificate which the Board of Examiners were empowered to receive, and the students who were such, by having taken the further step of voluntarily associating themselves with the Society. There was also to be borne in mind the fact that under the amended Bye-laws, which he was glad to say had now received the confirmation of Her Majesty's Privy Council, there might be a number of young men in the future who would be attracted with perhaps greater difficulty by the Society during the term of their apprenticeship, and they wanted to encourage those men to associate themselves with the Society from their earliest connection with pharmacy, and he thought that the title of "Student-Associate" would be a little encouragement to that class of men to join, and would also be helpful in making the distinction to which he had already alluded. The next point he would refer to was that dealt with in Clause 4. That Clause had been in several draft Bills which they had either introduced into Parliament or read at the Council table, and was one which, he was sure, would receive their unanimous approval. It merely provided a different mode of election to the Council. It did away with what some of them felt was not a satisfactory manner of balloting—seven out of the fourteen to retire, and seven to remain on the Council for another year. The clause merely provided for one-third of the Council retiring every year in rotation. This was a rule which was found to act well in various municipal and other bodies. It provided against too hasty changes, and on the other it provided for the possibility of, in two years at least, altering the character of the representative body, if it were found desirable. Dealing with Clause 5, which provided for an extension of the time at which voting papers might be received. Nowadays so much was done through the post that it was only right that those in the provinces who were unable to come to the annual meetings should have every facility given to them to record their votes up to the last moment that it was possible to receive them. This was a matter to which he need not further refer, as he was sure that it would be accepted. He would now say a word or two on the faults of omission which might be found in this Bill. Some, perhaps, might say that they had been asking for bread and the Council gave them a stone, and that no help was given them in those matters which pressed on them in their daily lives. He might refer to such questions as jury service, the operations of limited liability companies, and so on. The Council had had before it various resolutions proposed by local associations, of which he had an epitome before him, and he found that six out of seven agreed to the suggestion that all qualified should be eligible for membership. Other points, including those he had mentioned, had been discussed, and though he feared he could not give anyone very much comfort, he ought perhaps to say a word or two upon them. They were questions and grievances which affected more or less everyone in the trade, and as far as he knew the Council generally was quite in sympathy with many of the views expressed at the representative meetings he had referred to. There had been an opinion expressed that there should be an interval of three years between registration as a student and entrance for the qualifying examination. He believed they were all in favour of that, but there were certain difficulties in the way of making such a provision compulsory. He believed that under the new Bye-laws this result would be attained without a positive enactment. The First examination, in future, including three new subjects—Euclid, Algebra, and a foreign language—would, he believed, be passed either during school life or immediately afterwards by young men not over sixteen or seventeen, so that there would be at least three years before they could enter for the Minor. But that was only a part of a larger scheme, including a curriculum, of which he, personally, and many of his colleagues, were in favour, for the principle had been included in one or two draft bills which had been previously prepared. But he was bound to say that in his opinion the principle of a curriculum was not yet ripe. In the course of a few years there would probably be a great change in the views taken by members of the Society on the subject of education. The question of training, as well as examination, would attract more attention and would have to be dealt with. For some time past certain resolutions had been passed with reference to a conference on the subject of pharmaceutical education, having special reference to the facilities which should be provided in provincial centres. He should be glad to assist such a movement in any possible way, but he would ask those who were pressing it forward to remember the old adage *festina lente*, and to go somewhat cautiously, if they desired to achieve good and lasting results. Up to a certain extent he was in favour of dividing the qualifying examination, but he was entirely opposed to anything like an intermediate qualification. The division of the examination as distinct from the qualification, might be advocated with a view to encourage students to commence their work on first entering the business, and to continue their studies throughout their apprenticeship. The question of jury service, too, was one which affected many men, but it was impossible to deal with it directly in a Pharmacy Bill; it could only be done indirectly, by providing that every one who passed the Minor should become a pharmaceutical chemist. That had been advocated by some, but he was not prepared to go to that length himself, and was quite sure that if a clause of that kind were inserted it would excite a good deal of opposition. He was in favour of considering a scheme for having only one qualifying examination, which should give the title of Pharmaceutical Chemist, with possibly a further honorary examination for those who liked, as he had shown by supporting a Bill brought forward some years ago, in which it was suggested that there should be a curriculum and an intermediate examination, the title of Pharmaceutical Chemist to be given to all who passed the qualifying examination; but it was distinctly on the understanding that there was a system of training to be taken into consideration as well as the examination. With regard to the restriction of dispensing and the sale of drugs to qualified persons, they were all in favour of it, and a clause to that effect was inserted in a former Bill, but it did not seem to create any enthusiasm, and its insertion would be almost certain to evoke a great deal of outside opposition. Again, with regard to the question of limited liability companies, the more one thought about it the more one felt how hopeless it was to attack it. When one saw the various shops which appeared to be chemists' shops one often had to ask one's-self under what conditions they were conducted. Many of them were branch shops, sometimes owned by members of the Society and not always managed by qualified assistants, and every year more and more vested interests grew up, so that it became more and more difficult to approach the question of limited companies. He thought, therefore, that the Committee had done wisely in not dealing with this question at the present time. He noticed that no resolution on this question had been passed at any of the meetings to which he had referred, showing that it was felt to be a thorny one. There had been complaints from individuals from time to time, but no resolution had been ever moved at the meetings, and when it had been mentioned it was only touched upon lightly. He had in his mind what the logical outcome of the whole matter should be, but he would not state it because he feared the remedy might be considered worse than the disease. To sum up, the present proposal was to afford every facility for the consolidation of the Society, and to give full opportunity for representation of all interests on the Council. He trusted that if the Bill received the sanction of Parliament there would be a large accession to the number of members, who could take an active part in the conduct of the Society. To carry this Bill it was requisite not only that there should be no organised opposition, but that there should be a certain amount of pressure brought to bear on Members of Parliament to support it. He feared there was very little to interest an ordinary M.P. in such a Bill, and it therefore required to be brought home to them that it was purely non-contentious, and yet one to which a large number of people attached great importance. He was sure that every member of the Council

would do what he could in this direction, but it was very important that their friends throughout the country should also co-operate, so that when those in London went down to the House of Commons to press the matter forward, they should find that the way had been somewhat prepared for them. Local associations especially should bear this in mind.

The Vice-President said he would not take up much time in seconding the resolution, as the President had so fully covered the ground. They might appeal with confidence to the men who had passed the Minor and were on the register to give their support to the Bill. All the chemists throughout the country should set themselves to work to interview the Members of Parliament in several districts. They frequently heard Minor men give their reasons for not belonging to the Society. They were told that if they would join the Society the Council would do what they wanted, but they wanted the Council to do what they wanted before they joined. He would appeal to all chemists in the country to put their shoulders to the wheel and help the Society, and by so doing they would help themselves. If they would all join together they would get everything that they could legitimately want; but it was perfectly useless to expect to do so unless they had the whole weight of the calling at their back. Referring to what the President had said about the desirability of having a certain interval between the passing of the first examination and the Minor, in his opinion it was the duty of every chemist who took apprentices to see that they had passed the first examination before entering on their apprenticeship. Many chemists did not do this, with the result that a considerable period of the pupilage was diverted from the proper studies. In his own town and many others he felt sure that the local associations would do their utmost to help on the passing of the Bill.

Mr. Hampson, in supporting the Bill, said he had been long enough on the Council to remember nearly all the previous attempts in the way of legislation. The former Bills were, as it were, under the eye of, and were discussed by, the members of the trade with the result, not only of want of enthusiasm, but considerable opposition. Such experience as this was surely convincing proof that it would be futile to attempt anything that would produce active opposition. The method of enfranchisement contained in the Bill was a very important one, and it was certainly the first step that the Society ought to aim at before asking for more. They wanted the necessary members, the variety of opinion, and the force of opinion to make it possible to do anything beyond the initial step. He was sanguine now that these complex matters which had been so frequently discussed were in the minds of members of their calling, and that they would concentrate their attention on this simple enfranchisement, and give this Bill their hearty support. If they did not, let them hold their peace for ever afterwards. An opportunity occurred now by which they could not only complain, but they could make their complaints felt. They would be able to come there and air whatever grievances they thought proper, and they might send whatever men they liked to give expression to their views. If they felt any interest in pharmacy proper, in its commercial or scientific aspect, let them support the Bill, and so have a stronger Society.

Mr. Warren said he had long come to the conclusion that the great trade of pharmacy in this country was getting more and more into the hands of chemists and druggists, and he felt sure their interest and their desire for the welfare of the administrative body was equal to the interest of pharmaceutical chemists, and, therefore, they should have all the privileges and responsibilities attaching to it. He was the more sure that nothing but good could come of the proposal because it was found that wherever there was active association in pharmaceutical affairs it was not in antagonism to the Society; opposition came more from those who sulked in their tents and did not seek to know. Where there was an association they found the Society appreciated, and where there was intelligent argument they found the Council were not expected to do impossibilities. They had a desire to promote those things which for the interest of the profession they would like to have, but they knew that the time was not opportune. It was, therefore, all the more important that they should go on with a Bill that they hoped to pass.

Mr. Harrison said in following the Treasurer he felt that he was going on very safe lines. They had all learnt that the larger Bills that had been brought forward had failed to obtain the support that was expected, so that they were now driven to the conclusion that they must go to Parliament with a small matter, and do by two steps what it was thought could have been done by one. If this Bill passed it would at all events remove one suggested grievance. There was no doubt a feeling among a large number of men who had qualified by examination that they should be eligible for the privileges of membership. The Bill would at once do away with that grievance, so that those who had any complaint on that score ought to support the Bill. On the other hand, there were those who would ask for greater things, that they should go in for a Bill which should remove every grievance under which they suffered; but although these men might say, We have come to you and asked for bread, but you have given us a stone, he would remind them that they were not endowed with creative faculty, and that they asked by the Bill for power to go to Parliament to obtain the bread. They could not get all they wanted unless they had a large body of men at their backs. All sorts of vested interests would be attacked, and they would have to meet vested interests of a very powerful character indeed, the result of which would be, as it had been in the past, that they would get nothing. There was a progress that he knew some people delighted in, that was monotonous and useless, and that was ploughing the sand. He had no wish to join such an operation, but preferred to go for that which he believed was practical, and having got a Bill which would consolidate the Society, they would have a very much better chance in the future of obtaining the removal of their grievances. He failed to see who could be injured by the Bill; in fact, it was difficult to see who outside their own body was interested in it, and he could not help thinking that if all who were interested in the matter would take the trouble to instruct their Member of Parliament in the matter, the Bill would speedily become law.

Mr. Atkins said he had nothing special to advance in support of this resolution, the ground having been already well covered, but he thought it would be a mistake to allow the Bill to go out without the hearty assent of the Council to it having been expressed. If it were desired to create a momentum in favour of the Bill, it should originate at that table. It was said to be a very simple Bill, but he thought its simplicity was its special merit. He once thought otherwise, but he was now prepared to support this Bill, because it was simple, and because he did not think there was any chance of any contentious Bill relating to pharmacy passing the House of Commons. Where could any opposition to this Bill come from? Only from an opponent of the Society, and surely there could not be anyone who was opposed to the objects of the Society, though there might be one here and there opposed to its traditions. Its purpose and functions must certainly command the support of every right-thinking Englishman, and therefore he thought they need not anticipate opposition. Reference had been made to the fact that there had been no resolutions passed on the subject of company trading, but that must not be taken as any indication of apathy on the question. The fact was that members of the Society and the trade were beginning to realise what the Council had realised by a long and painful process of education, that the problem was an immensely complicated and difficult one, and that there were so many interests involved which were strongly represented in Parliament that it would be utterly impossible to get a Bill passed which dealt satisfactorily from their point of view with this matter. This was simply a Bill for consolidation and simplification of title. Whether it would achieve all which was expected of it he did not know, and sometimes he almost despaired on account of the supineness of members of the craft; but, at any rate, if it were passed, all ground of complaint would be removed, and that was well worth working for.

Mr. Storrar said he could not give a silent vote on this occasion because he had formerly spoken against the introduction of a similar measure. Hitherto he had objected to such a Bill for two reasons; first, because he feared the tendency might be to reduce the number of those who went in for the Major qualification, and thus lower the character of the Society as a scientific body; and secondly, because there was a certain element of injustice to those who already possessed the Major qualification. But as the principle of opening the door to everyone on the Register had been so loyally accepted by the Society generally, it would be foolish to oppose it any longer. The only criticism which could be passed on the Bill was that it was so small; but whose fault was that? It was not the fault of the Council or of the Society. Over and over again bills had been introduced containing propositions which it was thought would be for the benefit of the Society and of the trade, and they had invariably failed to pass, in large measure probably because they were not supported by the trade. This Bill showed a desire to take the whole of the trade with them, and if it failed to increase

the Society to such an extent that it represented the trade as a whole, the fault would lie with the members of the trade themselves, as every opportunity was given them of joining and helping forward the objects which all had at heart.

Mr. Young desired to record his approval of the measure now brought forward. It was not quite the Bill they would like to pass, but it was one which was likely to pass. Already its provisions had been discounted and minimised in some quarters almost to the vanishing point, and it was well to remember that of the chemists and druggists eligible for membership only a small percentage had thought fit to claim the privilege, and although under existing regulations seven chemist and druggist members were eligible as members of Council, never within his experience had more than three been elected. Nevertheless, as Mr. Harrison had pointed out, an electoral disability did exist, and whatever the consequences might be, they ought to be removed. If the Bill passed it would certainly strengthen the Society by the addition of some really good men, though he was not particularly sanguine about the numbers who would join. A more revolutionary Bill could scarcely be imagined, for under its provisions, within two years, it would be possible to utterly annihilate and exterminate the present Council and substitute a new set of men, who with newly-acquired zeal and vigour, might see their way to try to reach the pharmaceutical grapes which the discrimination and experience of the Council had so far regarded as being unattainable.

Mr. Martindale said this was a small Bill, but it would lead to the consolidation of the Society by removing all disqualifications on membership. Some were inclined to go farther and confer the title of pharmaceutical chemist on all who passed the qualifying examination, but one doubted if such a step would be favoured by the Legislature or the public. He believed there would still be a desire that there should be a subordinate class of chemists and druggists who should be allowed to sell poisons, etc., in villages and country districts, which would lead to further abuses. He should be very glad if the exemption from jury service could be extended to all qualified men, but he did not see how it could have been included in this Bill without introducing greater evils. He should therefore support the Bill most heartily.

Mr. Carteighe appealed to the Major men to receive the Bill in the same spirit as they received the Bill which passed in 1868. When he was president he had a Bill precisely similar to this, with the addition of a curriculum, and with the exception that there was a restriction as to the number of chemists and druggists who might sit on the Council. Wherever he went that Bill was carried, either by large majorities or unanimously; therefore, *a fortiori*, this Bill ought to be unanimously agreed to. So far as the feeling of the chemists and druggists could be judged at public meetings, they had already in his presence signified their approval of such clauses as were contained in this Bill. With regard to the constitution of the Council, it had always been felt that the voice of the electors themselves should be left unfettered in every way. Anything that savoured of a class representation in a small administrative body like theirs was always objectionable and led to friction. He felt perfectly certain that the qualification for membership of the Council should be not whether a man was a pharmaceutical chemist or a chemist and druggist, but whether he was a man who would devote his time, his energies, and his interests to advancing the craft without any desire for personal gain. That was the principle on which the Society was founded. Their founders gave up money and time and a certain amount of prestige, for they mixed with common people like themselves; they were great men in those days, from William Allen downwards; and that spirit came up again at the time of the passing of the first Pharmacy Bill. He had often before expressed his astonishment that in those days Jacob Bell was not powerful enough to remove the inertia which prevented every registered person in 1853 from being registered as a pharmaceutical chemist. It was an object-lesson that should not be lost sight of that the Bill which was practically Jacob Bell's Bill opened the qualification of pharmaceutical chemist to every registered chemist and druggist, and yet they did not come in, and the same observation applied to the 1868 Act. There was a clause in the 1868 Bill by which every person who was registered as a chemist and druggist should be for all time eligible to become a member of the Society; but the Major men kicked at this very much, and while they did not object to all chemists and druggists in business being eligible, they objected to the Minor examination *per se* giving that qualification. The only way in which the Bill was able to be passed was by a compromise being effected that only chemists and druggists in business should be eligible for membership. He remembered when he was the youngest member on the Council proposing an amendment introducing this compromise, and the only hand held up in opposition to it was the then President's, Mr. Sandford, who said that every man capable of keeping an open shop, no matter what his qualification, ought to be eligible for membership. Without reference as to whether the Bill would, if it were passed, bring into the Society the whole of those interested in the trade or not, he agreed with Mr. Harrison and Mr. Young that the pharmaceutical chemists who had borne the heat and burden of the day must see that their interests were benefited by having a large number of men in one body with one interest, and with the same electoral power. He sympathised with those pharmaceutical chemist members who might oppose the Bill, but he would remind them that their qualification of pharmaceutical chemist remained intact, and, whether that was a sufficient distinction for them or not, it ought to be some satisfaction to them to know that an educated pharmaceutical chemist soon made himself known to medical men and educated men as being what he was.

Mr. Bottle, as the oldest member of Council present, emphasised the appeal which Mr. Carteighe had made to the Major men, from whom alone any opposition to this Bill might be anticipated. He felt in the ranks of the Society and of pharmacy generally, that it was most desirable that this Bill should pass, and he should do everything he could to get it through. He had taken part in discussions on previous Bills, but never remembered so much unanimity as on this occasion, which he hoped might be taken as an augury of success.

The President, in putting the resolution, said he had received a letter from Mr. Symes, apologising for his absence on account of a bad cold. He spoke strongly in favour of this Bill, because it would tend to the consolidation of the Society. He should have been glad if it could have been somewhat more sweeping, and effected a consolidation of the whole craft, but he hailed it as a step in that direction. He (the President) was very pleased to find that there was such a unanimity of opinion, and thought it might be taken for granted that those who had not spoken were equally in favour of the measure. He was very pleased to hear the remarks of Mr. Carteighe, for they all knew what interest he had taken in former efforts at legislation, and that failure was not owing to any want of energy or effort on his part.

The resolution was then put and carried unanimously.

Expulsion of Members.

The President moved—

"That in accordance with Section 17 of the Bye-laws the Secretary be instructed to remove the name of George Ellinor, of Sheffield, from the list of members of the Society."

Mr. Carteighe seconded the motion, which was put and carried unanimously.

The President then moved—

"That in accordance with Section 17 of the Bye-laws the Secretary be instructed to remove the name of Thomas Garratt Forshaw, of Bradford, from the list of members of the Society."

The Vice-President seconded the motion, which was carried unanimously.

Resolutions from Local Associations.

The President said reports had been received from various local associations, including those at Plymouth, Nottingham, Manchester, Sheffield, and Bristol, of meetings which had been held, and including resolutions passed there, to which he had already referred in dealing with the Draft Bill. He was always glad to receive such communications, and he need only add that they had been laid before the Law and Parliamentary Committee and duly considered.

Appointment of Local Secretaries.

The report of the General Purposes Committee was read, in so far as it related to the appointment of local secretaries, superintendents of written examinations, and the appointment of examiners.

The President said on the last occasion it would be remembered there were a number of centres from which no communication had been received as to the appointment of local secretary, and to them a circular letter had been sent asking if any reason could be assigned for this apparent apathy, and if the present holders of the office were willing to continue to act. Answers had been received from nearly all, and in most cases the Committee recommended that the appointments should be renewed. Two

new centres were recommended, Ashby-de-la-Zouch and Weston-super-Mare. He would therefore move that the following appointments be made :—

Andover : Bienvenu, John.
Ashby-de-la-Zouch : Bullen, George W.
Ashford : Ingall, Joseph.
Brentford : Wood, Alexander.
Burton-on-Trent : Wright, George.
Coventry : Hinds, James.
Dartford : Goff, Walter E.
Darwen : Shorrock, Ralph.
Dolgelly : Williams, Richd. W.
Epping : Rowland, Thomas W.
Faversham : Laxon, Matthew E.
Flint : Jones, Owen W.
Hanley : Cornwell, Thomas C.
Houghton-le-Spring : Rowell, Robt. H.
Ilfracombe : Crang, Walter.
Keighley : Kershaw, A. N.
King's Lynn : Palmer, William J.
Llanrwst : Jones, Owen.
Longton ; Prince, Rowland.
Pembroke Dock : Bowllug, John H.
Pontefract : Bratley, William.
Richmond (Yorks) : Waltou, Bridges E.
Romford : Lasham, John W.
Ross : Matthews, Thomas A.
Rugby : Brown, Frederic P.
Runcorn : Weston, John H.
Shipley : Dunn, Henry.
Southend-on-Sea : Dawson, George R.
Stalybridge : Simpson, Allwood.
Stowmarket : Gostling, G. James.
Stroud : Coley, Samuel J.
Tamworth : Allkius, Thomas B.
Tauuton : Kirkpatrick, James.
Uxbridge : Coles, Arthur.
Walsall : Elliott, E. Matthew.
Wellington (Somt.) : Windeatt, G. John.
West Ham : Barnes, W. R.
Weston-super-Mare : Cooper, John.
Wokingham : Rednall, William R.

Assistant Local Secretaries.

Birmingham (*North*)	Poole, Jeffrey.
,, (*Central*)	Jones, William.
Liverpool	Buck, Anthony S. Grace, Walter A. Walker, F. (Everton). Hudson, Thomas H. Thompson, C. J. S.
Dundee (*Broughty-Ferry*)	Park, Wm.
,, (*Lochee*)	Russell, John W.
Glasgow (*Central and E.*)	Russell, J. A.
,, (*South*)	Moir, James. Boyd, Alexander.

Superintendents of Written Examinations.

On the motion of the President the following were appointed Superintendents of written examinations :—

Centre.	Superinteudent.	Deputy.
Aberdeen	Strachan, Alexander	Cruickshank, John.
Birmingham	Thompson, Charles	Prosser, Frank H.
Brighton	Gwatkin, James Ross	Savage, William W.
Bristol	Keen, Benjamin	Alleu, Benjamin.
Cambridge	Deck, Arthur	Coulson, Horace.
Canterbury	Bing, Edwin	Amos, Daniel.
Cardiff	Munday, John	Coleman, Alfred.
Carlisle	Hallaway, John	Pattinson, Michael H.
Carmarthen	Lloyd, Walter	Phillips, George.
Carnarvon	Joues, John	Jones, David.
Cheltenham	Barron, William	Palmer, Frank T.
Darlington	Robinson, James	Hutchinson, Rev. E.
Douglas (I.M.)	Radcliffe, John C.	Young, John.
Dundee	Kerr, Charles	Hardie, James M.
Edinburgh	Stephenson, John B.	Henry, Claude F.
Exeter	Lake, John Hinton	Milton, Thomas C.
Glasgow	Currie, William L.	Moir, James.
Guernsey	Nickolls, J. Bate	De la Rue, F. H.
Hull	Bell, Charles Bains	Stoakes, Benjamin M.
Inverness	Allau, Alexander	Ogston, William.
Jersey	Cole, George	Baker, John Thos.
Kirkwall	Stewart, Duncan	Webster, Rev. D.
Lancaster	Vince, James	Arkle, William.
Leeds	Reynolds, Richard	Bransou, Fredk. Wm.
Lincoln	Birkbeck, John Thos.	Elmitt, George.
Liverpool	Smith, Johu	Buck, Anthony S.
London	Taylor, George Spratt	Allen, Charles B. Moon, Harry.
Manchester	Kemp, Harry	Swinn, Charles.
Newcastle-on-T.	Clague, T. Maltby	Owen, Alfred E.
Northampton	Bingley, John	Mayger, Wm. David.
Norwich	Sutton, Francis	Corder, Octavius.
Nottingham	Bolton, Charles A.	Sergeant, F. Ross.
Oxford	Prior, George T.	Thurland, Hy.
Penzance	Symons, Netherton H.	Buckett, A. H.
Peterborough	Heanley, Marshall	Saunders, James E.
Plymouth	Hunt, Freeman W.	Woods, Wm. H.
Sheffield	Ward, William	Squire, George.
Shrewsbury	Cross, William Gowen	Blunt, Thomas P.
Southampton	Dawsou, Oliver R.	Wilson, Harry.
York	Sowray, Joseph	Kendall, Edwd. B.

Appointment of Boards of Examiners.

In accordance with the recommendation of the General Purposes Committee it was resolved that the following be appointed Examiners in England and Wales for the ensuing year :—

Arkinstall, Wm. ; London.
Farr, Edward H. ; Uckfield.
Gibson, Harvey ; Liverpool.
Kipping, F. Stanley ; London.
Lucas, Edward Wm. ; London.
McLeod, Herbert ; Staines.
Phillips, Alfred Jas. ; London.
Saul, John Edward ; London.
Seward, Albert Chas. ; Cambridge.
Taylor, Geo. Spratt ; London.
Tanner, Alfred Edward ; London.
Wright, Robert ; Buxton.

The following were appointed Examiners for Scotland for the ensuing year :—

Balfour, Isaac Bayley ; Edinburgh.
Davidson, Alexander ; Montrose.
Ewing, James Laidlaw ; Edinburgh.
Gibson, John ; Edinburgh.
Jack, James ; Arbroath.
Lunan, George ; Edinburgh.
Maben, Thomas ; Hawick.
Nesbit, John ; Portobello.

The President then moved that the best thanks of the Council be hereby given to each member of the Board of Examiners in England and Wales and in Scotland for their services during the past year. This was not a mere formal resolution, because they were much indebted to the examiners for the way in which they conducted their very arduous duties. He might call attention to the fact that there were certain gentlemen who retired from each Board by rotation, and in addition to that Messrs. Frankland, Green, and Bascombe had intimated their desire not to be re-appointed, although they had not served the full term of four years. There were, therefore, five new nominations for the Board for England and Wales, and two for Scotland. Their thanks were due to all the members, but especially to those who would not be members of the new Boards, though perhaps the services of some of them at any rate might be secured again at some future period.

The proposition was seconded by Mr. Martindale and agreed to unanimously.

Report by the Government Visitor for Scotland.

The President said a letter had been received from the Privy Council enclosing the report of Dr. Balfour Marshall, the Government Visitor for Scotland. He must say it struck him as one to which the writer had given a great deal of attention, and that it would be well worthy a careful perusal.

19, Sandyford Place, Glasgow,
November 24, 1897.

Report on the examinations held in Edinburgh by the Board of Examiuers of the North British Branch of the Pharmaceutical Society during the year 1897.

To the Lords of the Council.

My Lords,—I have the honour to report that examinations were held in Edinburgh during the months of January, April, July, and October, 1897, by the Board of Examiners of the North British Branch of the Pharmaceutical Society. I was present ou fourteen occasions, and beg to submit the results of both the Major and Minor examinations.

Major Examination.

	Number.	Percentage.
Candidates examined	10	—
,, who passed	1	10
,, ,, failed	9	90

Rejected Candidates.

	Number.	Percentage.
Failed in Practical Work	5	50
,, ,, Botany	7	70
,, ,, Chemistry	5	50
,, ,, Physics	2	20
,, ,, Materia Medica	7	70
Passed in each subject, but failed in obtaining required aggregate	1	10

Remarks.—It is much to be regretted that so few candidates should think it of advantage to present themselves for the Major examination. It would be gratifying if a much larger percentage of those who pass the Minor examination endeavoured to obtain the higher diploma, as indicating at least a desire to raise the educational status of pharmacists generally, apart from the greater benefit which would accrue to themselves. The percentage of failures is unfortunately very high, Botany and Materia Medica being the subjects responsible for 70 per cent. of the rejections. It seems to me that this great want of success can only be due to imperfect training, the students acquiring a knowledge of their work from books and coach classes, instead of having a recognised school of pharmacy to attend. It is a matter which demands the attention of the Pharmaceutical Society, and I would direct notice to the remarks I make regarding the education of pharmacists further on in this Report.

Minor Examination.

	Number.	Percentage.
Candidates examined	578	—
,, who passed	191	33 04
,, ,, failed	387	66·96

Rejected Candidates.

248 (42·9 per cent.) candidates failed in Practical Chemistry and Pharmacy, and were not admitted to the oral examinations. Of this number 165 failed to obtain any marks in Practical Chemistry. 136 failed to obtain any marks in Practical Pharmacy and Dispensing. 139 (24·05 per cent.) of the rejected candidates passed in these practical subjects and were admitted to the oral examinations in Botany, Chemistry, Materia Medica, Prescriptions and Pharmacy. Of this number 1 failed to appear for oral examination, 25 failed in Botany and were not further examined. 10 failed in Chemistry and were not further examined. 6 failed in one of the other 3 subjects and were not further examined. 10 passed in one subject, then failed iu Botany, and were not further examined. 8 passed in one subject, then failed in Chemistry, and were not further examined. 3 passed in one subject, then failed in Materia Medica, and were not further examiued. 12 passed in two subjects, then failed in Botany, and were not further examined. 5 passed in two subjects, then failed in Chemistry, and were not further examined. 3 passed in two subjects, then failed in Prescriptions or

Materia Medica, and were not further examined. 3 passed in three subjects, then failed in Botany, and were not further examined. 6 passed in three subjects, then failed in Chemistry, and were not further examined. 4 passed in three subjects, then failed in one of the other 3 subjects, and were not further examined. 12 passed in four subjects, then failed in Botany. 5 passed in four subjects, then failed in Chemistry. 26 obtained marks in each subject, but failed to get the aggregate required for a pass.

From the above it will be seen that out of 139 rejected candidates, who had already passed the first day's practical examination,

Botany accounted for	62 failures.
Chemistry accounted for	34 ,,
Other 3 subjects accounted for	16 ,,

I have found it impossible to give a percentage of the rejections in each subject, owing to the procedure in conducting the examinations, as a candidate, whenever he fails in obtaining marks in any given part, is not further examined, and his knowledge is, therefore, not tested in others, which he might have passed.

Remarks.—The percentage of failures, although high, compares favourably with the two preceding years. It is, however, not creditable to the candidates that 248, or 42·9 per cent., should be rejected on the first day in their practical chemistry and pharmacy, as a thorough knowledge of these subjects, especially the latter, is required in their daily work. Out of 578 candidates only 330, or 57·1 per cent., were admitted to further examination, and of this number 139 were rejected, Botany being accountable for 62, and Chemistry for 34 failures.

Botany and Chemistry.—These are the two subjects of which a candidate requires to have a special knowledge, as the others practically form part of the pharmacist's daily work. The examination in chemistry is of necessity searching, as it forms the groundwork of pharmacy, and, although not too severe, yet it accounts for nearly one-half of the total failures.

Prescription Reading.—Although the failures in this subject are few, yet far too many of the candidates showed great want of knowledge of their Latin grammar, which suggests a defect in the Preliminary examination. They translated English directions into Latin with difficulty, and were frequently ignorant of the names for the higher numerals.

The very high proportion of rejections distinctly shows that there is a lack of proper training, especially in laboratory work. It is not sufficient merely to recommend the students to attend a certain number of lectures, and I believe the only remedy is to have a regular curriculum. This would ensure compulsory attendance on lectures and a systematic laboratory training, both in chemistry and pharmacy. There may be financial difficulties in the Pharmaceutical Society establishing schools of their own in the Provinces, but these can be largely overcome. There are already medical schools established in most of the large centres, with excellent teachers in the subjects required for the pharmaceutical examinations. Arrangements could be made with teachers in their medical schools to hold special classes in the morning, and if a curriculum were made compulsory, pharmacists could let their apprentices attend as the forenoon hours are the most suitable. Many students who attend coach classes and other at present unrecognised pharmaceutical schools, do so late in the evening when they are already exhausted with their day's work and not in a mental condition to assimilate such knowledge as is imparted to them. Moreover, a thorough laboratory training is essential, and the neglect of this results in the large number of failures in the practical examinations. It is worthy of note that candidates even show a want of knowledge of such physical instruments as the thermometer, the barometer, the chemical balance, and the microscope. This is undoubtedly the result of mere cramming taking the place of careful systematic training. In conclusion, I am able to express my entire satisfaction with the manner in which the Examiners perform their duties.

I have the honour to be,
My Lords,
Your obedient servant,
(Signed) G. Balfour Marshall.

General-Purposes Committee.

The Council then went into Committee to consider the legal portion of the report of the General Purposes Committee dealing with questions of infringement of the Pharmacy Act. On resuming, the report and recommendations were received and adopted, and a special resolution passed authorising the Registrar to take proceedings against the parties named.

NORTH BRITISH BRANCH EXECUTIVE.

A meeting of the Executive of the North British Branch was held in the Society's house, 36, York Place, Edinburgh, on Friday, November 26, 1897, at 11 a.m., Mr. J. Laidlaw Ewing in the chair. Present: Messrs. Bowman, Coull, Currie, Ewing, Fisher, Henry, Johnston, Kermath, Kerr, Lunan, McAdam, McLaren, Mitchell, Moir, Russell, and Strachan. Apologies for absence were intimated from Messrs. Hardie, Paterson, and Storrar. The minutes of the last meeting were read and approved.

General Purposes Committee Report.

The Assistant Secretary read the report of the General Purposes Committee, from which it appeared that the contract for fitting up the new library had been completed to the satisfaction of the Committee. The Committee had accepted the tender of the Waverley Electric Lighting Co. for introducing the electric light into the Society's house and supplying an installation in the new library at a cost of £27 10s. This also had been completed to the satisfaction of the Committee. The Chairman, Professor Gibson, and Mr. Coull had been appointed a committee to advise and carry out a plan for the more efficient ventilation of the examination hall and laboratories by means of an exhaust fan and electric motor. The Royal College of Physicians had transferred to the Society their centre floor museum case.

The Chairman said with regard to the case from the Royal College of Physicians that they were very much indebted to that body for their very handsome gift. He hoped they would all go downstairs and inspect the case and museum collection, so much of it as had been fitted up. As Mr. Maben had said on the previous night, when it was finished they would have one of the best museums in the country, second only in some respects to that at Bloomsbury Square. He hoped the students would take advantage of it. He proposed that a committee should be appointed to send a special letter of thanks to the Royal College of Physicians for their handsome gift. The committee had carried out the remit for the alterations to the best of their ability. There were stil some parts of the alterations which he would like to see proceeded with, and he would ask the Executive Committee powers to do so, and they would carry them out as soon as the arrangements could be made. There were a great many noxious vapours in the laboratories, and in certain states the atmosphere of the place became very bad. They proposed to put in an electric exhaust fan, and they would be able to do that at a cost of about £20. They also required to put the old laboratory in order for its new purposes.

Mr. W. R. Kermath moved the adoption of the reports. He was sure they were all very much indebted to the Committee for having all this work carried out. It could not be done except by men on the spot, and it had been carried out in a thoroughly efficient manner. He was sure the Executive would express their gratitude for the trouble and time which the Committee had spent on this matter. He also moved that it be remitted to the Chairman and Assistant-Secretary to send a letter of thanks to the Royal College of Physicians for their handsome gift. He did not suppose the Chairman had uttered a word too flatteringly about what they had to show in the way of a museum. He also moved that it be remitted to the General Purposes Committee to complete the alterations.

Mr. C. Kerr seconded the motion, which was adopted.

Nomination of Examiners.

The Executive then went into committee to consider the question of the nomination of Examiners for the year 1898. On resuming, Mr. MacAdam, Glasgow, moved:—

> "That Isaac Bayley Balfour, Regius Professor of Botany in the University of Edinburgh; John Gibson, Professor of Chemistry in the Heriot-Watt College, Edinburgh; Alexander Davidson, Montrose; James Laidlaw Ewing, Edinburgh; James Jack, Arbroath; George Lunan, Edinburgh; Thomas Maben, Hawick; and John Nesbit, Portobello, be nominated for election by the Council as members for the Board of Examiners for Scotland for the year 1898."

Mr. J. Johnston, Aberdeen, seconded the motion.

Mr. J. Anderson Russell, Glasgow, said he wished to record his dissent.

The Chairman said he could not have his dissent recorded unless he moved an amendment.

Mr. Russell said he was prepared to move an amendment that he might put himself in order. He moved that they do not approve of the names of the two gentlemen who were at present on the Executive Committee.

The Chairman said they had no power to raise that question there.

Mr. Russell said it was not that they had no power, but that it was inadvisable.

The Chairman pointed out that the Executive had no power of electing; they could only nominate. He was inclined to rule that the Bye-laws had no bearing upon the Executive.

Mr. Russell said the Chairman was assuming something in regard to his opinions which was not at all correct. He was not saying that the Bye-laws had any bearing upon their conduct, but he put himself in order by assuming that they did. He took it that this Executive really had power to nominate or suggest persons to the Council in London, whom they thought it advisable should be appointed Examiners.

The Chairman: Are you going to submit names in place of those nominations? If you are going to bring up the question of principle, I am going to rule you out of order, and I do so now.

Mr. Russell: I submit to your ruling.

The Chairman then declared Mr. McAdam's motion adopted.

Mr. Lunan and Mr. Ewing thanked the Executive for having elected them to the Board.

Local Secretaries in Scotland.

The Assistant-Secretary stated that he had had some correspondence with Mr. Bremridge in regard to the appointment of local secretaries in Scotland. It would be seen that in the list published in the Journal no Scottish centre seemed to have been behind in the matter of nomination. This might be misleading. As a matter of fact from at least twenty Scottish centres no nomination was received at the proper time, but by correspondence he had succeeded in completing the list before the Council Meeting. But after consulting with the Chairman it had been thought desirable to bring the matter before the Executive at this meeting so that the attention of pharmacists throughout Scotland might be drawn to the subject, and that the Executive might consider any means that could be devised for creating greater interest in this subject. Something must be done to introduce more enthusiasm.

The Chairman: There is a great want of enthusiasm.

Mr. Currie said his opinion was that there was far too little time allowed between the issuing of the nomination papers and the date when they were required to be returned, for calling a meeting to decide upon the men. He got a notice asking him to convene a meeting to decide upon the best men to nominate for the ensuing year and to return the nomination paper on a certain date. The difference between the two dates was something like six days. He held that it was unreasonable to expect a local secretary to convene a meeting and return the nomination in six days. He had had a conversation with Mr. Newsholme upon that very subject, and he was likely to take the matter up. He thought the annual election of local secretary was a piece of absurdity and expense. He thought it should be a triennial or quinquennial appointment. The electorate would not take an interest and attend the meeting, and it was an unnecessary trouble and expense that it should be gone into every year.

Mr. C. Kerr, Dundee, was of opinion that the local secretaries should be appointed for two or three years, and that they should make it compulsory that he should retire at the end of that time.

The Assistant-Secretary stated that with the full concurrence of Mr. Hardie, Mr. Kerr had been appointed local secretary for Dundee.

It was agreed to remit the question to the General Purposes Committee for consideration, and report to the next meeting of the Executive.

The British Pharmaceutical Conference.

The Chairman expressed the hearty thanks of the Executive to the Local Committee of the British Pharmaceutical Conference at Glasgow for the hospitality shown, and remarked on the great success that had attended all the proceedings.

Mr. MacAdam, convener of the Local Committee, returned thanks and stated that the Local Committee had prepared several enlarged copies of the photographic group taken at the Conference excursion at Arrochar. In the name of the Committee he had pleasure in handing to the North British Branch one of those enlarged copies.

The Chairman thanked Mr. MacAdam, and accepted the custody of the picture.

The Control of Executive Business.

Mr. J. Anderson Russell asked what were the rules which controlled the conduct of the business of the Executive.

The Chairman referred him to the resolution of the Council printed in the Society's Calendar, constituting the Executive and defining its powers and functions.

Mr. Russell said the resolution contained no suggestions or instructions as to the mode in which the business was to be conducted. He submitted that it was most difficult for all members to be satisfied in their own mind as to the course to take in putting forward any matters of business. It must be difficult for old members, and what must it be for new members? He was desirous of making himself familiar in as short a time as possible with the mode of conducting the business, but he found he was hampered at every turning. He found that old members were also hampered, inasmuch as they had little idea as to what would be the event with regard to any subject to be submitted. It was not in accordance with the dignity of the Executive that, however worthy and accomplished the Chairman for the time being might be, the whole thing should be left in his hands. When the business was referred to any committee such as this Executive, it was for the Executive itself to determine how that business should be conducted, and not simply leave it in the hands of the Chairman. The Chairman might have in his mind certain well-defined sets of rules, and might be habitually guided by them. On an occasion the elected Chairman might be unable to occupy the chair, and another chairman had to take his place. When it came to that, where was the set of rules which the elected Chairman might have in his mind? If they were to conduct the business in a business-like fashion, they must all be familiar with the *modus operandi* in which the business should be conducted. He thought they should appoint a committee to draft a set of rules for the conduct of the Executive. He was not sure how to raise the matter. It should have been raised at the first meeting, and for that part of it each time the body was elected or re-elected, he thought these rules should be confirmed whatever rules might be agreed upon. There were many things which he thought were open to objection. The hour of meeting was not at all suitable for Glasgow men.

The Chairman stated that eleven o'clock was fixed upon by the Executive themselves. It was a matter of considerable discussion.

Mr. Russell said that was just the reason why they should have these matters before them. That should be entered as a standing rule, and these standing rules, while they applied to the Executive during its period of office, should not be held to apply to the Executive which followed, and it would be necessary that after each election they should be drafted afresh. He moved that it be remitted to the General Purposes Committee to consider the matter of drafting a set of standing orders.

Mr. David McLaren seconded, and this was agreed to.

Notices of motion:

Mr. Russell then said he had a proposal here which he had thought of bringing before the Executive. He was not aware before that they were in the habit of going into committee to discuss certain proposals. He would like, if this proposal of his could also be remitted to the General Purposes Committee.

This was agreed to.

Mr. C. F. Henry gave notice of the following motion for the next meeting. "That in the opinion of this Executive, steps should be taken to prevent limited liability companies using and exhibiting the title "chemist" or "druggist" or "chemist and druggist," and that the attention of the Council be called to the increasing use made of such titles by such companies, with the view of their taking action in the matter.

Mr. Currie proposed a vote of thanks to Mr. Ewing for the excellent manner in which he conducted himself in the chair at their annual dinner on the previous evening, which was accorded and the meeting terminated.

GENERAL MEDICAL COUNCIL.

THE NEW BRITISH PHARMACOPŒIA.

At a meeting of this body held on Tuesday, November 30, Sir William Turner in the chair, the first business was to receive the following

Report of the Pharmacopœia Committee.

"The Committee having had entrusted to it the duty of preparing the new edition of the British Pharmacopœia, has now the honour to submit for the approval of the Council copies of their draft of the work, subject to the correction of typographical and other errors. The estimated amount to be expended on its production will be about £6000. If twenty thousand copies are printed, the cost to the Council will be about six shillings per copy. The Committee accordingly suggest that the price of the volume might suitably be seven shillings and sixpence, but the power of actually fixing the price rests with the Commissioners of the Treasury. In order that the Pharmacopœia may be issued early next year, the Committee recommend that it be delegated to the Executive Committee to adopt the fully corrected work as The British Pharmacopœia, 1898, to communicate with the Commissioners of the Treasury on the question of price, to publish the Pharmacopœia, and to make the legal announcement of publication by notice in the London, Edinburgh, and Dublin *Gazettes*, in accordance with the provisions of the Medical Act, 1862."

Discussion on the Report.

Mr. Brudnell Carter moved that the report be received and entered on the minutes.—This was seconded by Sir Dyce Duckworth

and carried.—Mr. Carter said he now had to move the adoption of the report, but before doing so he wished to say that as it was not in his power practically to render any other assistance in the preparation of the new Pharmacopœia, his colleagues on the Committee had put him in the position of chairman, and that position had enabled him to see with what care and diligence it has been produced. On no previous occasion and by no other body had anything like the same labour, the same care, and the same pains been bestowed on the Pharmacopœia, which he thought will remain a monument to the work of the Committee. It was now fairly complete, except for typographical errors, and he therefore asked the Council to refer to the Executive Committee the special function of publishing the new work. If that was not done it would involve a delay in the publication until the Council meets in May next. Of course, the report would have to undergo some slight modification, in consequence of the Finance Committee having decided (subject to the approval of the Commissioners of the Treasury) that the Referees should receive a somewhat higher rate of remuneration. The total expense would be about £6200, or some 6*s*. 2*d*. per copy, and the Committee thought that 10*s*. or 10*s*. 6*d*. would probably not be too much for a publication of that kind.

The Price of the Book.

—Mr. Carter here produced a dummy copy of the Pharmacopœia to show the kind of binding it is proposed to adopt, viz., bright red cover with red edges.—The Chairman pointed out that in the report it was suggested that the price might be 7*s*. 6*d*., and asked if the Committee wished the Council to approve of that or the suggestion made by Mr. Carter that the price might suitably be 10*s*. or 10*s*. 6*d*.—Mr. Carter explained that at present all the Committee desired to be adopted was the last paragraph in the report recommending that the Executive Committee proceed with the publication of the Pharmacopœia so as to have it complete and ready when the Executive Committee meet in February, 1898, and in the meantime they would communicate with the Treasury on the subject of price.—Sir Dyce Duckworth, as a member of the Pharmacopœia Committee, thought it was due to the Council to know what an immense amount of labour and pains had been bestowed upon the new Pharmacopœia by the President, Sir Richard Quain. Those who knew him best knew how very dear it is to him, and had he been present he could have told them something in detail of the amount of work that has been done. The work and labour was simply stupendous, but the Committee had been materially assisted by Dr. Tirard, who had had nearly all the secretarial work in his hands for the last two and a half years, and during the President's illness had been in constant communication with him in reference to the work; without his (the President's), aid the book would not have been ready in anything like the time it is expected to be. The new edition had been revised in such a way as had no previous Pharmacopœia, and the Committee had endeavoured to make it as much as possible of

An Imperial Character.

With that object they had been in communication with India and the Colonies, and it had brought in a tremendous amount of correspondence on the subject. Sir Dyce went on to express the hope that the work would be favourably received, and that it would get into the hands of every practitioner in the Kingdom. Referring to the price of the book he thought it should be fixed so that the experts employed in its preparation could be adequately remunerated for their services. The Committee felt that the new edition is worthy of the Council, and is deserving of the respect of all interested in the Pharmacopœia. He had great pleasure in seconding that the recommendation of the Pharmacopœia Committee contained in the last paragraph of the report be adopted. —Dr. MacAlister cordially agreed with all that had been said regarding the amount of work already accomplished and still remaining to be done before the Pharmacopœia will be ready in February next. It was extremely important that any errors should be sought for and rectified; otherwise before it had been issued many months ingenious critics all over the country would be finding out something to complain of. He hoped that previous to the final Pharmacopœia Committee meeting all corrections would be noted, so that the work of the Committee might be finished. He therefore asked all members of the Council who take an interest in literary work to hunt out any obvious slips and errors, and to notify them to the Committee as soon as possible.—Mr. Brown did not agree with the suggestion in the report that the price should be 7*s*. 6*d*., or with that made by Mr. Brudnell Carter that it be 10*s*. 6*d*.; therefore he should oppose the adoption of the report.—The Chairman pointed out that the motion was that the Council approve of the recommendation of the Pharmacopœia Committee contained in the last paragraph of the report which did not refer to the question of price. —Mr. Brown, with due deference to the ruling of the Chairman, wished to ask at what price the present Pharmacopœia was published and sold.—Dr. J. Attfield appealed to by the Chairman, stated that the published price was 6*s*., but it was sold at 4*s*. 6*d*.—Mr. Brown thought it a great jump from 4*s*. 6*d*. to 10*s*. 6*d*. He had had much practical experience of printing, and he certainly was of opinion that such a book as the new Pharmacopœia promised to be could be produced for 2*s*. 6*d*., and he thought it ought to be published at as low a price as possible.—The Chairman asked Mr. Brown if he had read the clause in the Medical Act referring to the question of the price of the Pharmacopœia, and on receiving a reply in the negative, he proceeded to read the clause, which is to the effect that the exclusive right of printing, publishing, and selling the Pharmacopœia shall rest in the General Medical Council, subject to the proviso that it shall be lawful for the Commissioners of the Treasury to fix the price. It was, therefore, not a matter for the consideration of the Council.—Dr. Glover remarked that he thought the Council could make suggestions so as to guide the Treasury in fixing the price.—The motion was then put and carried.

LEGAL INTELLIGENCE.

Beecham's Pills.

On Friday, November 19, the action of Beecham *v*. Pemberton came before Mr. Justice North in the Chancery Division of the High Court of Justice for an injunction restraining the defendant from selling as Beecham's pills pills not manufactured by the plaintiff. The defendant, who carries on business as a chemist at 67, London Road, Derby, consented to treat the motion as the trial of the action to submit to a perpetual injunction, and to pay an agreed sum for damages and costs.—His lordship made an order in the terms arranged.

A Saccharine Patent Action.

On Friday, November 19, the action brought by the Saccharine Corporation for an injunction to restrain infringement of patent, was mentioned before Mr. Justice North.

Mr. Moulton, Q.C., said the motion had stood over for a week to enable the defendants to file their evidence, but up to the present time they had not done so. He did not wish to shut them out from the opportunity of filing affidavits, and would therefore let the motion stand over for another week.

Mr. Dodd said the patents in question were foreign patents. He was willing to give an undertaking in the terms of the notice of motion for a month, to be continued until the trial in the event of his not filing evidence at the end of three weeks. He asked that the plaintiffs should give an undertaking to be answerable in damages.

Mr. Moulton said he would give the undertaking, provided the defendants agreed not to sell pending the trial.

Mr. Dodd pointed out that the plaintiffs claimed fourteen patents in the writ, and that a summons had just been taken out for leave to strike out six.

His lordship asked whether the plaintiffs intended to go on with the motion.

Mr. Moulton said he proposed to let it stand over for a week, but he gave notice that he should bring it on then, whether the defendants had filed their evidence or not.

The Chemists' Association, Limited.

On Tuesday, November 23, Mr. Justice North, in the Chancery Division of the High Court of Justice, heard the further consideration of the action of Holes *v*. Chemists' Association, Ltd. The plaintiff is the holder of the whole of the issue of second debentures. According to the certificate of the Master, the holders of the first debentures had been entirely paid off, and the second debenture-holders had received 11*s*. in the £. The only remaining asset of the company had now been sold, and there was in Court a sum of about £2000, which was not sufficient to pay the balance remaining due to the second debenture-holders. It was proposed first of all to pay the costs and to divide the balance amongst the holders of second debentures.—Mr. Sargeant appeared for the plaintiff.—His Lordship made an order in the terms arranged.

NOTES AND FORMULÆ.

American Liquid Malt Preparations.

Liquid malt preparations in the States do not seem to be in a very satisfactory condition. Harrington has examined no less than twenty-one different brands, and has found all to be very deficient in diastasic power, and most of them markedly alcoholic, containing from under three to over seven per cent. of alcohol. In food value they approached to heavy beers, which, in fact, they resembled in most other respects.—*Bost. Journ. Med. Sci.*, through *Therap. Gaz.*

Cod-liver Oil Emulsions.

Condensed milk is said to be excellently adapted for the preparations of emulsion of castor oil and cod-liver oil. The proportions are oil, 8; condensed milk, 3; syrup, 3; water, 2. The condensed milk is mixed in a mortar, the oil gradually added, and last of all the syrup and the water.—*Pharm. Zeitg.*, xlii., 216.

Miscible Tar Oil.

Heavy tar oil, which is largely used as a deodorant and disinfectant, is rendered easily miscible with water to a uniform and more or less permanent emulsion by the employment of alkaline resin soap. Fegon prepares the soap basis from resin, 100; soap-maker's lye, 95; distilled water, 200; commercial oleic acid, 40. The resin is dissolved in lye and the water by boiling. The resin soap is then evaporated to 200, cooled, and the oleic acid added. Soft soap may be substituted for the oleic acid; in this case only 85 of lye are used, and the mixture of the two soaps is evaporated down to 240. To every such 240 parts of resin soap basis sufficient heavy tar oil is added to produce 1000. The soap is gently heated and mixed gradually with 400 of the oil; the temperature is then carefully raised just short of boiling, until a perfect solution is effected; the rest of the oil is then added. During cooling the vessel should be covered over to prevent too great evaporation of water, of which the soap should retain about 50 parts. Finally the mixture is filtered or strained through a cloth.—*Journ. de Ph.* [6], v., 328.

Bismuth and Potassium Iodide for the Isolation of Alkaloids.

Jahns states that the reagent recommended by Kraut is very serviceable for the isolation of plant bases. It is prepared as follows:—80 grammes of bismuth subnitrate are dissolved in acid nitric (sp. gr. 1·18), 200 grammes. The liquid thus obtained is poured into a concentrated solution of potassium iodide, 272 grammes, in just sufficient water to dissolve it. After the nitrate of potassium has crystallised out, the liquid is diluted to 1 litre. Thus prepared the reagent is far more sensitive than that of Dragendorff, even precipitating the creatine present in urine. To obtain plant bases, the material is exhausted with water acidulated with sulphuric acid. This extract is precipitated with lead acetate, and the excess of lead removed with phosphate of soda; the filtrate is then concentrated, acidulated with sulphuric acid, and precipitated with the bismuth reagent. The precipitate is washed and mixed while moist with silver carbonate until the red colour disappears and no iodine is found in the filtrate; or, the bismuth precipitate may be boiled with water and barium carbonate, the barium in solution precipitated by sulphuric acid and the hydriodic acid with silver carbonate. When betaine bases are present the filtrate may contain traces of silver, which is removed by sulphuretted hydrogen. The author has been able, by this process, to detect choline in many plants; he finds that the so-called bursine isolated by Bombelon from the shepherd's purse is nothing but choline.—*Archiv der Pharm.*, ccxxxv., 151.

DRAFT PHARMACY ACTS AMENDMENT BILL.

The object of this Bill is to render every person whose name appears on the register of chemists and druggists eligible to become a member of the Society. "Students" of the Society are to become "Student-Associates," and the retirement of one third of the Council every year is to be decided by rotation instead of by ballot.

A DRAFT BILL

INTITULED

The Pharmacy Acts Amendment Act, 1898.

1. In this Act—
   The terms "Pharmaceutical Chemist" and "Chemist and Druggist" shall have the same meanings respectively as in the Pharmacy Act, 1852, and the Pharmacy Act, 1868; and "The Society" shall mean the Pharmaceutical Society of Great Britain. — Interpretation.

2. Every person who at the time of the passing of this Act shall have been duly registered as an "Apprentice or Student," and who, under the provisions set forth in Section X. of the Pharmacy Act, 1852, has been admitted to and at that time remains in the Society as a "Student," shall be registered as a "*Student-Associate*" of the Society; and every person who at the time of the passing of this Act shall have been duly registered, or who thereafter shall become registered, as an "Apprentice or Student," shall be eligible as a "*Student-Associate*" of the Society according to the Bye-laws thereof.

3. Every person who at the time of the passing of this Act shall have been registered as a Chemist and Druggist or who shall hereafter become registered as a Chemist and Druggist shall be eligible as a member of the Society according to the Bye-laws thereof. — Registered Chemists and Druggists eligible to be elected Members.

4. In lieu of the provisions contained in the Royal Charter of Incorporation of the Society, whereby it is provided that two-thirds of the members of the Council shall in every year go out of office, the following provisions shall, after the passing of this Act, have effect:— — Retirement of Members of the Council by rotation.

1. On the ordinary day of election of members of the Council in every year seven members of the Council shall go out of office, and the vacancies shall be filled by election, the retiring members being again eligible.

2. The seven members who go out shall be the members of the Council who have been longest in office without re-election.

3. If and whenever the number of the members of the Council who have been longest in office without re-election shall exceed seven, the members of the Council to retire shall be determined by lot.

5. At all Meetings of the Pharmaceutical Society, at which votes shall be given for the election of officers, all or any of the votes may be given either personally or by voting papers, in a form to be defined in the Bye-laws of the said Society, or a Form to the like effect, such voting papers being received by the Secretary, under cover, not later than twelve o'clock noon on the day on which the election takes place.

6. This Act shall not extend to Ireland. — Extent of Act

7. This Act may be cited for all purposes as the Pharmacy Acts Amendment Act, 1898, and shall be construed as one with the Pharmacy Acts, and shall come into operation on the first day of August, one thousand eight hundred and ninety-eight. — Short title of Act.

8. The enactments mentioned in the Schedule to this Act to the extent specified in the third column of that Schedule are hereby repealed. — Repeal.

Schedule.

Enactments Repealed.

Session and Chapter.	Short title.	Extent of repeal.
15 and 16 Vict. c. 56	Pharmacy Act, 1852	In Section ten the words, "and every such person duly registered as an Assistant shall be eligible for admission as an Associate of the said Society."
31 and 32 Vict. c. 121	Pharmacy Act, 1868	Sections eighteen, nineteen, twenty, and twenty-one.

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THE COUNCIL MEETING.

There was a large attendance at the Council meeting last Wednesday, the only absentee being Dr. Symes, who was unable to be present on account of a cold.

The President called attention to an excellent photograph of the visitors to the Conference at Glasgow, which had been presented by the local committee. He also announced that since the last Council meeting a letter had been received from the Privy Council communicating the confirmation by their Lordships of the new bye-laws.

The report of the Finance Committee was of the usual character, and the President, in moving the adoption of the report, remarked that the only detail calling for mention was a payment from the General Benevolent Fund to the Orphan Fund as interest on money which had been used during the year.

On the recommendation of the Benevolent Fund Committee, three grants, amounting in all to thirty seven pounds, were ordered to be paid.

The report of the Library, School, and House Committee related chiefly to matters of routine business, but it mentioned the interesting circumstance that Dr. de Vrij had presented the Society with the letters addressed to him by the late Daniel Hanbury between the years 1851-75.

The President then announced that the Law and Parliamentary Committee had prepared a draft Bill for adoption by the Council, and moved that the Committee be authorised to take steps for its introduction during the next session of Parliament. He pointed out that the Bill was a very simple one, which would not perhaps excite any great enthusiasm, though it should receive very general support. The conclusion arrived at by the Committee, after very careful consideration, was that it would not be advisable under existing conditions to approach Parliament with a Bill that was at all of a contentious character. The great object was first to make the Society stronger, and to provide for the possibility of every interest in the trade being thoroughly represented. For that purpose the Bill proposed to make all registered chemists and druggists eligible as members of the Society. He expressed his belief that the general feeling among pharmaceutical chemists was that this important matter must be faced out of regard for the future usefulness of the Society, and that all who have passed the qualifying examination should be admissible to membership. For his own part he thought it highly important to have the chemists and druggists with them in every department of the Society's work. Another clause referred to was that relating to the election of members of Council, which had been in several previous draft Bills, and providing for one-third of the Council going out of office every year in rotation, so that without making hasty changes the constitution of the Council might be entirely changed if found desirable in at least two years. Some other minor provisions were also mentioned, and in regard to matters which the Bill does not deal with, the President remarked that—though some might regard those omissions as faults, and say the Council only gave them a stone in place of the bread they wanted—the several points on which resolutions have been passed at meetings in the country had been very carefully considered. Six out of seven of those resolutions agreed with the proposal that all qualified persons should be eligible for membership, and the unanimity on that point was encouraging. But some of the resolutions also referred to such matters as exemption of chemists and druggists from jury service, trading by limited liability companies, etc., and on those points he could not give much comfort, though they had been much considered and discussed. Members of Council are all touched by these grievances, and they sympathise with those who suffer from them, but these grievances—affecting everyone in the trade more or less—could not, in his opinion, be dealt with in a Pharmacy Bill that would stand any chance of being favourably considered by Parliament.

The subject of exemption from jury service could only be dealt with in a Bill specially relating to that subject. He was not prepared to go the length of attempting to deal with it indirectly, as had been proposed by some, by making everyone who passed the qualifying examination a pharmaceutical chemist. That would excite a good deal of opposition. The question as to limited liability trading seemed more hopeless the more one thought about it, especially while chemists carried on branch shops not always managed by qualified persons, and sometimes appeared to prefer styling themselves "store chemists" rather than pharmaceutical chemists. He might be in favour of a scheme for having only one qualifying examination giving the title of pharmaceutical chemist, but then it must be connected with a compulsory system of technical training—a curriculum in fact—which would ensure higher qualification. He thought, therefore, the Committee had been wise in refraining from touching that subject, and he noticed that the same impression appeared to have prevailed at the meetings in the country, since no resolution had been passed at any of them in reference to this thorny subject.

Some other points to which the resolutions referred had the sympathy of every member of Council. For instance, the suggestion that three years should elapse between the registration as a student and the qualifying examination, or that registration as a student should be a condition of apprenticeship. All were in favour of that, but there were difficulties in making it compulsory. Under the new Bye-laws that result might be attained, the first examination being of such a nature that it would have to be passed on leaving school. The compulsory three years' interval was part of a larger scheme for a curriculum, which he and many of his colleagues were in favour of, though they were compelled to admit that was a matter for the future. Up to a certain extent he was in favour of dividing the qualifying examination, but he was utterly opposed to any form of intermediate examination that would give the

semblance of legal qualification. In conclusion, the President repeated that the great object was to give every facility for making the Society and its Council representative of all interests of the trade. He trusted, therefore, that if the Bill passed there would be a large accession of members, who would all take active interest in the conduct of affairs. But it was requisite that there should be such pressure brought to bear upon Members of Parliament that they would interest themselves in this Bill, because it has in itself little to recommend it otherwise to their support. Members of Council would do all in their power in that direction, but it was very important that all registered chemists and local associations should do the same.

In seconding the motion, the Vice-President endorsed these opinions, and in appealing to those who have passed the Minor examination to support the Bill in the way indicated by the President, expressed confidence that they would respond, as it would remove any ground for the complaint that had been made, that joining the Society does not give the privileges of membership. Opportunity now offered to obtain all they could reasonably demand, and the Council should be able to go forward with the whole body of chemists at its back. As to the interval between the First examination and the qualifying, he thought it was the duty of every chemist taking an apprentice to see that he had passed the First examination.

Mr. Hampson, referring to the experience of absence of enthusiastic support to other Bills and their consequent failure, said that if this important measure of enfranchisement was not heartily supported by those in whose interest it was brought forward, they should for ever afterwards hold their peace.

Several other members of Council spoke in support of the Bill, and some of them who had formerly held the opinion that a more comprehensive measure should be attempted, admitted that further consideration had changed their views, and that the object contemplated in the draft now before the Council was at least the first step indispensably necessary for effecting improvement in the conditions affecting the business of chemists and druggists. On this point there was absolute unanimity. Lastly, Mr. Carteighe appealed to Major men to receive the Bill in the same generous spirit they received the Bill of 1868, as it would not in any way detract from their position as pharmaceutical chemists. That distinction would still remain intact. In the future the question as to qualification for a member of Council would not be whether a man was a pharmaceutical chemist or a chemist and druggist member, but whether he would devote his time and his energies to advancing the craft as the founders of the Society and the men who passed the first Pharmacy Bill had done in their time.

Some further appointments of local secretaries and superintendents of written examinations were made, as well as the examiners for England and Wales and Scotland for the ensuing year (see p. 498). Professors Frankland and Green and Mr. Bascombe did not offer themselves for reappointment. The President referred to a long report of Dr. Balfour Marshall, the Government visitor of examinations for Scotland, which had been received from the Privy Council, and he directed attention to it as being well worthy of careful perusal. After the legal portion of the General Purposes Committee's report had been considered, resolutions were passed authorising the Registrar to take proceedings in cases of alleged infringement of the Pharmacy Act.

THE PROPOSED UNIVERSITY OF WESTMINSTER.

In the *British Medical Journal* for last week further particulars are given of the new scheme for a metropolitan teaching university, which has received much additional support. A general committee has been formed, comprising numerous representatives of the different medical schools and colleges in the metropolis, and the proposal is evidently receiving serious consideration in medical circles at least. As regards the scheme of constitution proposed for the Faculty of Medicine, it is proposed that it should consist of the Royal Colleges of Physicians and Surgeons, the Society of Apothecaries, and the twelve medical schools in London. The Council of the Faculty, which would conduct the examinations, would consist of fifty-six persons in all, representing in due proportion the various bodies interested. This Council would nominate, for appointment by the Senate, examiners for all examinations in the Faculty, but power would be granted to join with any corporation constituent of the Faculty, at present empowered to grant registrable qualifications, in holding any examination jointly. A Board of Studies of the Faculty would also be formed, consisting of every professor and lecturer or other principal teacher appointed by the governing body of a school constituent of the Faculty. This Board would first draft regulations prescribing the course of study and schemes of examination for the consideration of the Council of the Faculty, and subsequently make recommendations for their alteration should emendation appear desirable. The Board would also appoint a standing Committee of Advice in each of the principal divisions, at least, of medical students. All graduates of the University in the Faculty would be members of Convocation of the Faculty, and every student of one of the London medical schools for not less than four years who had been admitted to the membership of the Royal College of Physicians, or the Fellowship of the Royal College of Surgeons, or who had obtained a degree in medicine or surgery in any university of the United Kingdom, would be admissible to Convocation on payment of a registration fee.

As might be expected, the new scheme does not meet with general approval, and the *Times* of November 25 contains a letter from Professor Silvanus P. Thompson, who writes in no undecided terms concerning the matter. He refers to the manifesto in favour of the proposed university as appearing at a "singularly inopportune moment," considers the name Westminster "inapposite," and attempts to minimise the importance of the affair by describing it as "a petty scheme conferring degree-giving powers on certain colleges and medical schools," and as "a herring drawn across the path." The warmth of the learned professor's language appears to be caused by a feeling of dread that a University of Westminster would enter into an ignoble competition with the existing University, with an inevitable and disastrous cheapening of degrees. But if degrees can be cheapened further than London degrees already are, when a very large proportion of them are awarded on the results of unmitigated cram, they must become very cheap indeed—in fact, almost as cheap as those American ones that are sent by return of post, on receipt of the fees. The warning is likely to be regarded with equanimity generally that, if the new scheme be carried out on a large scale with abundant means and great success—providing for London a real seat of learning, it will be the death-blow of the existing University. For few would regret the decease of the latter, but very

many will rejoice when London at length possesses "a real seat of learning." Professor Thompson, of course, hopes to see that desideratum supplied in connection with the institution which he so well defines as "a mere examining board, dwindling into nothingness as the resort of the crammer and of the crammee." But, by his own confession, the movement for reform has been in active progress for more than twelve years, and if that movement has, as he claims, grown in intensity year after year, the results of that growth are not very evident.

That the *Times* should support Professor Thompson's view of the matter does not count for much nowadays, the only feeling aroused by its leader on the subject being one of mild curiosity as to the identity of the individual who wrote it. No doubt he has expressed as strongly as one man can do his opinion that the publication of the project for the establishment of a University of Westminster is likely to prove both disappointing and mischievous, but to whom will it be disappointing and mischievous except the supporters of the existing "resort of the crammer and of the crammee." Nothwithstanding the dictum of the leader writer, it is not at all difficult to believe that the eminent men who appended their names to the plan have quite fully realised the consequences of the step they recommend, and it is doubtful if they are likely to be converted by the ill-timed sneers of Mr. Lawson Tait, the childish disclaimer of Mr. Dunstan, or letters written by any other individuals who have no direct interest in the matter. Professor Lionel S. Beale, curiously enough, defends the existing University of London while apparently he supports the latest proposals for a new one. Replying to Dr. Beale, Professor Thompson serves a useful purpose by asserting that the existing University of London has failed to discharge the highest functions of such an institution, being "restricted to the task of branding other peoples' herrings," decidedly not a high ideal for a university. He then proceeds in brave style to lecture Dr. Beale, whom he is pleased to speak of as one of the oldest and most honoured graduates of the University of London, and he concludes by ingeniously quoting his opponent in support of his own case. Following this letter appears one by Dr. W. H. Allchin, who writes about the unwisdom of changing horses when crossing a stream, and objects to the Westminster scheme because it proceeds on the basis of "self-organisation," whilst he also expresses the opinion that the new scheme has been nipped in the bud by the *Times* leader already referred to. But the Dean of Guy's Hospital summarises the whole question in such a form as practically puts Professor Thompson and his friends out of court. For, as he reminds them, the suggested University of Westminster is intended merely as an alternative "in the not improbable event of the London University Commission Bill being rendered impossible by continued opposition in Parliament." Why then not take advantage of the present movement and, if reconstitution of the so-called University of London be found impossible, proceed on the side issue and press for a University of Westminster? Greater London, too, is surely big enough to support two universities, and it is the feeblest of all feeble arguments to suggest that those who are prominent in the present agitation are of the type of men who would do anything to encourage the cheapening of degrees. If, however, the two institutions should come into collision, the cause of advanced education would not suffer if the weaker went to the wall, and there can be little doubt in most minds as to which would be likely to prove the weaker.

ANNOTATIONS.

The Special Issue of the Journal last week holds the record at present, not only as regards size and "the variety, interest, and practical utility" of its contents, but also because of the unusually large number of congratulatory messages received from readers. Written and verbal expressions of approval and sympathy have been communicated by all classes of interested persons, those connected with the wholesale trade vying with retail pharmacists in their chorus of praise. It is impossible to reply individually to all the communications received, but grateful thanks are hereby tendered to all and sundry, whilst it may not be inopportune to suggest that what is published in these pages must ever be strictly proportioned to the measure of support accorded by those in whose behalf the Journal is produced. The more assistance our readers render the better and more interesting a paper will it be possible to produce.

A Pharmacy Acts Amendment Bill has been agreed to by the Council of the Pharmaceutical Society, and the draft of the document is printed in full at page 502. As will be seen, the only object in view in drafting it has been simplification of the arrangements in accordance with which supporters of the Society are at present classed as Students, Associates, Associates in Business, Chemist and Druggist Members, and Pharmaceutical Chemist Members. If the Bill should become law, only two classes will be recognised—Student-Associates and Members, the former including all registered apprentices or students, while everyone who has passed the qualifying examination will be eligible for membership of the Society. Though the Bill is so simple, and apparently non-contentious, there are two dangers a-head which all registered chemists should consider it their duty to minimise. In the first place, there is the very great danger that what is so comparatively uninteresting a Bill, from the point of view of the average Member of Parliament, may fail to secure a place on the Statute Book from pure inanition. To prevent this, it is necessary that all registered chemists throughout Great Britain should, both individually and through their local associations, bring pressure to bear on their parliamentary representatives. This should be done at once, and the application be repeated at frequent intervals, culminating in a grand effort when the time approaches for the Bill to come up for the second reading.

The Second Danger is not so easily guarded against, being dependent on the insidious attacks of internal and external enemies of the Society. For such enemies exist now and are as powerful for mischief as in the days of the great fight over the interpretation of the bye-laws, recorded in the brief sketch on pages 493-4 of what took place when Joseph Gifford was President. The best way to defeat such secret opposition is to secure union in the ranks and present a solid and unbroken front when the actual trial of strength takes place. It is recorded in the *Pharmaceutical Journal* of some forty years ago how a successful attempt to rush through Parliament in 1858 a Sale of Poisons Bill that was antagonistic to the interests of the craft, was frustrated by the prompt and politic action of the Pharmaceutical Council, backed up by those it represented. Within two hours from the time at which the third reading of the Bill had been quietly carried by the Lords a meeting of members of the Society was convened in London. Circulars were also prepared and sent out to local secretaries, and in twenty-four hours "petitions began to come in, Members of Parliament received earnest letters from their constituents, and in the course of two or three days the entire House of Commons was

sensibly influenced by the pressure brought to bear upon it." In the end the Bill was withdrawn, and chemists escaped what was at the time regarded as a great danger. The moral is obvious; chemists must similarly unite now to secure the passage of the new Bill—not waiting to move until the actual danger is in view but taking the necessary steps at once.

Chemists and Druggists should bear in mind what Mr. Gladstone said when the members of the British Pharmaceutical Conference visited him at Hawarden last year. For he then recalled an impression he had formed, many years before, that chemists were very united. Indeed, he said he had been very much struck with the steady fire of opposition directed against a measure introduced into the House of Commons on one occasion, affecting chemists and druggists very materially. That resistance, so far as he could recollect, was entirely successful. If anything, the chemists of to-day should be even more capable of uniting—either for self-defence or for improvement of their position—than their predecessors, whose energetic procedure made so deep an impression on Mr. Gladstone's mind, and the opportunity which now presents itself for showing that the old spirit still survives ought to be fully taken advantage of.

Dr. G. Balfour Marshall's Report on the Edinburgh examinations (p. 498), as the Government Visitor for Scotland, is of great and especial interest at the present time, in view of the recent approval of the new Bye-laws. It appears that at the Major examination in Edinburgh during the year now expiring, out of the ten candidates examined, the practical work was accountable for 5 rejections, botany for 7, chemistry for 5, physics for 2, and materia medica for 7, whilst 1 candidate passed in each subject, but failed in obtaining the required aggregate. Regret that will be widely echoed is expressed that so few candidates presented themselves for this examination, and reference is made to the very high percentage of failures, especially in botany and materia medica. This is attributed to imperfect training, the students having depended upon books and "coach" classes only, instead of attending a recognised school of pharmacy. At the Minor examination, the number who failed in the practical subjects was 248, or 42·9 per cent.; of these 165 failed to obtain any marks in chemistry, whilst 136 obtained no marks in pharmacy and dispensing. It is rightly remarked that it is not creditable to the candidates that 248, or 42·9 per cent., should have been rejected in the practical portion of the examination. Only 330 out of 578, or 57·1 per cent., were admitted to further examination, and of this number 139 were rejected, botany being accountable for 62 failures, chemistry for 34, and materia medica, pharmacy, or prescription reading for 16.

Botany and Chemistry are described as the two subjects of which a candidate requires to have a special knowledge, and the examination in chemistry is said to be of necessity searching, as it forms the groundwork of pharmacy. Although not too severe, this subject accounts for nearly one-half of the total failures. In prescription reading, although the failures are few, too many of the candidates showed great want of knowledge of Latin grammar. They translated English directions into Latin with difficulty, and were frequently ignorant of the names for the higher numerals. But above all the very high proportion of rejections distinctly is said to show that there is a lack of proper training, especially in laboratory work, and Dr. Marshall believes the only remedy is to have a compulsory curriculum. It is pointed out that many students who attend "coach" classes and other at present unrecognised pharmaceutical schools, do so late in the evening when they are already exhausted with their day's work and not in a mental condition to assimilate such knowledge as is imparted to them. Moreover, though thorough laboratory training is essential, neglect of this is common, and results in a large number of failures in the practical examinations. It is also pointed out, as worthy of note, that candidates show a sad lack of knowledge of such physical instruments as the thermometer, the barometer, the chemical balance, and the microscope, this being undoubtedly the result of mere cramming taking the place of careful systematic training.

The New Pharmacopœia will probably be published about February or March next, arrangements having been made this week by the General Medical Council (see page 500) which will obviate the necessity of further reference to that body. The only work remaining is the correction of typographical errors, and when that is accomplished printing will proceed. The price of the book will probably be seven shillings and sixpence or even more, the addition to the price of the present work being intended to provide the means for remunerating the official referees at a somewhat higher rate than formerly.

The Royal Society's Anniversary Meeting was held on Tuesday, when the President, Lord Lister, delivered the usual address. He stated that fifteen Fellows of the Society and six foreign members had died during the past twelve months, the list including many names of the highest distinction—James Joseph Sylvester, Augustus Wollaston Franks, and Anthony John Mundella being amongst the deceased Fellows, whilst Emil Heinrich Du Bois Reymond, Julius von Sachs, and Karl Weierstrass are amongst the foreign members who have passed away. A reference to the Royal Jubilee was, of course, inevitable on this occasion, and Lord Lister also repeated what had been done in regard to the proposal to establish a national physical laboratory in which the testing and verification of instruments and the construction and improvement of standards of various kinds should be undertaken in a regular and systematic way. A committee, of which Lord Rayleigh is chairman, has been appointed by the Treasury to investigate and report upon the desirability of the scheme, and it is hoped that the Government will finally consent to promote the undertaking which, it is thought, cannot fail to advance the interests both of pure science and of scientific industry. Amongst other matters referred to was the alleged fact that an admixture of glycerin in certain proportions with vaccine lymph derived from the calf has the effect of causing the disappearance of what Dr. Monkton Copeman terms "adventitious microbes." It was stated that Dr. Copeman's results are turned to advantage abroad, though they have received little attention here. The President of the Local Government Board, however, is said to be likely soon to propose legislation for the purpose of giving this country the full benefits of the new process.

The Royal Society's Medals were presented at the anniversary meeting:—The Copley medal, to Professor Albert von Kölliker, For. Mem. R.S., in recognition of his important work in embryology, comparative anatomy, and physiology, and especially for his eminence as a histologist; a Royal medal, to Professor Andrew Russell Forsyth, F.R.S., for his contributions to the progress of pure mathematics, and especially for his work in differential equations and the theory of functions; a Royal medal, to Lieutenant-General Sir Richard Strachey, G.C.S.I., F.R.S., for his researches in geographical, meteorological, and botanical science; the Davy medal, to Dr. John Hall Gladstone, F.R.S., for his numerous contributions to chemical science, and especially for his important work in the application of optical methods to

chemistry; and the Buchanan medal, to Sir John Simon, F.R.S., for his distinguished services as an organiser of medical sanitary administration in this country and as a promoter of scientific research relating to public health.

The Officers and Council for the ensuing year are in great measure the same as for the year just ended, Lord Lister being re-elected as President, Sir John Evans as Treasurer, Professor Michael Foster and Professor Arthur William Rücker as Secretaries. Sir Edward Frankland is Foreign Secretary. The other members of the Council are Professor William Grylls Adams, Professor Thomas Clifford Allbutt, Sir Robert Stawell Ball, Rev. Thomas George Bonney, Professor John Cleland, Professor Robert Bellamy Clifton, Professor James Alfred Ewing, Alfred Bray Kempe, John Newport Langley, Joseph Larmor, Professor Nevil Story Maskelyne, Professor Raphael Meldola, Professor Edward Bagnall Poulton, William James Russell, Dukinfield Henry Scott, Professor Walter Frank Raphael Weldon.

The Anniversary Dinner, which followed the meeting, was chiefly remarkable for the speech made by Sir John Evans in proposing the toast of "Her Majesty's Ministers and the Members of the Legislature," and the Duke of Devonshire's reply. Sir John Evans said that during the last forty or fifty years the importance of science had been more and more felt by the Government of this country; references to the Royal Society had in consequence become more and more frequent, and further than that the Government, whether it had been of the one side or the other, had constantly shown an inclination to foster science by means of grants, which it had called upon the Royal Socieey to administer. The officers of the Society felt deeply grateful for the confidence which had been bestowed upon them in respect of those grants, and they felt more grateful still that they should have their opinion consulted in cases in which scientific interests were concerned. At the present moment they found that the Government had appointed a Commission to inquire into the desirability of founding a national physical laboratory where standards could be examined and investigations could be pursued with the view of rendering the advance of modern science of greater profit and greater use to the nation, and he thought they might look forward with some confidence to the verdict which that Commission would give. In his reply, the Duke of Devonshire said that in making a confession of incapacity to address those present upon scientific subjects he felt he was only acknowledging the existence in his own person of a defect which appeared to be almost inherent in those who had devoted themselves to the pursuit of politics. He doubted very much whether since the time of Bacon there had ever been a Minister of the Crown, with the exception of the present Prime Minister, who had been capable of saying anything upon those subjects to an assembly composed of the leading men of science of the day in words which would be worth their attention. Had not Lord Salisbury devoted his powers so vigorously to political and public affairs he would, without doubt, have been an eminent man of science, and even now, amidst all his numerous and important avocations, he is able to keep up a not inconsiderable knowledge of the progress and discoveries of many branches of science.

The Duke of Devonshire expressed his belief that the divorce which apparently has always existed between the pursuits of politics and science in our country has not been so complete in the case of other nations, and he said all would be acquainted with the names of men in many foreign countries who have been eminent in science and at the same time have, to say the least of it, been conspicuous in politics. Whether that fusion of political and scientific pursuits had always been a success he did not think was a subject upon which he was called on to enter at the present moment. But, at all events, with regard to our own case, he thought it appeared certain that the calls which the pursuit of politics makes upon the time and strength of any man who desires to attain success in that career are so severe as to leave but little residue for the equally increasing calls upon the strength and time of those who aspire to distinguish themselves in scientific pursuits. While, however, he did not look forward to any immediate closer connection between the pursuits of politics and science, he was not by any means sure that in some time not very far distant some greater knowledge and acquaintance with at least the results of scientific investigation and inquiry and research might not come to be a necessary part of the equipment of some portion at least even of the British Government. The recent discoveries of science and their practical results have had so profound an influence on the social condition of all the peoples of the world, uncivilised as well as civilised; they are having so great an influence upon the industrial progress and growth or decline of nations, that it was almost impossible that some knowledge at least of the results, if not of the methods, of scientific discovery should become almost as indispensable a part of the training of statesmen as the knowledge of the instincts, the passions, and the interests of the people to which their studies had hitherto been almost entirely, or at any rate mainly, directed.

The Extent to which the State can, with advantage, more directly interest itself in the direction or assistance of scientific inquiry was described by the Duke of Devonshire as one on which he had no doubt there would be considerable difference of opinion, even among those who were assembled on that occasion. He pointed out, however, that there is a less ambitious object, that of making some of the main principles of science, and a knowledge of the results at least of the discoveries of science, more accessible to the main body of the people. It was an object which had occupied a greater share of the attention of other nations, and one which, in his opinion, would require and demand greater attention in the future. As regards the creation of a teaching university for London, a non-committal attitude was taken up by the speaker, as also towards the question of the re-organisation of secondary education for the whole country, which is the indispensable foundation of any progress towards higher scientific study. He did not hold out any sanguine hope of being able to induce Parliament to devote to those subjects the attention which they richly deserve, and certainly thought it would not be possible to induce Parliament to give them the attention which they demanded and required unless they could create in the country a widespread public opinion of their importance and their necessity. In conclusion, his Grace remarked that those present could assist the Government in bringing home to the minds of many who have hitherto given an incomplete consideration to these questions the fact that no country can prosper when it neglects the prosecution of either the higher or the subordinate branches of scientific research, or is indifferent to the scientific training of those who are destined in the near or even the more distant future to conduct the industrial and commercial enterprises of the Empire.

An Evening Meeting of the Pharmaceutical Society will be held on Tuesday next, December 7, at 8 o'clock. The chair will be taken by the President, and a paper will be communicated by Messrs. E. H. Farr and R. Wright on some of the official extracts. Subsequently the Curator, Mr. E. M. Holmes, will refer to recent additions to the Society's Museum.

THE WORLD OF PHARMACY.

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN EDINBURGH.

The first meeting in Edinburgh of the present session was held in the Society's Hall, 36, York Place, on Friday, November 26, at 8.30 p.m., Mr. J. Laidlaw Ewing in the chair. There was a large attendance.—The minutes of the last meeting were read and approved.—The Chairman said they were fortunate in having an eminent chemist to open their session on the present occasion. It was unnecessary to say much in introducing Professor Walker, of University College, Dundee, who had kindly come at their request from Dundee to deliver the opening lecture, and he had great pleasure in calling on him to do so.—Professor Walker then proceeded to deliver the inaugural address on

The New Dualism in Chemistry,

the text of which appears at page 489. At the conclusion of the address, Professor Gibson said he had great pleasure in moving a very hearty vote of thanks to his friend, Professor Walker, for his very interesting and admirable *exposé* of the dissociation theory. He felt sure they must all feel grateful for the enlightenment which he had given them on this most interesting subject. One of the characteristics of the science of chemistry was the rapid changes which had taken place in chemical theory within recent years. He could remember well being taught the science of chemistry by his old teacher, Bunsen, entirely from the point of view of the earlier dualism, which, found in him, as they knew, afterwards its most determined opponent. He (Professor Gibson) was still a young man, and yet here they were now listening to an *exposé* of the third edition of a theory of chemical affinity. He would not detain them by entering into any details or offering any criticism. He had a high regard for Professor Walker as a chemist and as a teacher. He trusted that this lecture would lead students to take a great interest in this subject, for the admirable elucidation of which he had pleasure in asking them to accord a hearty vote of thanks to Professor Walker.—Mr. Bowman seconded the vote of thanks, which was passed with acclamation.—The Chairman then briefly conveyed the vote of thanks to Professor Walker, and expressed the indebtedness of the Society to him for the great amount of trouble he had taken, and the great favour which they had received.—The Assistant Secretary directed attention to the additions to the Library and to the Museum. The latter included the Museum of the Royal College of Physicians, about a fourth-part of which had been placed in the centre floor case in the Museum. The collection consisted largely of specimens which had belonged to Professor Theodore Martius, of Erlangen, who was formerly an honorary member of the Pharmaceutical Society, and a frequent contributor to the *Pharmaceutical Journal*. The portion exhibited gave some idea of the extent and richness of the collection. There was also the Scoresby-Jackson Museum which had been recently purchased, but was not yet placed.—At the meeting of Executive that day, Mr. McAdam, Chairman of the Glasgow Conference Committee, had presented an enlarged copy of the Arrochar Conference Group Photograph, and it had been placed in the new Library so that members might have an opportunity of seeing it. The original parchment manuscript Articles of Association of the Society of Druggist-Apothecaries in Edinburgh in 1785, presented by Mr. James Mackenzie, had also been framed and hung in the new Library.—The Chairman moved a vote of thanks, which was cordially awarded, to the donors of additions to the Library and Museum, and mentioned that in regard to the important and most valuable gift of the Royal College of Physicians the Executive had that day resolved to send a special letter of thanks.—The Chairman then intimated that tea and coffee would be served in the new Library, which had just been completed and fitted with electric light.—The company then adjourned to the old Board Room, now the new Library, which was generally admired and regarded as admirably adapted for the purposes of a library and reading room.

DINNER OF SCOTTISH PHARMACISTS.

The members and associates of the Pharmaceutical Society resident in Scotland held their annual dinner in the Royal Hotel, Princes Street, Edinburgh, on Thursday, November 25, 1897. Mr. J. Laidlaw Ewing, Chairman of the Executive of the North British Branch, occupied the chair, whilst Mr. J. W. L. Currie, Glasgow, Vice-Chairman of the Executive, and Mr J. Bowman, Leith, President of the Edinburgh District Chemists' Trade Association, officiated as croupiers. About seventy gentlemen were present, including Dr. P. A. Young, Treasurer Royal College of Physicians; Mr. J. S. Amoore, President; and Mr. H. B. Ezard, Secretary Odonto-chirurgical Society; Mr. P. Morison, S.S.C., Solicitor to the Society in Scotland; Dr. Leonard Dobbin; Dr. Kennedy; Dr. E. Price; Dr. Butchart; Messrs. D. Storrar, Kirkcaldy; J. Johnston, Aberdeen; C. Kerr, Dundee; R. McAdam, Glasgow; A. Strachan, Aberdeen; A. Davidson, Montrose; J. Anderson Russell, Glasgow; T. Mabcn, Hawick; J. Fisher, Dunfermline; A. McKellar, Glasgow; J. Moir, Glasgow; J. W. Sutherland, Glasgow; W. R. Kermath, St. Andrews; D. Mitchell, Inverness; T. Mackenzie, Glasgow.

Loyal and Patriotic Toasts.

The Chairman, in proposing "The Queen and the Royal Family," said he would like to mention in that connection that it had pleased Her Majesty to present their esteemed President, his friend Mr. Walter Hills, with a Jubilee medal. He was sure they all wished it to go forth to him from them in the North that they congratulated him most heartily. The Chairman next proposed "The Navy, Army, and Volunteers," to which Mr. C. F. Henry replied.—Mr. J. Anderson Russell, in proposing the toast of

The Pharmaceutical Society of Great Britain,

said it might be asked by outsiders what was meant by their President being made the recipient of this honour from Her Majesty. Why did the Society get this great honour? Who were the men, and what had the Pharmaceutical Society done? If they carried themselves back fifty or sixty years to the condition in which medicines were dealt with then and now, they could turn round and say, There is the work of the Pharmaceutical Society. It was a voluntary body of men who had banded themselves together to do so much for the community. It was to their own advantage, but it was pre-eminently to the advantage of the community among whom they laboured. He trusted the Society would ever seek to maintain a uniform system of education and that the Council of the Society would never be induced to give away the position which its licentiates now occupied by creating a lower qualification. It would be altogether against the present constitution of the Society, and it would be unfortunate if they should give way to the cry of a few. The Council was now seeking, along with the more prominent members of the Society, to bring together all the members of the Society—make them not merely associates, but members of the Society. That proposal had been well received in Scotland and at the Council, and he thought it would be well received in England. It seemed to him, however, that it would be well if they could go a little further in another direction and curtail something in the practice of pharmacy, so that they would not have to contend against so much knavery in their midst. The Society was a voluntary body working for the whole body of pharmacists, and it should have disciplinary powers over those whom it licenses. The organisation of pharmacists in England and Scotland was just now being kept very much to the front. It would be a sorry thing if in another searching after organisation they should neglect the good old Society which had done so much for pharmacy. He hoped it would form a rallying point through which members of the pharmaceutical world might join themselves together to work hand in hand and concentrate their energies in the London centre, so that there might be less of the feeling amongst members and associates that the Society itself was something away up in London and that they had nothing of it near home.—Mr. Storrar, whose name was coupled with the toast, said they all agreed with Mr. Russell when he said the Society was year by year growing in status and influence and in the recognition it received. It had devolved upon it by Government very important duties, and he honestly believed it carried them out faithfully and well. Its educational and examination system afforded evidence of that to the public and the nation, and in many ways it was, in fact, equal to many, if not to most, of the scientific societies. Their Chairman had referred to the very gratifying fact that their Presi-

dent had the honour of receiving a Jubilee medal from Her Majesty, but they could not help regretting at the same time that the Socicty did not, unfortunately, receive that support from the members of the trade which they though it deserved and ought to get. It was urgcd by those outside that the Society did nothing in the way of trade protection, and was not worked sufficiently as a trade association, but if anything that was a reason why they should all join the Society. It was perfectly absurd that people should remain outside and attempt to clog the wheels of their coach. The wheels would go round in spite of them, and surely the most sensible thing was to get on board thc coach and try to control the driver. At the present moment every registered man in business was eligible as an associate of the Society, and in the new Bill which was being prepared it was proposed that not only should every associate in business be entitled to vote, but he would be entitled and eligible to sit on the Council if sent there. It was only by making a united front that they could hope or attempt to get anything from Parliament to enable them to stand against the illegitimate opposition which surrounded them on all hands. There were many points on which they all agreed, whether they belonged to the Society or not. They all felt that some legislation was necessary. They should either have more legislation or free trade in drugs. The recent interpretation given to the Pharmacy Acts he believed was not that which was originally intended. What was left in them offered very little safety to the public, and was of still less benefit to pharmacy. Personally he could not see they would gain much by legislation. He did not believe they need look or hope for protection to their calling from Parliament. He did not believe even that they would get or need ask to put down store dispensing or legitimate company trade dispensing. It was quite possible they might be able to put down those bogus or one-man companies, organised simply and solely for the purpose of defeating the law, though not on account of giving justice to the pharmacist, but because the matter affected the public interest. He thought that of late, both in and out of the Society, they had spent themselves very largely in discussing details—in many cases petty details, but they were beginning to try and agree upon and formulate some general policy. They ought to try and get the dispensing of all drugs confined to qualified men, certainly to get the dispensing of scheduled poisons strictly confined to such. They should go back to the policy of the first Pharmacy Bill and have it enacted that a man who keeps open shop was the seller in thc eye of the law, and should be held accountable for the actions done in his shop or place of business. And although it was not very popular, he thought if store and company dispensing was to be carried on, these companies should be made to give the names of their qualified men, and that ought to be the name on the labels. But the hope for the future in regard to pharmacy was increased education and increased fitness for thcir calling. What they had to depend upon was their personal influence on the public. But there should be something more—something in the way of professional position. They ought to be able to claim a fee for dispensing. The only alternative policy was protection, either by the State or by some such society as the P.A.T.A. Protection by the State was a very desirable thing if they could get it; protection by the other was a matter of opinion. But whatever conclusion they came to, their legislation should not be selfish. They should remember they were legislating and planning for the future as well as the present, and that it would be criticised and judged by their successors as well as by their contemporaries. He had faith in the future, and he believed the pharmacist of 1997 would be a better equipped and more successful man than the pharmacist of 1897.—Mr. T. Maben proposed

"The Licensing Bodies."

He referred to the important work done by the Board of Examiners appointed by the Royal Colleges of Physicians and Surgeons in Edinburgh, and the Faculty of Physicians and Surgeons in Glasgow. He attributed the high standard of teaching in the University of Edinburgh in large measure to the setting up of the extra-mural school by the Colleges of Physicians and Surgeons, and while the people of Edinburgh and the University were indebted to the Royal College of Physicians for that, the Pharmaceutical Society was still more indebted to them. He would like, if he might do so, in the name of those present and the Society, to express to Dr. Young, as representing the College of Physicians, their grateful thanks for the magnificent collection of materia medica which had been presented to them. Reference was also made to the Royal College of Surgeons, and the names coupled with the toast were those of Dr. Young and Mr. Amoore, President of the Odonto-chirurgical Society.—Both these gentlemen having responded, Mr. Peter Boa proposed the toast of

"The North British Branch and the Board of Examiners."

He said they had heard a great deal that night about pharmacists. It was the fashion at the present time to talk of the members of their particular trade and thcir business as pharmacists and pharmacy, but he did not know that the public had altogether become educated as to the proper application of the new words. In some instances pharmacists had been taken for agriculturists, and he really thought there was a great necessity for enlightenment on the part of the public in regard to the uses of the titles pharmacist and pharmaceutical chemist. The North British Branch did a very great deal for the advancement of their status in popular esteem. It did whatever it could to increase the dignity of their position as dispensers of medicines. He had only to say, with regard to the Edinburgh Board of Examiners, that they were extremely good fellows. They usually got a certain amount of abuse about once a quarter from some irresponsible persons, but he did not know how far that might be deserved. Within recent years the Board had undergone some change, and at the present time they had representatives of science in the shape of an eminent chemist and botanist. He referred to thc strictures which had been passed on the tendency to make the scientific part of the examinations an examination in the pure science of chemistry and botany. It seemed to him that in this part of the country they got credit for being men of practicablity, and if a man had sufficient knowledge of any science in its purity and could not apply it, that was a defect for which the Board of Examiners could not be held responsible.—Mr. W. L. Currie returned thanks. He said if the Executive had the power as they had the will to settle matters in relation to the conduct of their trade they would do it to their satisfaction. It was a pity they had not that power, but he thought some measure of home rule in regard to matters pharmaceutical should be carried out. Why it was that the majority of Scottish pharmacists had not a good will to the Pharmaceutical Society he did not know. In the Executive they had a popularly elected body, and on behalf of that Executive he thanked them for the toast. As regards the Board of Examiners the spirit of emulation to get on to that board was growing, and he was glad to see it grow. They had to look to the younger men to keep up the standard.—Mr. C. Kerr, Dundee, proposed the Chairman, to which Mr. Ewing replied.—Mr. P. Morison gave the Assistant Secretary, which was acknowledged by Mr. Rutherford Hill, and Mr. Lunan proposed "The Company," which was acknowledged by Mr. Bowman.—During the evening the speeches were diversified with songs by members of the company, and the company broke up after singing "Auld Lang Syne."

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

A meeting of this Pharmaceutical Association was held on Tuesday, November 23, Mr. W. L. Currie, the President, in the chair, and there was a large attendance. The notice calling the meeting stated that acting on the suggestion of

The Federation of Local Pharmaceutical Associations,

the following subjects would be discussed :—(1) That all registered chemists and druggists shall be eligible for membership of the Pharmaceutical Society. (2) Is a modified examination for assistantship desirable? and (3) That in the interest of the public it is desirable that some means ought to be adopted to show who is the legal seller in establishments where there is absence of indication.—Mr. Currie said the first thing he had to do was to hand over the very handsome and valuable collection of books which was upon the table, which he accepted on behalf of the Association at the recent Conference in Glasgow. He accepted it with very great pleasure, as it would be a valuable acquisition to their library, and he hoped it would bc largely taken advantage of. He had also to mention that the local committee in connection with the Conference had decided to hand over to the library the balance of ten pounds which had been left after paying all expenses.—Mr. Walker then handed over to the Association a framed enlarged copy of the group of the members of the Conference which was taken at Arrochar, mentioning that another copy would be sent to Edinburgh and another to the Pharmaceutical Society's headquarters in London.

—Mr. David Watson, the Hon. Sec., read a letter from the Secretary of the Early-Closing Association in London, as follows :—

"In view of the great difficulty experienced by private members under the present rules in passing any measure which is seriously opposed, the Board are of opinion, in which Sir John Lubbock and Mr. A. Cameron Corbett concur, that a strong effort should be made to get the Government to take up Sir John Lubbock's Early-Closing Bill next session, and I would ask you to sign the enclosed and return it to me."

On the motion of the Chairman the Secretary was instructed to write to the Secretary of the Early-Closing Association, giving their support to the proposal of the Board of that Association. A communication from the Plymouth Association with reference to the dispensing of drugs by unqualified assistants in connection with parochial boards was allowed to lie on the table, the Chairman remarking that they had signed a memorial to the Pharmaceutical Council on that subject in 1893.

Address by the Chairman.

—The Chairman then said that there were doubtless many subjects upon which he might have enlarged, but events and time had moved so quickly during the recess that he had little or no opportunity to think which might be the most suitable topic for an address, and on the near approach of the opening of the session circumstances over which he had no control completely debarred him from attempting the compilation of anything so formidable as an address. Referring to the Conference, Mr. Currie said that those who were present at it would long remember the hearty good fellowship they enjoyed in the Diamond Jubilee of our Gracious Queen. At the meeting of the Federation of Pharmaceutical Associations, held in Glasgow during the Conference week, and over whose deliberations he had the honour to preside, certain points were raised which they considered of sufficient importance to ask every association throughout the country to discuss, so as to be able to arrive at an understanding, in view of legislation in the near future, as to whether certain claims which had been put forward from time to time were desirable or not. A circular letter had been sent to each association by the Secretary of the Federation, asking that the subjects agreed upon be discussed and the result forwarded to him as soon as possible, which results would be tabulated and acted upon accordingly. That this was the best way of getting at the minds of all went without saying. They were told that a new draft Bill might be brought forward at the next meeting of Council, and they were asked to give suggestions which might be embodied in it. What had they been doing for the past few years but sending to Bloomsbury Square ideas, suggestions, and resolutions for the new Bill? They would be glad to see the Bill when it came and discuss it in all fairness, and if it met their approval give it all the support they could. One very important clause which the Bill ought to contain was that referring to the membership of the Society. Too long had the Society ignored the claims of those whose support would be a valuable acquisition *(sic)*. They knew that as far back as 1868 the intention was that such should be the condition, but on account of internal dissensions the chance was lost. At that time Mr. Sandford, with wonderful far-sighted vision, made use of the following language contending for the privileges of membership for a qualified man :—"The Minor examination will not always remain as it is ; it will be progressive, and will yet be a qualification deserving of full membership of the Pharmaceutical Society." Now that the Minor examination demanded so much careful training, and when they kept in view that it was the legal qualification, he failed to see why, in common justice, the privileges of the Society were not conferred.—Mr. Alexander Boyd said he strongly supported the proposal that all registered chemists should be admitted to

Membership of the Society.

On the question of the proposed modified examination of assistants, he said that there were many parts of the country where registered assistants were scarce, and in some shops the business was carried on illegally, when the master was absent the assistant selling poisons, and unless he was qualified he was breaking the law. If they could get an examination for young men so that they would be qualified to act under the master, say an examination in prescription reading and dispensing, that would then entitle them to act under a master, but not to keep open shop or to be the manager of a store but to act under the manager. That would put a great many shops in a legal position, which unfortunately was not the case at present. They knew that in every shop there ought to be registered assistants but they were not always to be had. Take a district in the country where there might be only one chemist, and he might not be able to get a registered assistant to stay in the place. They all went to the Stores. If this chemist were called upon to serve upon a jury his district was deprived of a registered chemist for a certain time. He thought that all assistants should combine against going to the Stores, as tha, would shut the door of the Stores for ever. Those assistants who went to the Stores were taking a narrow view of the question. They were not looking to their own ultimate best interestst because the more they flocked to the Stores the more they destroyed their own future prospects of being in business for themselves.—Mr. J. Anderson Russell said that the Council of the Society now had quite a plethora of suggestions to extract from, and they wanted to see what they were going to do with those. Let the Council submit

A Draft of the Proposed Bill

to chemists throughout the country, and see whether or not the multitude of suggestions given on the text might not result in a better text than they had submitted. That was a point which they ought to enforce upon the Council of the Society, which had heretofore been much too hurried in promoting Bills. They wanted time to discuss these things. The Society claimed to be a democratic body, and the Minor qualification was, without any doubt about it, the standard of the pharmaceutical man. That being so, if they were democratic they would put the pharmaceutical man in a position where he could exercise the full suffrage just the same as any other pharmaceutical man, no matter what his qualification might be otherwise. He could not agree with Mr. Boyd as to the assistant's qualification. There was no good reason in support of his view. At present an unqualified assistant had not the power to sell a poison except under the personal supervision of his employer, a qualified man. Was it proposed to give him that power?—Mr. Boyd : He might be able to dispense and sell poisons, but not to open a shop for himself, not even to manage a branch shop or act as a manager for a store.—Mr. Russell said that the man would then only have to turn himself into a limited company and open a shop. It would be giving away their position entirely. He thought the third point was bunkum.

Assistant's Qualification not Wanted.

—Mr. Alexander Laing said that the Council would have to embody the desire of the associations in their forthcoming Bill, and if they did not they would be hoist with their own petard. Too many stiles had been erected that people had to cross before they could get into the Society. What they wanted was a good, sensible, level road, that folks could see what was ahead. The only service that the modified examination would be would arise when the owner of the shop was called away to serve upon a jury. There was, therefore, no need whatever for it. If they gave an assistant power to sell poisons in the absence of his employer, they could give him power to do it in any case, and the assistant would not be under any control whatever. The registered apprentice had all the rights that such a man should have. If they lowered the assistantship it would disorganise the whole pharmaceutical world, because they would stick there and be far happier as assistants than many were as employers. With the next proposal he concurred. He thought it was only right that a legal seller should have a means of making himself known. He thought it advisable that the name of the manager who was at the head of the pharmaceutical department of a store, or who was in charge of a branch, should appear.—Mr. Walker said that he saw a little difficulty with regard to the third proposition. It said that in the interests of the public this should be done. Now, he was not sure that this was the reason why they were going forward. There was no doubt that the legal seller was the proprietor of the place, so far as they had to do with anything that might take place, such as a mistake. Of course, that was not the only meaning of the word "seller" under the Pharmacy Act, as it also meant the person who handed over the article. They had all the qualification they required under the Act, which provided that he who handed over the article must be duly qualified. Mr. Boyd pointed out, with reference to the proposal, that the name of the manager should be put forward, but he did not see how that would be workable. They would not get Parliament to entirely override the law of the country, even for the sake of chemists. Other businesses were carried on from century to century under old-established names, and these were really the goodwill of the business, and other businesses would not readily submit to being compelled to

put up the name of the person to whom the business at present belonged.—Mr. Boyd suggested the name of the senior partner.—Mr. Sutherland said that was a most unreasonable thing to ask, and if they went to parliament and asked an unreasonable thing they would be snuffed out. Let them rather work on the lines that no one should own a shop unless qualified. As to assistants, it was undoubtedly a hardship that when a druggist went out he knew that the competent, if not qualified, assistant whom he left behind him must either refuse to do certain things or do an illegal thing. Most druggists, unless those who were in a large business, were in that posititon. Mr. Sutherland said they could not make provision for everything that cropped up. They could have

Too Much Law,

and ought to be very careful in invoking the law in a business that was so fenced round as the druggist's business. The law said that the party who was qualified was the party who was responsible to the public, and the public were protected by the qualification being made a very severe one. Nor was it desirable that draft Bills should be sent down for six, nine, or twelve months to be discussed. If legislation were to be carried through, the Bills should be discussed by the representatives who were sent up from different parts of the country. They in Scotland had two members on the Council, and they could easily insist that those should carry out the wishes of the various associations they represented. They must remember that it was much more difficult to get laws passed now than it was twenty or thirty years ago. Much discussion arose over the very simplest thing, and if the public thought they were going to give protection to any body of men, they would be very chary of giving them anything. The Minor examination should now be called a qualifying or some other name. The present name gave the public the impression that it was an inferior examination, while the fact was that it was quite equal to the old Major examination, and the man who passed it was quite as competent as the Major man of thirty years ago. If this proposal were to become law, it would introduce a very large number of men, making competition in the drug trade very much stronger than it was. These men would attend to business for one or two years and pass this examination, and the point would then arise what part of the business were they to carry on.—Mr. James Robb said he had no objection to registered chemists and druggists being made members of the Society. With regard to assistants, he thought it would be a very great mistake to entertain any such idea as the proposed qualification. In 1868 it was intended that the Minor qualification should be the assistant's qualification, and the pharmaceutical qualification should be that for opening a shop. He thought that the assistant needed far more to be qualified than the master, especially in large places, for there were many masters in large businesses who had only to do with the financial and the commercial side of these businesses, and never dispensed a prescription. To speak of giving assistants a less qualification was going back to pre-legislation days altogether. To put a manager's name on a label was the height of adsurdity. All that they wanted to get hold of was a name for the purpose of recovering damages from the proprietor of the shop, if necessary, and that was very simply got. They had names in London, Edinburgh, and Glasgow that were reverenced by the whole of the pharmaceutical body, and he would be very sorry to see these old names taken down and new and unknown names put up. A very simple way to get over the difficulty would be the registration of firms.

The Chairman Sums Up.

—The Chairman said that the fact seemed to have been overlooked, that the Association had already adopted the first proposal on the list. With regard to the second proposal, whenever it was mentioned at the Federation meeting he thought it a very retrograde step, and he gave it no countenance whatever. But out of courtesy to one or two of the members—who thought that, in view of the correspondence that had taken place in the *Pharmaceutical Journal*, it might be discussed by the associations—it was allowed to go down. He did not think that they in Glasgow would be desirous of supporting that proposition. He would be very sorry if they had an intermediate examination allowing assistants to dispense poisons during the absence of the employer. As regarding the third proposal it seemed as if each speaker in turn had missed the point of this proposition. It was most distinctly in the interests of the public that this was worded. It had been said by one or two speakers that all they wanted to have was the name of the proprietor of the shop. Now, he maintained that in the case of limited liability companies they could not get at the proprietors. They had no civil remedy against a company. If an assistant committed any error and the store was sued, the purchaser got no damages. They must proceed against the assistant. In places where there was no qualified assistant, how was the Pharmaceutical Society, or any other prosecuting body, to proceed? There was no law to compel an assistant to say whether he was qualified or not, and they could not proceed until they had that information. So long as the name of a qualified man appeared on the label that was all right, but it had to be there. That did not appear now, and it had been allowed to go into abeyance. The name of the manager ought to appear on the label as a guarantee that the business was being conducted by a qualified chemist. He would go a step further, he thought that time-honoured names ought not to be kept up when those individuals were gone. An individual might get a very old business with a very good name attached to it, he might trade upon the reputation of the name, and yet he might not be as good as the man who had gone before him. He might conduct his business under the old name, and yet it might be a very inferior business. No name, whether it was that of a President or a founder of the Pharmaceutical Society, ought to be kept up, unless it was that of the individual to whom the shop belonged. That was in the interests of the public. It was within his knowledge that the reason why this had not been enforced was simply on account of those in high places.—Ultimately the proposal that all registered chemists and druggists should be eligible for membership of the Pharmaceutical Society was unanimously agreed to, but the second proposition was unanimously answered in the negative, and further consideration of the third was adjourned.

MIDLAND PHARMACEUTICAL ASSOCIATION.

A meeting of this Association was held on November 25 at the Grand Hotel, Birmingham, for the purpose of discussing a series of resolutions passed at a meeting of delegates of various local associations held at Glasgow in August last.—Mr. F. J. Gibson, President of the Association, occupied the chair.

Provincial Pharmaceutical Organisation.

Mr. C. Thompson said that the Midland Pharmaceutical Association had given the subject of local organisation a very large amount of attention. At the opening meeting in 1892 he addressed them upon that particular subject, and showed them that from the date of the formation of the Pharmaceutical Society in 1841, local organisation had been repeatedly brought forward. He advocated that the country should be divided into sections, that each section should be constituted a branch of the parent Society, with a representative on the London Council, elected by each of the divisions. It was not necessary to go into minor particulars respecting the conduct of the branches, but he would be pleased to forward copies of his address, with two lists of replies he afterwards received from secretaries of local associations and many local secretaries throughout England and Scotland, expressing approval and otherwise of the scheme he advocated. Recently at Nottingham their worthy Vice-President, Mr. Newsholme had dealt very ably with the same subject, and he cordially endorsed his views. After five years' consideration he confessed he had somewhat modified his views. The time had not yet come for them to have branches of the Pharmaceutical Society scattered over the length and breadth of the land, but he was glad to find that local associations were being formed, and that there was more life in the older associations now than in any previous period of their history. The forty-two associations, he was informed by the Secretary of the Federation, were all linked together in one bond of unity, and he ventured to assert that the Federation, which was doing good work, would be the means of infusing more life into their midst than had ever existed in the past. After reading extracts from the pamphlet written by Mr. Newsholme respecting "What local associations may do," and what he said the parent society did do, the speaker said that while he sympathised with the Council in the difficult work it undertook, he did think it would be a distinct gain to the pharmaceutical profession if some of the older members could be transferred into a sort of House of Lords. It seemed to him the phrase often used, "Once a mason always a mason," might very well be altered to "Once a councillor, always a councillor," respecting the members of their Executive body. Without being

at all personal, he suggested that there should be an age limit, say, sixty-five, at which councillors should be ineligible for re-election. He also held that no office, however good the official might be, from the president down to the local secretary, should be held for a longer period than three, or, possibly, four years. He then moved—

"That it is desirable that every pharmacist in business, in addition to joining the Pharmaceutical Society of Great Britain, should consider it his duty to join some local organisation, and that such associations should, without exception, join the Federation."

—Mr. J. Poole seconded the proposition.—Mr. A. Southall gave an historical review of the chemists' organisation in Birmingham, and said that chemists could not expect much to be done for them until they more closely combined and took more interest in their own associations. The Pharmaceutical Society was not so strong as it ought to be, for instead of 4000 or 5000 members there ought at least to be 12,000 or 13,000. Grumbling at the Pharmaceutical Society would do no good, because they had nothing at their backs. He had appealed to Members of Parliament to support them in the passing of Pharmacy Bills, but they had invariably replied that the pharmacists ought not to expect much unless they did something for themselves.—Mr. J. Spilsbury agreed that it was easy to grumble at the parent Society, but he suggested that those who did the grumbling should propose remedies for the removal of the evils that were supposed to exist. Mr. Thompson's scheme aimed at producing good results, because fifteen delegates, meeting at Bloomsbury Square and in a measure affiliated with the Pharmaceutical Council, would carry great weight and be of assistance to the Council.—Mr. H. Jessop said that the assistants would support the question of the federation of the associations.—The Chairman said that their Association numbered 198, and their views ought to carry some weight and be respected.—Mr. F. H. Alcock said that Mr. Thompson's resolution excluded all students, but he presumed the intention was to include all in the Pharmaceutical Society. He suggested the first part of the resolution should read,

"That it is desirable all pharmacists and pharmaceutical students should consider it their duty," etc.

The suggestion was accepted and the amended resolution was then unanimously carried.

The Proposed Examination for Assistants.

—Mr. F. H. Alcock moved—

"That this meeting of pharmacists considers it is not desirable in the interests of pharmacy to have a modified examination for assistants which would carry with it any qualification to sell or dispense any of the scheduled poisons."

He said that whatever the issue of their discussion on the subject might be, it was certain that those meetings to air their grievances and state their wants must be beneficial. As he understood the question allotted to him of moving the resolution, the title was not a wise one, for they had already a modified qualifying examination for assistants who were engaged in pharmacy before 1868, which enabled them, if successful, to have their names placed on the Register. It was not that to which reference was made, for he believed all agreed that it was quite time it ceased to exist. There had arisen in some parts of the country, on the part of employers and employed, a desire for a milder examination than the Minor for students of pharmacy, to enable them to perform certain duties which, at present, it was not lawful for them to do. There was no doubt that the cry was heard most amongst pharmacists who, from the size of their business or otherwise, were not able to employ qualified assistants, and who relied for assistance upon their wives, apprentices, or errand-boys. Unless the actual seller was qualified he was not in a position to sell poisons or dispense medicines containing them, however competent he might be to do so, and for so doing he might be subjected to heavy penalties for each offence. There were very few pharmacies throughout the country in which that offence was not committed daily. It was quite true that little notice was taken of it—except occasionally through the coroner's intervention—because only the Pharmaceutical Society could deal with offenders, and their machinery being in London, it was but seldom set in motion against members of its own craft. To meet that difficulty it was suggested that a "little-go" should be established which would remove all those legal obstacles, and confer advantages upon the single-handed pharmacist. To sanction the giving of such a certificate to a pupil or an unqualified assistant would, in his opinion, be fraught with great danger to the public, and their calling, especially in the present state of pharmacy, and particularly in view of what Mr. Gibbs was to speak about. It might benefit the pharmacist, because he could get assistance for less money, but it would retard the progress of education, and tempt the possessor of such a certificate to stop there, under many circumstances. He did not think the promoters of the new modified examination should desire the present qualifying examination made less stringent, for if a young man would work hard and honestly at the subjects required, and think less of his beer, bacca, billiards, and bicycles, there ought to be no difficulty about the assistant getting the legal qualification at the right time. The modified examination idea was a step backwards. He believed that every pharmacist should be so well up in his profession as to be able at short notice to occupy the most important post in any first-class pharmacy of the realm. If their friends desired modified examinations to test the progress of pupils under their care, and in order that the London Council might feel satisfied they were being rightly trained, and not used merely as a form of cheap labour, he was on their side, and would suggest they should be held aunually, not giving any certificate, because all that would be a gradual preparation for the Minor, or as he would prefer to call it, the Intermediate, and give the certificate of legal qualification only after successfully passing the Final, which would correspond to the Major of to-day but on more pharmaceutical lines.—Mr. Gibbs said the question arose in the north of Scotland, where, owing to the paucity of qualified chemists, it was thought better to have the modified examination which would enable Scotch chemists to more easily carry on their businesses.—Mr. A. Southall said that he understood this modified examination referred to the educational examination brought forward some years ago by Mr. Barclay, and of which they had seen some account in the *Pharmaceutical Journal*. That examination was worthy of encouragement, but he did not think they as chemists and druggists wished to assist their Scotch friends in getting unqualified men to dispense poisons. As a matter of fact in the Midlands, they wanted to lessen the number of illegal dispensers of poisons.—Mr. H. S. Lawton seconded the motion, and expressed the opinion that the modified examination, if carried out, would be an encroachment upon the Minor man's province, and would also invite a rush of undesirable men into the trade, because they would be attracted by a cheap and easy examination.—The resolution was carried.

The Exhibition of a Pharmacist's Name.

—Mr. R. D. Gibbs proposed—

"That in the interest of the public it is desirable some means should be adopted to show who was the legal seller in any establishment where there is absence of indication."

In briefly speaking to the resolution he said that if the majority of those who had entered the ranks of pharmacy did so under the belief that after years of apprenticeship, close confinement and close study, a haven would be reached where the conditions of life would be worthy of the efforts made for their attainment, the belief was not a blind one; it accepted and was prepared to accept the teachings of economic science, but it was not prepared for such a revolution as was involved in the decision that person did not mean persons, and that consequently companies were, as such, outside the Act. It was outside the subject they were dealing with to say such a decision should not rest. It did rest, and the question which followed was, how could their remaining interests be secured and proper protection given to the public. The great principle which governed the case was that it was no longer necessary that capital and labour should for the purpose of the Act be provided by one person, provided there was a registration under the Companies Act. What they had to do was to protect their labour, and as the law declared the person who made the sale to be the seller, and the seller assumed to be qualified, they asked that it should be open to the public to know that the seller was properly qualified. He desired to say that he had no company or private interest in his mind. The whole matter was one of principle.—Mr. Spilsbury said that there were a considerable number of irregularities existing at the present time, and how could they compel a company to put up the name of the actual dispenser when there were hundreds of shops in the country being conducted under their names, the actual chemist not having his name up at all. The resolution would touch pharmacists from the highest to the lowest rank.—Mr. Perry asked what was meant by "absence of indication."—Mr. Gibbs said that the resolution came from the Conference, and he was only voicing it. He presumed it

meant that the public should know the sale was a legal sale.—Mr. Lawton seconded the motion, which, on being put, was defeated. A vote of thanks to the Chairman closed the proceedings.

CHEMISTS' ASSISTANTS' ASSOCIATION.

The lecture room of the C.A.A. at 73, Newman Street, W., was filled to its utmost limits on Thursday, November 25, when Mr. T. Morley Taylor, the President, called upon Mr. E. W. Lucas to give a lecture and demonstration on

Urine Analysis.

Mr. Lucas had not written a paper on the subject, as he afterwards explained, partly for lack of time and partly because so much has already been written on the subject that anything he might have composed for the occasion would naturally have been on somewhat similar lines to the work of other writers. He proposed, however, to give a practical demonstration of a few of the numerous methods employed in the examination of urine. Beginning with the appearance of the excretion, Mr. Lucas pointed out the general characters of urine, showing the acid reaction and the change of character it undergoes according to diet, it becoming alkaline after a vegetable diet. The specific gravity was next dealt with and the determination of sugar in urine, Sir Geo. Johnston's test being employed to ascertain the amount of sugar in a certain sample. Various modifications of this test were also tried. Gerrard's apparatus for determining the urea of urine was described, and a practical demonstration given. Various tests for the presence of bile were then given, special mention being made of Oliver's test and also Gmelin's test. Blood in urine was next dealt with, Day's and Hæmin's tests being applied for its determination. Having touched thus briefly upon the general features of a chemical examination of urine, Mr. Lucas then, by the aid of a lantern skilfully manipulated by Mr. F. L. Robinson, exhibited a large number of excellent photographs of crystals, isolated and mounted by himself. He also showed several photos of extraneous objects found during the examination of urine, such as human hairs, a minute feather, threads of linen and cotton, and a kind of fungus sometimes found in urine.—At the conclusion of the lecture, Mr. T. Morley Taylor remarked that he need hardly assure Mr. Lucas they had listened with extreme interest to a very able lecture and demonstration. Perhaps there was no branch of analysis that a pharmacist could take up with more profit than urine analysis. Medical men often had not time or inclination to make an analysis, and if they knew that the work could be satisfactorily accomplished by a local pharmacist, they would delegate that part of their work to him. He (Mr. Taylor) could not boast of being the only man there who had learned much that night concerning the chemical analysis of urine; he was sure everyone present had acquired a great deal of knowledge on the subject. Mr. Taylor then asked "What work on urine analysis is the best from a pharmacists' point of view?"—Messrs. G. Pearson, E. W. Hill, Thompson, G. Roe, and C. E. Robinson supplemented the President's remarks as to the excellency of the proceedings of that evening, and referring to Mr. Taylor's query respecting a work on the analysis of urine, Mr. Hill thought that anyone who carefully read a paper by Mr. Saul, given before that Association some years ago, and published in the *Ph. J.* in full, would be able to carry out an analysis.—Mr. Lucas having replied to questions asked by several of the gentlemen before mentioned, said that he was extremely gratified by the very kind way they had received his remarks and efforts. He had to thank Messrs. Bakers for the use of certain apparatus, and also the parent Society for the lantern, and Mr. F. L. Robinson for his aid with the same.—Mr. C. Morley, on behalf of the members of the Association, tendered a very hearty vote of thanks to Mr. Lucas. He thought it rather a good thing that Mr. Lucas had not written a paper, because his remarks and the practical demonstration had been so very interesting and instructive. Referring to the paper by Mr. Saul, he believed it was not now possible to obtain a copy of the *Pharmaceutical Journal* containing it, as that particular number is out of print, but the Association had still some copies of the proceedings for that year, which could be had on application to the literary secretary.—Mr. Pearson seconded the vote of thanks, which was carried with acclamation.—In replying, Mr. Lucas handed over to the President a book of photos similar to the slides exhibited, which gift Mr. Taylor suitably acknowledged.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

On Thursday evening, November 25, the usual meeting of this Society was held at University College, the President, Mr. Pierson, in the chair. Three new members were elected, Messrs. Stower, Powell, and Whistle. As usual the

Miscellaneous Communications

formed an important and interesting portion of the evening's business. A fungus of a peculiar brown colour, resembling burnt heath, was shown by Miss E. M. Wood, who said it was found on the Cheshire side of the Mersey, growing on a common which had been on fire last season but one. The interesting feature of the growth was its colour, which was an exact imitation of that of the ground upon which it grew, possibly an example of the adoption of a particular tint seen at times in plants as a means of protection. A good specimen of the Jew's Ear or Judas Ear fungus, *Exida Auricula Judæ* found growing on elder trees, was also shown by Miss Wood. The President passed round a sample of a very satisfactory lanolin cold cream, made from a formula given in the Supplement to the German Pharmacopœia, and printed in the *Pharmaceutical Journal* of October 23, 1897. The ingredients were lanolin anhydrous, 80 parts; spermaceti, 20; white vaselin, 60; water 100 parts; perfumed with one drop of otto of rose to every 50 grammes of cream.—Mr. Pierson also suggested that it would be a move in the right direction if chemists would reduce their prescription stamps to a suitable size and stamp only on the back of the prescriptions. Some prescriptions he handled were literally covered with impressions, so that the writing was hardly decipherable, and some of the stamps were of dimensions leading one to suppose that their sole object was to act as gratuitous advertisements to the establishments using them. It was thought that good might result if the subject were brought before the Liverpool Chemists' Association, so that some degree of uniformity might be attained at any rate in the district. A tracing of a foreign prescription was sent by Mr. Morgan, which ran as follows:—

℞ Tr. Valer. Æth.	5 grammes.
Tr. Chin. Comp.	25 ,,
Tr. Cichor. Sp.	1 ,,
Ol. Menthæ. Pip.	2 drops.

The only difficulty lay in the second ingredient which was compound tincture of cinchona, and the third which was tincture of chicory.—Mr. R. H. Mitchell then presented a batch of dispensing difficulties he had had to surmount of late. The first was

℞ Vapor Creasoti.	ʒ ii.

one teaspoonful in a pint of hot water as an inhalation. It was evident that the prescriber did not intend the vapour of the Pharmacopœia to be sent, so what did he mean? Two drachms of creasote with directions for use were dispensed by Mr. Mitchell.—Mr. Wyatt thought that it was the vapour of the London Throat Hospital Pharmacopœia containing creasote, light carbonate of magnesia and water to be used by teaspoonfuls that the doctor had in mind. The second was for 24 pills.

℞ Creasoti	♏ i.
Zinci Valer.	gr. iii.

Fiat pilula mitte xxiv.

These required curd soap, 6 grains; licquorice powder and compound powder of tragacanth, of each, 25 grains, to make a decent mass, and the zinc salt was well dried on a water bath before using.

A third prescription for pastils ran as follows:—

℞ Cocainæ Hydrochlor.	gr. $\frac{1}{10}$
Menthol	gr. $\frac{1}{2}$
Acid. Tannic	gr. ii.

Fiat pastillus mitte xx.

The glyco-gelatin base used went semi liquid when the tannin was added, and nothing could be done to remedy the failure. The prescriber finally ordered the glyco-gelatin to be replaced with fruit paste, when, of course, all trouble was over. Although a great chemical error was undoubtedly committed in prescribing tannic acid with gelatin, yet Messrs. Wokes and Wyatt said that pessaries containing such a combination had been dispensed by them repeatedly with success by taking care to dissolve the tannic acid in a little glycerin and adding it to the gelatin mass when just cold enough to run into the moulds.—A lecture was then delivered upon—

Sponges,

by Mrs. T. S. Wokes, who illustrated her remarks by a fine

series of lantern photographs, and rapidly gave the natural history of these wonderfully complex organisms, their growth, various habitats, collection, and the different efforts which had been made at times to propagate them artificially. This latter portion of the subject was made very intelligible by the views shown illustrating the methods of division, spacing out and, anchoring to the sea-floor in vogue at experimental stations on the coast of Italy.—A vote of thanks was proposed at the close by Mr. A. H. Mitchell, seconded by Mr. Harris Burns, and carried by acclamation.—In reply to various questions, Mrs. Wokes said that British sponges were to be found on the shores of Hilbre Island at the mouth of the River Dee, and also off the coast of the Isle of Man. Regarding the process generally followed for bleaching sponges she could not pretend to possess much knowledge, as it was to a large extent a trade secret, and the hue of the bleached sponge depended in some degree upon its variety.—Mr. Mitchell said he had bleached sponges very well, using solutions of permanganate of potash, oxalic acid, and sodium hyposulphite successively, a method taught him by an old sponge-dealer.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION.

The opening meeting of the session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Tuesday, November 30, 1897, at 11 a.m., Mr. John Bowman, President, in the chair.—The Chairman delivered an

Opening Address.

In the course of which he said that when the Pharmacy Act, 1868, was passed it occurred to no one that what was illegal for an individual might be done with impunity if that individual was multiplied by 7 or an X. It might be urged that this evasion was in the public interest. Was that so? Although there was no absolute rule to indicate what is fair to the public and to the chemist, certain general principles or tendencies indicate the direction in which we should steer. Now the tendency of such evasion was undoubtedly to lower the tone of the chemist and the quality of the medicines, and the most unscrupulous man would be the most successful. The motive of self interest, of gain of character, of the dignity engendered by honest work were a-wanting. There was no incentive to raise oneself or the calling in which they were engaged beyond the minimum required by law. He felt sure that were the public educated in the real facts they would be wholly dissatisfied with the position which many chemists were compelled to occupy. He had touched upon one great grievance, but many smaller ones were constantly cropping up in the course of social progress, which required watching, and it was the aim and function of such an Association to direct attention and avert or remedy anything which pressed unfairly on their craft. Doctrinaires had been praising the respective merits of individualism and collectivism for the salvation of society. In his view the truth lay in a proper blending of the two. The individual who would grasp all was confronted by others having the same instincts, which unrestrained would mean a war of everyone against all. But men were rational, and recognised that combinations under certain laws and limits were necessary to prevent mutual destruction and secure a fair field for self-interest and development. That applied to internal defence within the ranks. For those outside he would say that no man was fully equipped, one excelled in one direction and another in another, and that it was only in association that they could hope to attain the fuller wisdom so desirable in deliberating as to what was best for their mutual interests. He would respectfully urge on everyone connected with the business the duty of giving the Association their loyal support and contributing their talents for the general weal.—On the motion of Mr. Boa, seconded by Mr. McGlashan, a hearty vote of thanks was awarded to the Chairman for his address.—The Secretary then read the report of the

Prize Scheme Committee

as follows:—

"That the competition be open to all assistants and apprentices engaged in the practice of pharmacy within the area from which the Association draws its membership.

"That two cash prizes be offered:—First prize, £2 2*s*.; second prize, £1 1*s*.

"That the subjects of examination be commercial or legal questions bearing on pharmacy.

"That a set of such questions be drawn up, printed copies of which should be addressed to the assistants and apprentices within the before-mentioned area."

Some discussion took place as to whether the scheme should be confined to employés of members of the Association, but on the motion of Mr. McLaren, seconded by Mr. Mason, it was agreed that it should be open to all, without any restriction.—Mr. Mackenzie moved and Mr. McDougall seconded the adoption of the report, and this was agreed to. Messrs. Boa, Burley, Henry, Hill, and Lunan were appointed a Prize Committee to carry out the plan.

Some Trade Topics.

—A lengthy discussion then took place on a proposal made by a member to approach the local wholesale houses with a view to their giving the same terms for proprietary medicines as are now given for orders of £5 and upwards.—Mr. Mackenzie (T. and H. Smith) said there were difficulties in the way which could not be easily overcome. They had reduced the amount from £10 to £5, but he doubted if it would be possible to get the wholesale houses to agree to go any further. At the same time there could be no harm in trying, and he quite concurred in the suggestion that they should try. The patent medicine trade was not a profitable one, as they knew, either for wholesale or retail dealers.—The Secretary asked if it would not meet a difficulty if cash were sent with the order.—Mr. Mackenzie said prices varied so frequently that that was impracticable.—Mr. Laird said there was already one firm in Leith which gave the discount on any order £1 or anything else, and he believed it was only a matter of time till all the other houses would do the same.—The Secretary was authorised to lay the views of the Association before Mr. Addison Smith, S.S.C., the agent for the wholesale houses.—A request from the Scottish Traders' Defence Association for assistance in organising the trade against co-operation was refused.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on November 26, the usual fortnightly meeting of this Association was held at the Pharmaceutical Society's House, 67, Lower Mount Street. Mr. J. Boyd-Alister, L.P.S.I., presided, and there was a large attendance of members, including Miss Ada Wyatt, L.P.S.I., and Miss C. Jessop. Mr. W. Vincent Johnston, M.P.S.I., Hon. Secretary, read the minutes of the previous meeting, which were confirmed. Letters were received from a number of employers approving of the newly-started employment agency, and promising to avail themselves of the agency when they wanted assistants.—Mr. R. J. Downes, President of the Pharmaceutical Society, was not in favour of the departure, and gave his views thereon in a most courteous manner.—Mr. T. W. Robinson, of Kingstown, promised to read, in February or March next, a paper on his experiences as an Examiner to the Society.—Thanks were accorded to Mr. Robinson, whose offer was received with applause.—Messrs. Hackett, Kingston, and McMahon were elected members of the Association.—The annual dance was fixed to take place early in January next, and Messrs. Hardy, Taylor, and Dunwoody were appointed a sub-committee to make the necessary arrangements in the matter. Circulars inviting the members to compete for the prizes offered by the Association for the best essay on "An Ideal Pharmacy" were distributed. A debate then took place on the following subject: "Is it Necessary to have an Intermediate Examination for the Pharmaceutical Licence?" in which the following speakers took part:—Affirmative, Messrs. Hunt and Dunwoody; negative, Messrs. O'Sullivan and Alister. After a spirited discussion lasting for upwards of an hour the question was put and decided by a majority of ten votes in the negative. A short business meeting was afterwards held, after which the proceedings terminated.

LIVERPOOL CHEMISTS' ASSOCIATION.

A smoking concert was held on Tuesday, November 30, at the Alexandra Hotel, Liverpool, there being a good attendance.—The President, Mr. A. C. Abraham, occupied the chair, and was ably seconded by Mr. J. Bain, who was responsible for the musical arrangements; and the Secretaries, Messrs. Dutton and Wardleworth, who successfully watched over the welfare and comfort of the guests, worked through a well-selected programme of vocal music. The accompanist, Mr. Frank Loft, contributed in no small degree to the successful manner in which Messrs. Bain, F. Smith Stone, C. O'Bierne, A. Field, S. L. Austin, J. Shacklady, and Beckett acquitted themselves of their self-imposed and much-appreciated tasks, and richly deserved the vote of thanks awarded to him and his brother artistes at the close of a very pleasant evening.

LETTERS TO THE EDITOR.

More Friendly Words.

Sir,—Although somewhat averse to the practice of unburdening one's mind in the public prints, I cannot forbear writing to compliment you upon the present issue of your Journal. Having been a loyal supporter of the Society for many years, I have considered it a manifestation of my loyalty to scan week by week the columns of the Journal. It is true that while it sustained, solely, its character as a scientific publication, I felt proud of its prestige, but I must confess that it did not greatly interest me. During the last three years or so my interest in it has been growing; still I was not so satisfied with it, as far as the commerce of the craft is concerned, that I dared to ignore the other so-called trade journals. In order to keep abreast with the times I find that I have to keep a close and keen look out for the latest novelties, and it seemed to me that advertisers patronised the other journals to a somewhat larger extent. The tone of the *Pharmaceutical Journal* certainly pleases me well in that it appears to me to treat pharmaceutical matters seriously, whereas the other paper, which I have hitherto had to look upon as a necessity, evidently considers the craft and those who follow it fit for nothing but to afford it material for cheap sneers, at the same time that it unblushingly appeals for a larger subscription list from the despised and foolish chemists and druggists. I am tired of being told that I am only a huckster, and ought to be content to compete on the same lines as hucksters. I am tired of being told that I am helpless and that the public does not care a snap of the fingers what becomes of me and the craft. Is the public ever likely to care when an organ which should uphold our interests is continually trying to belittle us? Perhaps I am getting sensitive in my old age, but I am jealous for a profession in which I have striven to earn a self-respecting livelihood. Yes, a profession which will neither be of much use to its members nor to the public unless it shakes off the huckster's rags in which it has arrayed itself, and which the little old man of—the sea clutches so tightly about its neck. To return, this week's issue of your Journal shows me that it is possible for you to attract advertisers, and I therefore hope to be spared from a weekly attack of choler. Congratulating you on your progress,

November 27, 1897. Sinbad (117/40).

Courteous (?) Wholesale Houses.

Sir,—A prescription was brought me the other day to dispense, one item prescribed was proprietary, for which I wrote the wholesale house. It came down by "letter post," but in a very sad condition; the bottles were smashed, and the contents broken up into small pieces. The accompanying invoice declared at foot "Not responsible for breakage." In sending the amount charged I informed them of the disaster to the parcel, and of course the loss to myself, venturing to suggest that as they repudiated "responsibility," the least they could do would be to pack the goods so that in transit they should receive no damage. To this reasonable suggestion they were silent, and returned the receipt without remark. I have sent this to you that others may compare notes.

Luton, November 27, 1897. Joseph T. Sunman, M.P.S.

The Proposed Pharmacy Bill.

Sir,—As a member of the Pharmaceutical Society, I crave your permission to enter a feeble protest against some of the suggestions relative to the proposed Pharmacy Bill. There seem to be two objects in view; one affecting apprentices, and the other to increase the number of adherents of the Society. With the suggestions put forward relative to the first I am in cordial agreement, namely, that the preliminary examination should be passed before entering the calling, and that there should be an interval of three years between it and the Minor; to these I would suggest that no chemist be allowed to take an apprentice until the latter had passed the examination, and that every candidate for the Minor be required to produce his indentures to show that he had been duly apprenticed, as by this means the entrance into the calling of undesirable persons would be largely prevented. With regard to the second object—that of strengthening the Society—I also am in sympathy, but from the methods suggested for its attainment I must entirely dissent. Let us take them *seriatim* and ask a few questions concerning them. Will someone give any tangible reason for electing as "Associates" those who have passed the preliminary Is there any disgrace attached to the term "student"? I have read your reports of the transactions of provincial associations concerning this point, and find that "Mr. This" and "Mr. That" are of opinion it is advisable. Opinions are not evidence and consequently afford no reason for making this change; and until we get something approaching evidence, let students in fact remain students in name also.

Another suggestion to strengthen the Society consists in admitting all Minor men to full membership and give to all the title of pharmaceutical chemist. Will anyone furnish evidence to show, first, that this change is really wanted; and, secondly, to show that the change would actually strengthen the Society? Both these questions can be easily answered if proper means are adopted. It will possibly be urged that the provincial associations afford sufficient answer to the first part of the question. Certainly they seem to want it, but I am not aware that they have any right or title to speak on behalf of the bulk of registered men, for they are self-constituted and represent no one but themselves. It would be very interesting, nay, perhaps amusing, to know how many Major and Minor men and apprentices were present when the resolutions embodying the proposals were passed. I suspect the numbers would bear a microscopical proportion to the 15,000 chemists on the Register. Briefly, then, no evidence, as far as I can perceive, has yet been advanced to show that one single chemist at present outside the Society would enter it as a result of the change. I imagine that a simple circular sent by the Society to every non-society chemist on the Register, asking, if in the event of certain changes being made, he would join, would provide a full answer to the second part of my question, and an answer obtainable in no other way. Further, if the title pharmaceutical chemist is to be cheapened by universal distribution, how will it induce men to become M.P.S.? for in this respect they would be on the same footing whether inside or outside the Society.

As regards pharmaceutical chemists who are not at present members, will the change bring them within the fold? If so, in the name of common sense, how? What title are we Major men to receive, and what extra privileges are we to possess as a reward for our extra study and culture? We will make you "Fellows" (apparently without any extra privileges), you say. A bawble, good-for-nothing, no thank you. Now I do not wish to be misunderstood. I offer no objection to giving chemists and druggists a voice in the government of the Society, but not on the proposed lines. It seems to be that justice would be done if ten seats on the Council were set apart for associates, and that votes for election of the Council be allowed to members and associates, but that each member should have twice or thrice as many votes as each associate. I am by no means certain that even this or any other arrangement would add to the strength of the Society. Means to this end must be sought in another direction. The Society must show sincere willingness to secure real and lasting benefits for the craft at large in respect to company trading, public acknowledgment of our qualification, and in many other ways affecting ourselves; especially to one matter should the Council's efforts be directed, namely, the Assistants' Examination of the Apothecaries' Society, which is fast becoming recognised as a qualification.

London, November 29, 1897. F. A. Hocking, B.Sc. (Lond.).

A Protest Against Misrepresentation.

Sir,—The P.A.T.A. *Advertiser* has from time to time contained a series of articles from the same pen, which have—all of them—a tendency to reflect scurrilously on the position of the quietly-disposed pharmacist, who, from a love of manly freedom in the conduct of his own affairs and the determination to utilise to the full that quiet leisure which is no less necessary than enjoyable in the prosecution of the art and mystery of his business, refuses to listen to the brassy notes of the bagman or the wheedling tactics of itinerant secretaries of associations, or general agents of any kind whatever. No. 9 of these papers on page 7 of the November number bears witness still more plainly to the hurried confusion of the writer's brain and the recklessness of his ungovernable pencil. Here we have an object-lesson in three tableaux; above and below there is one of excessive brightness, which set off in all due hideousness the big black one between. Under the heading of "Chemists' Shops I Visit," reference is made to "the palatial West-ender, glowing with electric lamps . . . . bevelled glass mirrors . . . . pink jars and polished mahogany." Such the lovely picture of those which belong to the subscribers to the P.A.T.A., culminating below with a description of the kind of window-dressing that is supposed to assort therewith. Artificial flowers, butter-milk soap in the midst of green moss and china

cows, the picture of a plump young lady in classic attire with a dressing of yellow art muslin, the frog-windows, "so well known as to need no further reference," and mice-windows and rat-windows where these rodents are let run about and feed out of tins resembling those containing vermin killer, the whole sketch closing with a pious "hope that the sale for rat charmer" in this latter case would soon increase sufficiently to justify the proprietor in putting it on the P.A.T.A. list (see page 9).

Well, "*chacun à son gout*," says the Frenchman, "but," says John Bull, "let each one be truthful too." The last clause contains a *suggestio falsi*. It is not a fact that proprietaries which sell the best are on the P.A.T.A. list, but quite the reverse. That list from the first consisted mainly of articles of doubtful repute, and so it does still; those with an established and steady demand are conspicuous by their absence—*e.g.*, Beecham's, Holloway's, Kay's, Cockle's, Powell's, and almost all others of any repute at all. The black picture puts one in mind of the vulgar daubs in certain "penny horribles." Those who will not join the P.A.T.A. are styled "dirty druggists," "slum chemists," and their places of business "slum pharmacies." Of these there are about 2000 altogether, leaving only 6000 to be reckoned with, the half of which are supposed to be members of the P.A.T.A. and constitute the *élité* of the whole profession. Now, sir, I can answer for my own borough—West Marylebone—that if "Canvasser" were to come anywhere near me—which I cannot find he has done yet—whatever may have been in the past, there is nothing anything like what he describes to be found here so far as the shops of registered chemists are concerned. I allow that there are physic shops—herbalists and others—that cannot yet be hit, it seems, by pharmacy or medicine Acts, and are a disgrace to civilisation, and this may have led, perhaps, to such an egregious mistake on the part of the writer, for which, let us hope, he will offer some explanation or apology.

Marylebone, N.W., November 29. J. C. Hyslop.

A Hint to Readers.

Sir,—Not unfrequently it is requisite to refer to a back number of your Journal, but it is sometimes difficult to pitch on the particular one that is wanting. I adopt a simple plan; taking an old directory and pasting on its pages the weekly index of contents; by removing an alternate leaf the symmetry of the volume is retained.

November 27, 1897. R. G. M. (188/6.)

** Our correspondent has carried to its logical issue the idea suggested by the publication of a weekly index, and if others would follow his example the Editor would perhaps not receive so many requests for information that have already appeared in the Journal.—[Ed. *Ph. J.*]

Public Dispensers' Association.

Sir,—Will you allow me to draw the attention of dispensers in public institutions to the advertisement in last week's *Pharmaceutical Journal* with reference to the above Association. I trust that all dispensers connected with infirmaries, hospitals, dispensaries, etc., who possibly can will attend the meeting at Trinity Church Schools, 252B, Gray's Inn Road, Tuesday, December 7, at 8 p.m.

17, Glengarry Road, E. Dulwich, December 1, 1897. C. H. Russell, *Secretary.*

The Chemists' Club.

Sir,—Referring to the paragraph in the last issue of your Journal, I beg to say that the firm through whose instrumentality the Chemists' Club was at first started, and up to the present mainly supported, thinks that the time has now arrived when the Committee should, on behalf of the members, take over the entire management. It is thought that the Club, depending on one firm for support, has prevented the other wholesale houses from taking that interest in the Club which was from the first expected considering that the members comprise hundreds of chemists doing business with them. The Committee have now decided, while thanking "Camwal" for the trouble and expense incurred in starting the club, to take over the proprietory control from December 25 next, and to remove the Club to the western district of London, in the vicinity of Regent Street. However, to make the Club a decided success it will require, for the present, financial support, and for this the Committee hope that the trade generally will lend them aid as patrons with annual subscriptions. Mr. H. Davenport has kindly consented to head the list with £10, and from promises of financial assistance received we hope, with the aid of the trade generally, to make the Club a financial success, both as a social and a business club. Any subscriptions will be gladly acknowledged by the Hon. Secretary. Cheques to be made payable to the Chemist's Club, and crossed "London and Provincial Bank, Ltd."

2, Farringdon Avenue, E.C., December 1, 1897. C. Edwin Garman, *Chairman of Committee.*

ANSWERS TO QUERIES.

Proprietary Pills.—The pills consist of ferrous carbonate with a trace of resinous matter, probably balsam of Peru, and a slight trace of arsenic. The outer coating is coloured with cochineal. [*Reply to* Quis.—1/28.]

Society of Chemical Industry.—You must be proposed by one or more members to whom you are known personally. Apply to the General Secretary of the Society, 9, Bridge Street, Westminster, S.W., for a nomination paper. [*Reply to* I. M.—2/1.]

Deodorant Earth.—This is a ferruginous earth, containing iron equivalent to 6 per cent. of ferric oxide. The iron appears to exist partly in the ferrous and partly in the ferric condition. It is well known that such earths are deodorant. [*Reply to* Minor.—115/2.]

Shaving Cream.—You will probably do better by using white soap as a basis rather than by trying to saponify fat yourself. Something on the following lines will probably suit you. Naples soft soap, 8 ounces; white Castile soap, 4 ounces; simple syrup, ½ fl. oz.; water, 4 ounces; oil of sweet almonds, 3 drachms; tincture of quillaia, 1 ounce; oil of *Myrcia acris*, 60 ♏.; oil of rose geranium, 30 ♏.; oil of peppermint, 2 ♏. Cut the Castile soap into shreds and heat with the water on a water bath until it becomes quite soft. Then turn into a hot mortar and rub until homogeneous. Add the Naples soap, tincture of quillaia, almond oil, and syrup in the order thus indicated. Lastly, add the desired perfume. A blend of myrcia and eau de Cologne oils is very pleasant. [*Reply to* J. H.—1/18.]

Evananescent Ink.—A solution of iodide of starch in boiling water is said to have the effect you describe. Possibly a very weak solution of iodine thickened with a little mucilage would answer your purpose. [*Reply to* Ink.—1/21.]

Formulæ, Methods, and Reagents.—As we have already intimated to several correspondents, the matter will be reprinted if there appears to be any likelihood of a sufficient demand for copies of the book. [*Reply to* G. S.—117/44.]

Dispensing Query.—We have tried your prescription—sodii salicyl,, ℥ij.; sodii benz., ℥ss.; spt. chloroform, ℥ij.; aquæ ad., ℥viij.—and have kept it three weeks under observation, but fail to notice any deposit or change more than a slight darkening. In another lot, to which we added a trace of free benzoic acid however, the darkening was much more pronounced, but the mixture did not show any deposit. Possibly your sodium benzoate contains a little free acid. It often does so. Then, if the glass of the medicine bottle contained a heavy trace of iron it would doubtless give rise to the coloration on keeping. [*Reply to* B. A. M.—1/7.]

[Several Answers are unavoidably deferred.]

OBITUARY.

Clark.—On Oct. 31, Ingham Clark, Chemist and Druggist, Hull. Aged 75.

Akeroyd.—On Nov. 22, Peter Martin Akeroyd, Chemist and Druggist, late of Canterbury. Aged 31.

Brain.—On Nov. 23, Frederick Spanton Brain, Chemist and Druggist, Bury St. Edmunds. Aged 53.

Stedman.—On Nov. 24, Richard Broomfield Stedman, Chemist and Druggist, West Malling, Kent. Age 76.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Aston, Boehm, Branson, Brown, Butler, Eaton, Farr, Fletcher, Gair, Griffiths, Harrison, Hill, Hocking, Hooper, Hyslop, Jewsbury, Keen, Kirkby, Lloyd, Lothian, Matterson, Moore, Mumbray, Perry, Plumbly, Robb, Sharp, Smith, Stewart, Sunman, T Idesley, Veitch, Wilson.

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NOTE ON SOME OF THE OFFICIAL EXTRACTS.*

BY S. H. FARR, F.C.S., AND R. WRIGHT, F.C.S.,
Pharmaceutical Chemists.

The extracts constitute a valuable class of preparations, containing as they do the active principles of the drug in their natural state of combination, in a permanent condition, and in a comparatively high degree of concentration.

There is no doubt that in many instances a typical extract, in which all the activity of the drug is contained within a small compass, presents distinct advantages over any other class of preparation.

The method originally employed in the production of medicinal extracts consisted in evaporating the expressed juice of the fresh plant, or an infusion or decoction of the dry material, over a naked flame, a steam bath, or a water bath.

This process was followed in the London, Edinburgh, and Dublin Pharmacopœias, and still survives in the British.

In the case of some drugs such a process is not open to serious objection, but in others it cannot be adopted without disastrous consequences so far as the strength and stability of the resulting product are concerned.

The development of scientific pharmacy has already brought about many changes in pharmaceutical operations, and as the problems of drug extraction become more thoroughly understood, and the application of scientific principles to the production of pharmaceutical preparations more complete, such primitive methods as those outlined above will doubtless go to the wall and be discarded. For the essential principle of scientific pharmacy is, that in the production of galenical preparations every drug shall be studied, *per se*, as an individual, the methods employed for its extraction being based upon a careful study of its physical and chemical constitution and the experimentally ascertained effect of various menstrua upon it.

It is of special importance that the selective method be followed in the production of extracts, the object being to include all that is active, to exclude as far as possible inert matter, and to reproduce the active principles of the drug in the resulting extract in as concentrated and stable a condition as possible.

One of the greatest drawbacks in connection with many of the official extracts is that they are so overloaded with inert matter that in order to produce the characteristic effect of the drug represented it is necessary to administer the extract in excessively large doses.

For some time past we have suspected that this fault was more especially characteristic of the green (or as they might more appropriately be termed, the juice) extracts.

Our suspicions were strengthened by an examination of some of the official juices, the results of which were brought before the Liverpool meeting of the Pharmaceutical Conference.† Those results proved that two at least of the official juices, viz., those of henbane and hemlock, were lamentably deficient in strength.

In the discussion upon the paper additional testimony as to the comparative inertness of some of the juices was borne by Messrs. Cross, J. C. Umney, and others.‡

Mr. Umney's remarks were both valuable and suggestive. He said that "he had had an opportunity of pressing out the juice from a considerable quantity of *Aconitum napellus*, but on working it up it was found to contain practically no aconitine. On extracting the marc, however, practically all the aconitine was recovered. This seemed to show that while the potent alkaloid might be soluble and come away with the juice, in many instances it was left behind in the marc and wasted."

These remarks afforded a possible explanation of the deficiency in strength exhibited by many samples of the vegetable juices, and also of the extracts prepared therefrom.

The figures we have to submit to this meeting prove conclusively that what is true of aconite also holds good with regard to the other medicinal plants containing alkaloids; and that in expressing the juice from the fresh plant a quantity of alkaloid, amounting on an average to at least 50 per cent. of the whole, is left in the marc.

This fact being established as the result of the examination of commercial samples of the juices and juice extracts, the question naturally suggests itself, Cannot better methods for the preparation of these extracts be devised? Why make the extract from the juice of the plant, or, indeed, from the fresh plant at all? Seeing that good, carefully dried, English grown medicinal herbs are obtainable in almost unlimited amount, why not employ the dried material and adopt the process of alcoholic extraction with subsequent evaporation of the tincture at a low temperature, a process already employed for several of these extracts in various pharmacopœias? This mode of procedure presents several advantages, the chief of which are that by using an alcoholic menstruum nearly all the inert matters present in the juice extracts are shut out, and also that at no stage of the process is it necessary to employ so high a degree of heat as in the evaporation of vegetable juices; while evaporation in alcoholic solution is less likely to be accompanied by changes in the character of those constituents of the drugs most readily affected by high temperatures. Fortunately we had on hand two series of figures relating to the proportion of alkaloid and extract contained in the percolates from various drugs, the first published in connection with our work on alcoholic menstrua,* and the second in conjunction with a paper on the standardisation of alkaloidal tinctures,† by the light of which we were able to forecast with a tolerable degree of accuracy the probable alkaloidal strength of such a series of extracts. The figures shown on Table I. are compiled from the table of results published in connection with the last-mentioned paper.

The original table indicated the percentage of alkaloid and dry extract yielded by separate fractions of the percolate from 100 grammes of the drug, each fraction consisting of 100 C.c. We have previously shown‡ that the exhaustion of most, if not all drugs is practically complete when a volume of percolate has been collected equal to three times the bulk of the drug operated upon, and as in the experiments about to be made it was not intended to carry percolation beyond that point, the results obtained from the first three fractions were added together. In calculating the amount of moist extract from the dry, an addition was made on the basis of an extract containing 20 per cent. of moisture. The consideration of these figures showed that our alcoholic extracts were likely to possess very much greater alkaloidal strength than the official ones.

The experimental work was practically limited to the extracts of aconite, belladonna, henbane, hemlock, and colchicum. In addition, however, several samples of commercial extract of stramonium were examined, and two samples of alcoholic extract of the leaf were made for comparison with the official extract.

* Paper read at an Evening Meeting of the Pharmaceutical Society on December 7, 1897.
† 'Year-Book of Pharmacy,' 1896, p. 292, *et seq.*
‡ 'Year-Book of Pharmacy,' 1896, p. 295.

* *Vide Pharm. Journ.* [3], xxi. and xxii.
† *Vide* 'Year-Book of Pharmacy,' 1893, p. 359.
‡ 'Year-Book of Pharmacy,' 1893, p. 358.

An alcoholic extract of taraxacum root was also prepared with an 80 per cent. menstruum. The chemistry of this root is in such an unsatisfactory condition that no assay of its preparations is at present possible. If, however, the bitterness of the extract affords any criterion of value, as is usually supposed, this should be an excellent preparation, seeing that it possesses at least ten times the bitterness of the official extract.

The investigation of the other juice extracts comprised :—

1. The examination of commercial extracts and the determination of the alkaloid, proportion of dry extract soluble in 70 per cent. alcohol, and percentage of moisture in them.
2. The preparation of alcoholic extracts.
3. The determination of the alkaloid and moisture in the latter.

Six samples of each of the official extracts were obtained from the usual sources and submitted to examination.

The *modus operandi* was as follows :—5 grammes of the extract was weighed out into a mortar and rubbed with a little warm water containing 1 per cent. sulphuric acid, until perfectly smooth. The mixture was then diluted with more acidulated water to a thin syrup, and the whole poured into a graduated cylinder containing 70 C.c. of 90 per cent. alcohol. The mortar was well rinsed and the rinsings added to the contents of the cylinder. The latter was shaken and allowed to stand for a short time. The mixture was then filtered and the filter with its contents washed with 70 per cent. alcohol until the volume of liquid had been brought up to 100 C.c. Of this solution 50 C.c. was employed for the determination of the alkaloid. The processes followed were in all cases precisely the same as those employed by us in our work on alcoholic menstrua, and will be found under their appropriate headings in various numbers of the *Pharmaceutical Journal* for the years 1890-92.* The weight of alkaloid thus obtained, multiplied by forty, gives the required percentage in the extract.

The proportion of dry alcoholic extract was obtained by measuring off 10 C.c. of the above solution into a tared dish, evaporating over a water bath, and drying the residue in a hot-air oven at a temperature of 110° to 115° C. until the weight was constant. The weight of the residue, multiplied by ten, gives the amount of dry alcoholic extract in 5 grammes of the original, and from this the percentage is obtained by a simple calculation.

The moisture was determined by spreading a thin film of the extract over the bottom of a tared glass dish, and drying in the hot-air oven until constant.

The results are shown on Table II.

The one point in connection with those results which we wish specially to emphasise in the large proportion of the juice extracts insoluble in alcohol. This inert matter amounts in some cases to 50 per cent. of the whole.

Attention is also drawn to the greater strength of the only alcoholic extract in the series, viz., stramonium. The drug contains about the same percentage of alkaloid as belladonna, but the extract is much richer, owing to the superior method of preparation.

The next step consisted in the preparation of a series of alcoholic extracts for comparison with the commercial juice extracts already examined.

For this purpose we obtained two samples of each of the following drugs in a suitable state of division :—Aconite (leaf and root), belladonna (leaf), hemlock (leaf and fruit), colchicum (corm and seed), henbane (leaf). As previously mentioned, two specimens of stramonium leaf and one of taraxacum root were also operated upon.

* *Vide Pharm. Journ.* [3], xxi., pp. 857, 957, and 1038 ; also xxii., pp. 255, 469, and 569.

A 70 per cent. menstruum was employed in the production of all the extracts except those of colchicum and taraxacum. For colchicum a 50 per cent. menstruum was used. Four extracts were made from both the corm and the seed, two with diluted alcohol only as a menstruum, and the other two with alcohol containing 1 per cent. acetic acid.

The tinctures for evaporation were made by repercolation, the percolate being collected in three separate fractions, the more dilute of which were evaporated first. The evaporation was conducted in large shallow porcelain dishes over a water bath, the water in the bath being kept just below boiling-point and the liquid constantly stirred. The temperature of the liquor in the dish rose from 60° C. to a little above 70° C. The average yield of extract by the different drugs is given on Table III.

It was remarked that one sample of extract prepared from aconite root was full of small tabular crystals. A few of these were separated and found to possess all the characters of a sugar. The proportion present was so large that we thought it desirable to ascertain the amount. It was therefore separated, and from the extract yielded by half a pound of root we obtained quite half an ounce of the sugar, corresponding to a yield of about 6 per cent.

The percentage of alkaloid was determined by weighing out 2 grammes of the extract, dissolving in 70 per cent. alcohol, and proceeding as usual.

Our general conclusions are as follows : There can be no reasonable doubt as to the superiority of the alcoholic extracts over those at present in use. They compare very favourably with the official extracts, both as to appearance and aroma, and their superior strength is accompanied by a corresponding advantage, viz., a greatly reduced dose. This in an age which might almost be characterised as an age of "little pills" is by no means the least of the advantages they present. As regards their keeping properties we have not much evidence to offer, but there is no reason to suppose that in this respect they will fall behind the juice extracts. The samples exhibited have all been made within the past two months, and have since been kept under ordinary conditions in covered pots. None of them have shown any tendency to go wrong or to absorb moisture, except the acetic extracts and those of conium.

With regard to the individual extracts, that of aconite root is evidently a much more powerful preparation than that of the leaf, and should be preferred.

The results of the analyses of the extracts of colchicum indicate that there is no advantage whatever in the employment of acetic acid in their preparation. The fact that an acidified alcoholic menstruum presents no advantage whatever over diluted alcohol alone for the extraction of colchicum has been previously pointed out by Mr. R. C. Cowley.* There is a positive disadvantage in its employment in the preparation of an extract, owing to the highly hygroscopic nature of an extract so prepared. Of the colchicum extracts we recommend that made from the seed. As for the extract of hemlock fruit we might perhaps be entitled to claim that the specimens now shown are the first really active extracts of that drug which have been made in this country. In the note on the "Pharmacy of Conium Maculatum," to which reference has already been made, we stated that no solid extract of hemlock could be considered satisfactory which did not contain from 5 to 7·5 per cent. alkaloid. The extracts now exhibited yield 7·05 and 9·2 per cent. alkaloidal hydrochlorates respectively.

The principles underlying the production of the extracts brought under review in this note are obviously capable of much wider

* *Pharmaceutical Journal* [4], iv., 173.

application. We regret that the time at our disposal has only allowed us to deal with a small section of the group.

Table I.

Showing Percentage of Alkaloid and Extract Yielded by 1 in 3 Tinctures.

Tincture.	Alkaloid.	Dry extract = Moist extract.		Alkaloid in extract.
Aconite (1)	(a) ·641	21·63	27·84	2·30
(2)	·840	27·56	34·45	2·44
Belladonna (1)	·546	11·17	13·96	3·91
(2)	·708	24·68	30 85	2·29
Colchicum (1)	·540	25·50	31·87	1·69
(2)	·789	15·38	19·22	4·10
Conium	(b) 1·798	12·40	15·50	11·6
Hyoscyamus (1)	·098	28·72	35·90	·27
(2)	·060	22·34	29·79	·24
Stramonium (1) ...	(c) ·228	4·64	5·80	3·93
(2)	·276	15·98	19·97	1·39

(*a*) From the root. (*b*) From the fruit. (*c*) No. 1 from seed; No. 2 from the leaf.

Table II.

Showing Percentage of Alkaloid, Dry Extract, etc., in Commercial Juice Extracts.

Extract.	Alkaloid.	Moisture.	Dry extract.	Dry alcoholic extract.	Extract.	Alkaloid.	Moisture.	Dry extract.	Dry alcoholic extract.
Aconite.....(1)	·20	29·6	70 4	33·8	Colchicum..... (1)	·78	24·1	75·9	49·6
,, ...(2)	·24	22·9	77·1	57·0	,, ...(2)	·78	21·5	78·5	46·8
,, ...(3)	·28	29·4	70·6	40 8	,, ...(3	·86	19·6	80·4	48·2
,, ...(4)	·60	21·5	78·5	46·7	,, ...(4)	1·00	30·9	69·1	56 0
,, ...(5)	·62	22·4	77·6	48·5	,, ...(5)	1·04	24·1	75·9	59·2
,, ...(6)	·66	19·5	80·5	65·0	,, ... (6)	1·60	25·2	74·8	51·4
Average.....	·43	24·2	75·8	48·6	Average	1·01	24·2	75·8	50·2
Belladonna ....(1)	·52	24·9	75·1	46·2	Colchicum				
,, ...(2)	·90	25·7	74·3	41·2	(acetic) .(1)	·62	22·0	78·0	43 6
,, ...(3)	·92	29·6	70·4	42 0	,, ...(2)	·91	24·6	75 4	46·4
,, ...(4)	1·10	24 8	75·2	52·4	,, ...(3)	·96	23·9	76 1	55·2
,, ...(5)	1 21	26·8	73 2	53·1	,, ...(4)	·98	25·1	74·9	49·0
,, ... (6)	1·33	25·6	74·4	54 0	,, ...(5)	1·00	36·3	63 7	45·6
Average	·98	26·23	73·77	41·5	,, ...(6)	1·12	28·1	71·9	68·2
Conium* .....(I)	·04	26·7	73·3	37·5	Average	·93	26·6	73·4	51·3
,, ...(2)	·20	21·6	78·4	37·0	Hyoscyamus....(1)	·13	26·0	74·0	36·8
,, ...(3)	·32	28·0	72·0	51·8	,, ...(2)	·14	29·3	70·7	37·6
,, ...(4)	·52	25·2	74·8	39·0	,, ...(3)	·15	27·5	72·5	44·2
,, ... (5)	·64	29·5	70·6	39 8	,, ...(4)	·15	22·9	77·1	37·6
,, ...(6)	·70	23·6	76·4	38·6	,, ...(5)	·16	27·9	72·1	42·6
Average.....	·40	25·8	74·2	40·6	,, ...(6)	·18	26·0	74·0	35·4
					Average	·15	26·6	73·4	39·0

* The alkaloids were weighed as hydrochlorates.

Table III.

Showing Average Percentage of Alkaloid, etc, in (1) Juice Extracts, (2) in Alcoholic Extracts, with Approximate Average Yield of the Latter.

Extract.	Alkaloid.	Moisture.	Dry extract.	Yield per lb.
Aconite (1).....	·43	24 4	75·6	—
(2) Leaf	·60	17·0	83·0	2½ ozs.
(3) Root	2 44	20·8	79·2	4 ,,
Belladonna (1)	·98	26·2	73·8	—
(2)	2·86	20·2	79 8	4 ,,
Conium (1)*	·40	25·8	74·2	—
(2).....	·30	17·7	82 3	2½ ,,
(3) Fruit	8·13	18·6	81·4	—
Colchicum (1)	1 01	24 2	75·8	—
(2) Corm	1·67	20·5	79·5	2¾ ,,
(3) Seed	3·16	18·2	81 8	2 ,,
Colchicum, Acetic (1).....	·93	26·6	73·4	—
(2) Corm .	1·67	19·3	80·7	2¾ ,,
(3) Seed ..	2·93	17 7	82·3	3 ,,
Hyoscyamus (1)	·15	26·6	73·4	—
(2)	·30	18·0	82 0	4 ,,
Stramonium (1) Leaf	1·54	19·4	80·6	2 ,,
(2) Seed	2·73	16·8	83·2	—

* The alkaloids were weighed as hydrochlorates.

RECENT ADDITIONS TO THE MUSEUM.*

BY E. M. HOLMES, F.L.S.

Curator of the Pharmaceutical Society's Museums.

Japanese Chillies.

During the last three or four years there has been in commerce a very bright red variety of *Capsicum minimum*, Roxb. (*Capsicum fastigiatum*, Bl.), said to be imported from Japan. In consequence of its clean, bright, and attractive appearance it has commanded a higher price than other varieties. Mr. J. C. Umney has recently directed my attention to the fact that this variety is less pungent than the Sierra Leone and Zanzibar varieties, although far superior to them in colour. On further inquiry I find that this fact is well known to drug and spice brokers. Mr. Umney points out that when an alcoholic tincture of the Japanese and Zanzibar varieties are respectively diluted with about 14 parts of water, the former gives a much clearer solution than the latter, indicating less oily matter. All the bright red Cayenne pepper until recently in commerce is said to have been imported from Natal in that state. The entire pod pepper imported from Natal is a variety of *Capsicum annuum*, much larger than the chillies, and of a dark red colour, and very pungent, whereas the powdered Japanese and Natal Cayenne peppers placed side by side are indistinguishable in point of colour. The other principal varieties of chillies at present in English commerce are, I am informed, those of Sierra Leone and Zanzibar, the former being of a yellowish-red tint, and the latter of a dull, dark red, and often of inferior quality, containing badly-dried fruits, stalks, and foreign matter, but both are more pungent than the Japanese kind. The latter is, however, quite pungent enough for most people, although perhaps unsuitable, by reason of its lesser pungency, for medicinal purposes, as an outward application, etc. I am indebted to Mr. Young, of the firm of Messrs. Dalton and Young, for information concerning the different commercial varieties and for specimens illustrating them. My object in directing attention to these commercial varieties is to point out to students and to retail chemists that there are often differences in the qualities and appearance of the same drug, which are worthy of careful observation, not only from a scientific, but also from a commercial point of view. Nepaul cayenne pepper is made from a small variety of the *Capsicum annuum*, and is remarkable for its violet odour. Neither this kind nor the Zanzibar gives a red, but a brownish, powder.

Ayapana.

Ayapana consists of the leaves of *Eupatorium triplinerve*, Vahl., better known, perhaps, under its older name of *Eupatorium ayapana*. The plant is a native of tropical America, where it has long been used, particularly in Brazil, as a sort of panacea or domestic remedy for everything. It has, when dried, a somewhat agreeable odour, and a faintly aromatic, slightly bitter and astringent taste. It has been recommended for the cure of snake-bites and for the cure of cholera, but its inutility in such cases has been demonstrated, and it has, perhaps, on that account been undeservedly neglected.

However that may be, one thing is certain, that in whatever country ayapana has been introduced as a ptisane or tea it has come to stay. In the Mauritius, in Java, Ceylon, India, and other tropical or sub-tropical countries, it still remains in use, chiefly as a tea, which is considered to be especially useful as a stomachic tonic in indigestion, and is used externally as an application to wounds and ulcers. It may be regarded as a stimulant diaphoretic, useful in colds and complaints arising from a chill. Dr. Ainslie said of it, "An infusion of the leaves has an agreeable and

* Paper read at an Evening meeting of the Pharmaceutical Society on December 7, 1897.

somewhat spicy taste, and is a good diet drink. When fresh and bruised they are one of the best applications I know for cleaning the face of a foul ulcer." According to Bouton's 'Med. Plants of the Mauritius,' p. 696, "it holds a high place amongst the medicinal plants of the Mauritius, being there in daily use in the form of infusion, in dyspepsia, and affections of the bowels and lungs. It is held in considerable esteem by those who are acquainted with it." The plant has been chemically examined, presumably by Mr. D. Hooper, and the following statement concerning it appears in 'Pharmacographia Indica,' ii., p. 247 :—"On distillation of the fresh plant with water, a colourless oil was obtained lighter than water, and possessing in a marked degree the odour of the plant. We also obtained a neutral principle soluble in ether and alcohol, and crystallising in long needles. It easily sublimed at a temperature of 159° to 160°, and condensed in beautiful brilliant scales and rhombic prisms. In water it was practically insoluble; when dissolved in alcohol it gave no reaction with ferric salts. To this principle the name of ayapanin was given."

It may generally, I think, be inferred that when any plant comes into widely-extended use it probably contains some constituent that has more or less beneficial physiological effects. On this ground, and because there is at present an attempt to introduce the drug into use in this country in the form of tea, I think that the plant and its constituents are worthy of further investigation by physiologists and chemists. There is no doubt that there are many persons who find that continuous tea-drinking injures the nervous system, but who cannot take coffee and who dislike cocoa, and would be glad of a substitute for use as a daily beverage. To such persons ayapana (or possibly the lemon-scented verbena, which is largely used in Central America as a tea) might prove a useful alternative.

Muscale or Mescal Buttons (Anhalonium Lewini, etc.).

Attention was directed to this remarkable drug as long ago as 1887 by a Dr. Briggs, of Dallas in Texas. He observed its use by the native Indians for producing a kind of mental intoxication and forgetfulness of trouble. His personal experience of the drug was such as to incline him to leave future experiments to other people, for he became unconscious after a rapid increase in the rate of the pulse and of respiration. Similar results do not seem to have been obtained by others, the general testimony of other experimentalists showing that its action resembles that of *Cannabis indica* in causing a feeling of double personality and of the loss of the sense of time and space, and sometimes of smell also, but differs in causing wakefulness for twelve or twenty-four hours. The visions produced by its use are said to be remarkable for the brilliance of the coloured objects and designs which apparently pass before the eyes like the changes in a kaleidoscope. A sedative effect on the muscular system appears to have been produced in some persons, and on the other hand tetanic spasms were manifested in some animals treated with it. The variation in symptoms observed may have been due to the employment of different species of the same genus, or to personal idiosyncrasy, but upon this point the evidence is not clear.

The so-called buttons consist of the growing tops of one or more small plants belonging to the Cactaceæ and to the section Echinocacteæ, and the genus *Anhalonium*.* The species to which the drug originally was referred was supposed to be a new species, which was described by Henning, of Berlin, under the name of *Anhalonium lewini*. There is reason to believe, however, that other species have also been used in experiments, especially *A. williamsii*.

* This is now sunk by British botanists in the genus *Mammillaria*, from which it differs in the absence of spines.

A. lewini is thus described by Drs. D. W. Prentiss and T. P. Morgan (*Ther. Gaz.*, Sept., 1895, p. 578). "It is found in barren rocky soil in the valley of the Rio Grande, in Mexico, in somewhat inaccessible places. It reaches a height of about ½ inch above the surface of the ground. The body is comparatively thick, and is surmounted by a top, which is composed mainly of the blunt leaves of the plant. In the centre of this top is a tuft about ½ to 1 inch in diameter, composed of yellowish-white filaments or hairs." The hairs, according to Lewin and Henning (*Ther. Gaz.*, 1888, p. 232), are 6 to 9 Mm. long, and from them protrude very small blossoms, about 1 Cm. long and about 4 Mm. broad, the eight outer segments being 5 Mm. long, dark green at the back, and having a long and transparent angular point. The twelve inner segments are of a pale pink colour, spathulate, blunt, and smooth edged.

The stamens are attached one above the other to the petals, the filaments being 1½ to 2½ Mm. long and white, and the anthers barely ½ Mm. long and yellow. The pistil is open at the top, but is not so high as the petals, though larger than the stamens. The fruit is an oblong berry, 6 Mm. long, and contains about fourteen seeds, which are about the size of a mustard seed.

In *Anhalonium williamsii* the tufts of hair are in single bunches, and are of a purer white, silkier and longer, the hairy cushion not being so strongly developed, the petals are pointed and have a dark line on the outside, and the pistil is shorter than the stamens. I owe to the kindness of Messrs. Parke, Davis two living specimens of *Anhalonium*, one of which flowered in August last and produced a single fruit, which, however, did not ripen seeds. The flowers were small, pink, and resembled in appearance those of the *Mesembryanthemum* genus. The fruit was oblong, succulent, and of a pinkish colour. These plants I refer to *A. williamsii*, although received as *A. williamsii* and *A. lewini*, but the peculiar hairy surface of *A. lewini* is not present in either, the hairs forming distinct, small, cylindrical tufts, from which the flower arises. The plants consist of a green, convex, fleshy head about 1 to 2 Cm. high and about 5 to 6 Cm. in diameter. The portion underground is brownish and fleshy, and shaped like a carrot, and appears to be formed by the withered bases of successive growths of the fleshy disc.

At the instigation of Messrs. Parke, Davis and Co., Dr. Lewin, of Berlin, made a chemical investigation of the drug, and extracted from it an alkaloid, to which he gave the name of anhalonine, which seemed to possess properties similar to those of strychnine (*Ther. Gaz.*, 1888, pp. 231–237). It appeared to contain also a glucoside, since a crystalline substance extracted from the plant gave the reaction for glucose (*Archiv für Exp. Pathol. u. Pharm.*, 1888, xxiv., p. 401). In a later investigation of the same drug, Dr. A. Heffter found three alkaloids, one of which was apparently identical with Lewin's anhalonine. It formed brilliant colourless needle-shaped crystals. It formula is given as $C_{12}H_8NO_3$. The second alkaloid crystallised in dull white rhombic tables, and the third alkaloid, which remained in the mother liquor, proved to be amorphous, but very poisonous. Mr. E. E. Ewell, working on the same drug in the laboratory of the United States Department of Agriculture, detected in addition two resinous bodies and a wax-like substance soluble in chloroform and petroleum spirit and in hot but not in cold alcohol. The ash of the plant is remarkable, containing half its weight of potassium chloride. In the opinion of the authorities of the Agricultural Department at Washington the activity of the drug is mainly due to the resinous bodies, and not so much to the alkaloidal constituents. In any case there is sufficient evidence to show that the drug is one worthy of further investigation.

FORMULÆ, METHODS, AND REACTIONS,

KNOWN BY THE NAMES OF THEIR AUTHORS.*

(Continued from page 445.)

Weigert (Staining in Actinomycosis).—Immerse sections for 1 hour in Wedl's Orseille stain, then quickly rinse with alcohol and counterstain with gentian violet. If it be desired to stain the mycelium also, afterwards submit the sections to Weigert's modification of Gram's method.

Weigert (Varnish for Mounting Sections).—Large sections are mounted in photographic negative varnish without cover-glasses.

Weil (Canada Balsam for Imbedding).—The Canada balsam is heated till it becomes brittle when cold, then dissolved in chloroform. Objects (bone or teeth) to be imbedded are heated in this on a water bath. See J. R. M. S., 1888, 1042.

Weiske (Alkalimetry).—Add a few drops of ferric chloride solution to an aqueous solution of salicylic acid, then cautiously add dilute soda solution till exactly neutralised. On adding a few cubic centimetres of the resulting yellowish-red solution to the acid solution under examination, and neutralising with normal soda solution, a deep violet colour appears but vanishes as soon as the smallest excess of alkali is added.

Weissmann (Acid Mixture).—A mixture of 10 volumes of concentrated nitric acid, 2 volumes of concentrated sulphuric acid, and 10 volumes of water is used to dissolve iron samples. Ulzer and Brüll recommend the addition of a little concentrated hydrochloric acid during the operation.

Wellcome (Morphine).—The addition of chlorinated lime to a solution of morphine causes a red coloration.

Weller (Titanium).—An orange red to yellow colour is produced on adding a few drops of hydrogen peroxide solution to a solution of titanic acid in sulphuric acid.

Welmann (Vegetable Fats).—Dissolve 5 Gm. of sodium phospho-molybdate in water, acidify with concentrated nitric acid, and dilute the solution to 100 C.c. On dissolving 1 C.c. of fat in 5 C.c. of chloroform, and shaking the solution for 1 minute with 2 C.c. of the above reagent, a green colour—changing to blue on the addition of ammonia—appears in the presence of any vegetable fat except cacao butter.

Weltzien (Hydrogen Peroxide).—A blue colour is produced on adding solutions of ferric chloride and potassium ferricyanide.

Wender (Glucose).—See Neumann-Wender's test.

Wengel (Alkaloids).—On adding a 0·5 per cent. solution of potassium permanganate in sulphuric acid, various colour reactions are produced; veratrine, for example, yielding a light red coloration, which changes to orange.

Weppen (Alkaloids).—A yellow colour, changing to green and then blue, is produced on mixing a small quantity of veratrine with 6 times as much cane sugar and then adding a few drops of concentrated sulphuric acid. Neumann-Wender use a solution of furfurol in sulphuric acid instead of sulphuric acid and sugar. In either case morphine and codeine yield an unstable red coloration. With sugar, sulphuric acid and bromine water, morphine also gives a red coloration.

Werber (Nitro-Glycerin).—A purple to dark green colour appears on extracting with ether or chloroform, adding 2 drops of aniline, evaporating, and then adding a few drops of sulphuric acid.

Werner-Schmidt (Fat in Milk).—Treat the milk with an equal volume of hydrochloric acid (1·1 sp. gr.), heating on a water bath till nearly black. It is then cooled and extracted with ether, the fat left on distilling off the solvent being weighed.

Weselsky (Phloroglucin).—Upon adding toluidine nitrate and potassium nitrite to a solution of phloroglucin, a light yellow colour is produced and the solution gradually becomes opalescent, the colour subsequently changing to orange and, finally, vermilion. In very dilute solutions the precipitate remains suspended for some time and, upon settling, the solution appears orange and the precipitate vermilion.

Weselsky (Reagent).—Nitric acid is saturated at a low temperature with nitrous acid.

Weyl (Creatinine and Creatine in Urine).—If a very dilute solution of sodium nitroprusside be added to a solution of creatinine and dilute caustic soda added drop by drop, a fine ruby-red colour will be produced which changes to intense straw-yellow. The presence of other sulphur compounds interferes with the test. If acidulated with acetic acid (Salkowsky) after the red colour has appeared, and warming the solution turns greenish and Prussian blue separates out. Creatine boiled with dilute acid, is converted into creatinine, and then answers this test. See also Jaffe's test.

Wharton (Mineral Acids in Vinegar).—Add a little sugar to the vinegar and evaporate to a syrupy consistence, then add potassium chlorate and stir for 2 minutes. If mineral acid be present the chlorate will be decomposed with ignition, chlorine being given off.

White (Sections of Bone).—Sections of osseous or dental tissue are cut or ground down moderately thin and soaked in ether for 24 hours or more. Then place them for 2 or 3 days in thin collodion coloured with fuchsine, made by dissolving the dye in methylated spirit, adding the requisite quantity of ether, then the pyroxylin. Subsequently place the sections in spirit to harden the collodion, and afterwards grind them down to the requisite thinness between two plates of old ground glass, with water and pumice powder. Finally mount, surface dry, in stiff balsam or storax, care being taken to use as little heat as possible.

Whitman (Hardening Methods).—After first treating pelagic fish ova for 5 to 10 minutes with a mixture of equal parts of sea water and 0·5 per cent. osmic acid solution, harden then for 2 days in a mixture of equal parts of 0·25 per cent. platinum chloride solution and 1 per cent. chromic acid solution. Before transferring to alcohol, prick the membrane. The ova of Amphibia, after being fixed, are left in a 10 per cent. solution of sodium hypochlorite, diluted with 5 to 6 volumes of water, until they can be shaken free.

Wickersheimer (Preservative Liquid).—Dissolve 100 Gm. of alum, 25 Gm. of common salt, 12 Gm. of saltpetre, 60 Gm. of potassium carbonate, and 20 Gm. of arsenious acid in 3 litres of water.

Wiederholt (Rum and Cognac).—Upon adding 3 C.c. of concentrated sulphuric acid (sp. gr. 1·84) to 10 C.c. of rum, and allowing the mixture to cool, the aroma is destroyed in the case of impure spirit. Pure cognac gives a black precipitate with a few drops of dilute ferric chloride solution. A dirty-coloured precipitate forms, only slowly if at all, with artificial cognac.

Wiesner (Lignin).—(1) An acid solution of aniline sulphate stains woody fibres golden-yellow, while pure cellulose is not affected. (2) Phloroglucin solution (5 per cent.) with hydrochloric acid colours woody fibres yellow.

Wildenstein (Copper and Iron).—A blue colour is produced on adding tincture of logwood.

Wiley (Chlorochromic Acid).—A blue-violet coloration is produced on adding a small crystal of strychnine to a drop of sulphuric acid, then stirring with a glass rod moistened with chlorochromic acid.

Wilson (Nitrous Acid).—On adding a little resorcin to sulphuric acid containing nitrous acid, and shaking with 5 C.c. of water, a yellow coloration results.

Wimmer (Purity of Olive Oil).—Note the effects produced on passing nitrous acid gas through the oil.

Winckler (Alkaloids).—See Mayer's reagent.

Winkler (Water in Alcohol).—Cobalt chloride is turned red if water be present.

Winkler (Iodine).—A blue colour is produced on addition of sodium nitrite and starch paste.

Winkler (Kinoric Acid).—A dirty green colour and precipitate are produced on adding copper sulphate solution.

Wissowsky (Stain for Blood).—First treat with a solution of equal parts of eosine and alum in 200 parts of alcohol, then with hæmatoxylin.

Wittstein (Tarry Matter in Ammonia).—A brownish-red colour is produced on supersaturating the ammonia with moderately strong nitric acid.

Wittstein (Foreign Starch in Chocolate).—On boiling and filtering, the natural starch does not pass through the filter, and the filtrate, therefore, gives no reaction with iodine.

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

Witz (Mineral Acids in Vinegar).—Methyl violet solution is turned blue or green on adding 2 drops to 25 C.c. of vinegar containing mineral acid.

Wöhler (Phosphorus).—Treat the suspected liquid in a Marsh's apparatus, ignite the gas evolved, and let the flame impinge on a porcelain plate. If phosphoretted hydrogen be present the flame is coloured green.

Wolesky (Wood Fibre in Paper).—Dissolve 1 Gm. of diphenylamine in 50 C.c. of alcohol and 5 to 6 C.c. of concentrated sulphuric or hydrochloric acid. This reagent colours the wood fibre orange-red, the intensity of the colour depending upon the amount present. The coloration is more pronounced on drying.

Wolff (Naphthol).—Alcoholic potash solution dissolves both α- and β-naphthol, and on heating the solutions with chloroform to 50° C., they become blue, but change to red on adding hydrochloric acid.

Wolter (Vanadium Nerve Stain).—See Wolter's second hæmatoxylin stain.

Wolters (Hæmatoxylin Nerve Stains).—(1) Proceed as in Kultschitzky's method, except that sections should be stained for 24 hours in a solution kept at 45° C. Afterwards dip them in Müller's solution and differentiate by Pal's method. (2) Material hardened in Kultschitzky's potassium bichromate and copper sulphate mixture, followed by alcohol, is imbedded in celloidin or paraffin and cut. Mordant the sections for 24 hours in a mixture of 2 parts of 10 per cent. vanadium chloride solution and 3 parts of 3 per cent. aluminium acetate solution, wash for 10 minutes in water, and stain for 24 hours in a solution of 2 Gm. of hæmatoxylin (dissolved in a little alcohol) in 100 C.c. of 2 per cent. acetic acid. Next wash out the sections in 80 per cent. alcohol, containing 0·5 per cent. of hydrochloric acid until they are of a light blue-red colour, remove the acid by washing thoroughly in pure alcohol, dehydrate, clear with origanum oil and mount.

Wormley (Alkaloids).—(1) Alcoholic solution of picric acid throws down yellow amorphous or crystalline precipitates. (2) A solution containing 1 part of iodine, 3 parts of potassium iodide, and 60 parts of water throws down coloured precipitates.

Wormley (Free Sulphuric Acid).—A crimson colour appears on adding a little veratrinc and evaporating to dryness on a water bath.

Worm-Mueller (Glucose).—This reagent is a modification of the original Fehling's solution, a 2·5 per cent. solution of copper sulphate being employed, and a 4 per cent. solution of caustic soda containing 10 per cent. of Rochelle salt. Heat 5 C.c. of the suspected urine to boiling, and add it, without shaking, to a mixture of 1-3 C.c. of the copper sulphate solution and 2·5 C.c. of the Rochelle salt solution.

Wright (Aconitine).—On mixing 0·001 Gm. of aconitine with a few drops of moderately-concentrated sugar solution, and adding a drop of concentrated sulphuric acid, a rose-red zone develops at the line of contact, whilst the colour of the acid changes to dirty violet and brown.

Wright (Free Alkali in Soap).—Boil 2 or 3 Gms. of soap with 95 per cent. alcohol and filter, then wash the residue with the alcohol. Phenol-phthalein added to the filtrate will show at once if free caustic alkali is present, if so, it is titrated with normal acid. The residue on the filter is dissolved in water and titrated with decinormal acid, using phenol-phthalein as an indicator. This gives the alkali existing as carbonate, silicate, borate, etc., and the sum of the two titrations the total free alkali.

Wurster (Albumin).—This is a modification of Silbermann's reaction, in which the concentrated hydrochloric acid is replaced by a mixture of the same with one-tenth to one-fifth its volume of concentrated sulphuric acid.

Wurster (Test Paper).—Traces of ozone or hydrogen peroxide in neutral solutions, or in solutions containing acetic acid, impart an intense blue coloration to filter paper saturated with tetramethyl or dimethyl-paraphenylene diamine. The blue colour disappears on boiling with alcohol.

Wynter Blyth (Alum in Bread or Flour).—This process is conducted by macerating the sample with a small quantity of water, and then soaking strips of gelatin in the liquid; after 12 hours the gelatin slips are removed and immersed in a mixture of equal volumes of fresh logwood tincture and saturated ammonium carbonate solution. In the presence of alum they are blue coloured

Yoon (Alcohol in Chloroform).—A solution of 1 part of potassium permanganate and 10 parts of caustic potash in 250 parts of water was formerly used as a qualitative test, the violet colour changing to green on shaking with chloroform containing alcohol. But as alcohol-free chloroform alone stands the test, the reaction is now employed as a means of determining the amount of alcohol present.

Yoon (Alkaloids).—A red colour appears on adding a solution prepared by boiling 3 Gm. of bismuth subnitrate with 40 Gm. of water, 14 Gm. of potassium iodide, and 40 drops of hydrochloric acid.

Young (Gallic in Tannic Acid).—Potassium cyanide gives a red coloration with gallic acid, but not with tannic acid. The colour soon vanishes, but re-appears on vigorous shaking. According to Stahl the reaction can be referred entirely to the alkalinity of the cyanide.

Zacharias (Acetic Acid Carmine).—Add to each 10 C.c. of Schneider's solution 1 drop of wood vinegar.

Zacharias (Acetic Alcohol).—Mix 1 part of glacial acetic acid with 4 parts of absolute alcohol and a few drops of osmic acid solution.

Zacharias (Albumins).—This reagent is a solution of potassium ferrocyanide and ferric chloride.

Zacharias (Iron Carmine).—Stain the objects thoroughly for several hours in acetic acid carmine or Mayer's carmalum, rinse with dilute acetic acid, and pass them into 1 per cent. solution of ammoniated citrate of iron, taking care that no metallic instruments touch them. Leave for 2 or 3 hours till thoroughly penetrated (a few minutes only in the case of sections), then wash for several hours in distilled water, dehydrate and mount in balsam.

Zanker (Fixing Liquid).—Dissolve 5 per cent. of mercuric chloride and glacial acetic acid in Müller's solution. Fix objects in this for several hours, wash out with water, and treat the tissues or sections with alcohol containing some tincture of iodine.

Zechini (Purity of Olive Oil).—Note the colour reactions produced on adding nitric acid (sp. gr. 1·4).

Zeise (Carbon Bisulphide).—A yellow precipitate is thrown down on adding a little alcoholic potash solution, and solution of copper sulphate.

Zeisel (Colchicine).—A solution of 0·002 Gm. of colchicine in 5 C.c. of water changes from yellow to olive-green and then to blackish-green on boiling for 1 to 3 minutes with 5 to 10 drops of fuming hydrochloric acid and 4 to 6 drops of 10 per cent. ferric chloride solution. Upon shaking the solution with chloroform in the presence of air, the chloroform becomes ruby-red and the aqueous solution olive-green.

Zeller (Quinine).—This is the thalleioquin reaction, with bromine water (1 : 40) substituted for chlorine water.

Zellner (Natural Injections).—Use Müller's solution.

Ziegler (Hydrochloric Acid).—The presence of arsenious and sulphurous acids in hydrochloric acid is detected by adding zinc and passing the hydrogen evolved through water containing a few drops of ammoniacal copper chloride solution, then through water containing 1 drop of silver nitrate solution. Any sulphurous acid present reacts on the copper salt; arsenious acid affects the silver solution.

Ziehen (Gold and Sublimate Stain).—Leave small pieces of fresh tissue for 3 weeks to 5 months in a large quantity of a mixture containing equal parts of 1 per cent. mercuric chloride and gold chloride solutions. When they have assumed a metallic red-brown colour, gum them on cork and cut sections without imbedding. Treat the sections with Lugol's solution diluted with 4 times its bulk of water, or with dilute tincture of iodine, until duly differentiated, then wash and mount in balsam.

Ziehl (Carbolic Fuchsine).—See Neelsen's solution of carbolic fuchsine.

Ziehl-Neelsen (Staining Bacilli).—Sections are removed from weak spirit into Neelsen's carbolic fuchsine and left for 10 or 15 minutes; next decolorise in sulphuric acid (sp. gr. 1·84) or nitric acid (sp. gr. 1·42) diluted with 3 volumes of water, rinse in 60 per cent. alcohol, and wash in a large volume of water to remove the acid. Tubercle and leprosy bacilli are the only microorganisms that can retain the stain after treatment with acid. If the presence of traces of nitrous acid in the nitric acid be suspected, Squire recommends the use of saturated aqueous solution of sul-

phanilic acid, mixed with one-third its bulk of nitric acid. The sulphanilic acid destroys any free nitrous acid, which would otherwise exercise a bleaching action on the fuchsine-stained bacilli. The sections may be counterstained with a solution of 0·5 Gm. of methyl green (or 0·25 Gm. of methylene blue) in 20 C.c. of rectified spirit and 80 C.c. of distilled water. Finally dehydrate in absolute alcohol, clear in cedar oil, and mount in balsam.

Zouchlos (Albumin in Urine).—This reagent is prepared by mixing 10 C.c. of a 2 per cent. solution of potassium thiocyanate with 2 C.c. of acetic acid.

Zuelger (Albumin).—This is a zone reaction which occurs on pouring a layer of albuminous urine upon concentrated chromic acid solution.

Zuelger (Glucose).—A solution of cupric oxide in soda lye is reduced by grape sugar in the cold or upon gentle warming.

Zulkowsky (Starch Solution).—Heat starch with glycerin to 190° C., precipitate with alcohol, and dissolve the precipitate in water.

Zwaardemaker (Safranine Stain).—Mix equal parts of saturated alcoholic solution of safranine and aniline water.

BOTANIC GARDENS OF THE WORLD.

VIII.—KEW GARDENS.*

In 1865, Dr. Hooker succeeded his father as Director of Kew Gardens. One of his earliest acts was the re-arrangement and re-naming of the whole of the palm collection. He also took in hand the systematic re-modelling of his father's Arboretum, setting apart yearly a sum of money for this purpose. The severe winter of 1867 destroyed many of the oldest trees in the Gardens, together with almost all the tender pines and cypresses and quite half the shrubs. The most denuded parts of the Gardens were re-planted, and the old wall widened and improved. In his "Report" of January, 1869, he says: "As regards the general condition of the old forest features of the pleasure grounds, nothing favourable can be said. The beeches are rapidly dying through age, exhausted soil, disease, and fungi, and the elms and cedars through decay and exposure to the winds. Meanwhile, every effort must be made to plant open spaces in their outskirts and among them." A grass avenue, 250 yards long and 18 yards broad, was laid down from the south end of the Temperate House to the western approach to the Pagoda, through the collection of Rosaceous and other plants, and various species of Hawthorn, *Pyrus*, etc., were arranged in threes down each side of it. The smaller shrubby plants of allied families [Roses, *Spiræas*, *Deutzias*, Brambles] were arranged in broad new beds parallel to them, and these beds were backed by plantations of shrubs and deciduous trees. Avenues, too, were formed among the trees with the view of giving access to specimens and having them properly ticketed and arranged.

The year 1869 saw the opening of the Kew Gardens station of the S.W.R. which necessitated the construction of new entrance gates to the Gardens on the Richmond Road, and the erection of a new range of greenhouses devoted to economic plants and orchids. The lake, constructed by Sir William Hooker, was also deepened, and the King William Temple enclosed within a wire fence.

The long and severe drought of the summer of 1870 was extremely disastrous to the trees at Kew. Elms, ashes, beeches, and sycamores perished by hundreds. The oldest trees in the grounds were oaks and English elms, the majority of which were planted in the reign of George II. The oldest beeches were planted in the same reign, and being put in very densely, suffered most of all from the drought. Good limes, evergreen oaks, Spanish and horse chestnuts, ashes, poplars, acacias and willows were also among the trees planted before Sir William Hooker's time. He planted conifers among the old trees in every available open space, but they died out among the old trees. His plantations by the river and in the Queen's Cottage grounds did well, and were used by his son to fill up the gaps made by excessive cold and drought.

Dr. Hooker undertook the formation of a Pinetum on the south side of the lake, no complete public named and arrangod collection of hardy conifers existing in England at that time. Few of the older specimens of pines were used in the formation of this Pinetum, which consisted of young plants raised from seed in the Kew nursery, and contributions from the Edinburgh Botanic Gardens, and two large firms of Scotch gardeners. By the end of the year 1873 this, the most important and extensive collection in Kew grounds, was completed. It extended along nearly 2000 yards of path and avenue, representing two and a quarter miles of made beds and plantations, except where interrupted by old trees. Almost every species capable of being grown in the open air was represented, the plants being throughout so arranged that the old world species were as far as possible placed opposite the American species of the same genera. The number of species in 1872 was about 1200. The Pinetum soon drew to Kew many public and private collectors from various parts of the world, especially the United States. Besides the arrangement of the Pinetum in 1872, the *Acacias*, *Robinias*, *Gleditschias*, etc., scattered over five acres of ground, were arranged in a broad avenue leading from the old arch to the Pagoda, the Leguminosæ were classified and replanted in beds parallel to the avenue, the named collection of willows and alders was taken to the borders of the lake, and a rose garden was made on the slope of the mound on which stood King William's Temple.

In 1875 a hardy fernery was laid out. The ferns were planted on both sides of a winding path, forty yards long, amongst loose stones forming a low bank backed by evergreens. The Old World species were planted for the most part on one side of the walk, and the New World ones on the other. They comprised about 150 species and varieties. During the year 1877 the collection of economic plants and the Aroidæ were revised, the fern collection was increased, and the contents of the whole of the beds of hardy shrubs between the King William Temple and the Temperate House were extended and re-arranged.

In 1878 the extensive collection of Bromeliaceæ was carefully revised and catalogued by Mr. J. G. Baker, assistant keeper of the Herbarium, and an important collection of succulents was exhibited by Mr. Peacock in the south octagon of the Temperate House.

On August 3, 1878, a very severe hailstorm did a great deal of damage at Kew, the broken glass amounting to eighteen tons, and necessitating a supplementary vote in the Estimates. The collection of Liliaceæ was arranged along the west side of the wall bounding the herbaceous ground on the west and the Amaryllideæ to the south side of the herbaceous ground. The Tropical Fern House, which had got into a ruined condition, was also put in order and repaired. A choice collection of named *Pyri*, chiefly presented by Professor Decaisne, of the Jardin des Plantes, was planted on the left of the path leading westward from the Lion Gate. In 1880 the houses were renumbered. They then comprised a Tropical House, a house for tropical ferns, a house for temperate ferns, a conservatory, a house for succulents, a fern propagating pit, a Cape House, a begonia house, a stove, a Victoria House, a house for tropical economics, a house for temperate economics, a house for tropical orchids, a house for temperate orchids, a water lily house, orchid propagating pits, tropical propagating pits, two conservatory reserves, a conservatory forcing house, a succulent reserve house, and a Bulb House.

The severe winter of the latter part of 1880 caused a great deal of damage in the Arboretum. The snow "falling on the old and brittle oaks, laden with foliage and with an unusually heavy crop of acorns," so broke them up that many of them had to be removed. Several pines were killed, and the hydrangeas, escallonias, and cistuses for the most, perished. Good progress was made with the classification of trees. The collection of nuts was planted in beds on each side of a short avenue, and the collection of hornbeams was arranged in an avenue, 190 yards long, leading northwards to the poplar collection. The planes were arranged along both sides of the walk leading from the Sion vista to the rhododendron dell by the river. The alders were rearranged round the east end of the lake. The collections of birches, hickories, walnuts, and *Pterocaryas* were added to, and the Celastrineæ, Rhamneæ, and Terebinthaceæ, which had become much overcrowded, were placed in new beds. The October cyclone of 1881 blew down several large elms, and did other damage in the Arboretum, the Queen's Gardens, and Kew Green. The collection of cypresses, Arbor Vitæ, Retinosporas, etc., were transplanted into circular beds in the Pinetum during this year. Towards the close of 1881 a memorial was addressed to the Board of Works, petitioning for the formation of a Rock Garden at Kew. There already existed a small rockery north of the icehouse, and Mr. Joad's collection, containing many rare plants, was bequeathed to the Gardens. The sum of £500 was granted by the Treasury, and a site was selected between the wall bounding the herbaceous

* Continued from last volume, page 528.

ground on the east, and the new range on the west. As the surface was quite flat it was necessary to sink a path to get variations of level and prevent the carriage thither of large quantities of soil. A path, 8 feet wide and 514 feet long, was made at the bottom of the rock garden to represent the dry bed of a Pyrenean stream. On either side fragments of rock were piled up as naturally as possible to a height of about five feet, and as much good soil as possible was thrown in behind the rock bank. Care was taken to leave between the rock deep pockets for the plants, which were filled with loam mixed with leaf mould. The whole rock garden was thoroughly drained, and 2630 of Mr. Joad's plants were planted out. A wild garden was also begun in this year, the sloping surface of the hill crowned by the Temple of Eolus being planted with bulbs and spring flowers. In the Arboretum the collection of yews was lifted and arranged in semicircular beds. The species and varieties of cedar, *Cedrus*, were collected and arranged in an avenue 165 yards long, leading from the Juniper Avenue to the Heath collection. Many of the rarer ashes were transplanted to make an avenue in that part of the Gardens between the east end of the lake and the Garden fence. The Leguminous collection was enlarged, the collection of Terebinthaceæ, Sapindaceæ, and Rhamneæ was greatly extended, and the collection of hazels, filberts, etc., was arranged in a short avenue leading from that of the beeches to the American Garden. The whole collection of monocotyledonous shrubs, etc., was planted in semi-circular beds on the lawn on the east side of the holly walk.

(To be continued.)

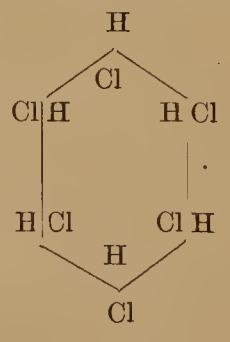
MEETINGS OF SCIENTIFIC SOCIETIES

CHEMICAL SOCIETY.

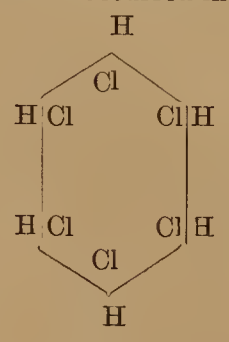
At a meeting held on Thursday, December 2, Professor Dewar, F.R.S., President, in the chair, after the transaction of the usual preliminary business, a paper was read by F. E. Matthews, Ph D., on—

Collie's Space Formula for Benzene.

Dr. Matthews recounted the features of Collie's formula, the principal one of which is that while three hydrogen atoms are on the outside of the nucleus, the remaining three alternating with them lie within the nucleus, pointing out that it agreed with both Kekule's and the centric formulæ, and that while it explained all that these explained, it went farther, and showed the reason why "para" compounds were formed under one set of conditions, and "meta" compounds under another. The author's attention had been given to the hexa-halogen addition compounds. Two modifications of these existed, and no explanation had yet been put forward to account for them. By means of Collie's formula a simple explanation was derived. The following formulæ were proposed for the alpha and beta benzene hexa-chlorides. Of the two forms the beta occurred in smaller

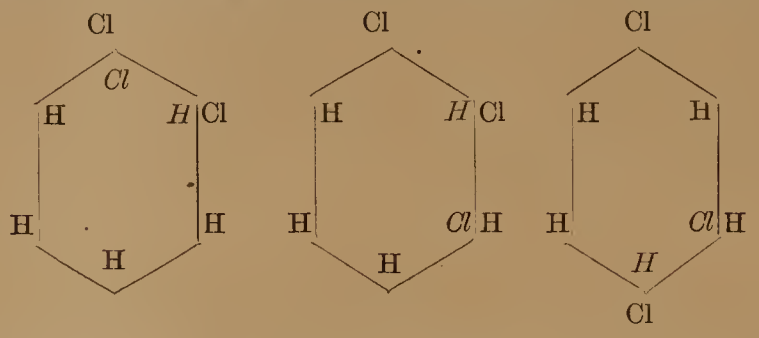


Alpha.

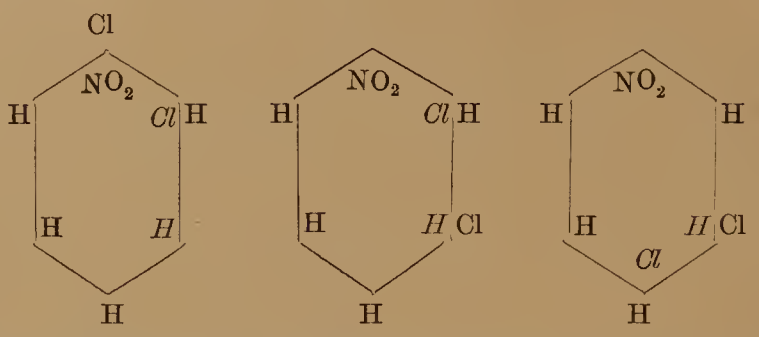


Beta.

quantity, and while statically symmetrical, it was in vibration unsymmetrical. In the production of di-substitution compounds from the mono-derivatives, Collie assumes that an unstable addition compound is first formed, and, moreover, that the addition to the meta position resulted from the near relation of the meta atoms; but the latter assumption, the author believed, was not in agreement with experience; addition was more likely to take place at the double binding between two ortho carbon-atoms. It has been stated that meta-brombenzoic and meta-phthalic acids have been obtained in small quantity through the action of zinc ethyl upon benzene hexa-bromide, but under the drastic treatment employed this was not surprising. The following formulæ show that in the chlorination of chlorobenzene only ortho- and para-derivatives are possible. They represent the three positions in which addition at a double binding may take place; the atoms going out in each case are indicated by italic letters:—



When two chlorine atoms are added on at a double bond one of the two is necessarily inside; and the important consideration is not in what phase of rotation the addition takes place, but in what phase the splitting off occurs. In the chlorination of nitrobenzene splitting off takes place while the NO_2 group is within the molecule, as shown in the three cases represented by the following formulæ:—



In the first instance the remaining chlorine atom must wander from its attachment with the NO_2 group to the meta position. From consideration of the hexa-chlorides of benzene it seemed probable that hydrogen and chlorine are most readily split off in the ortho position, being on the same side of the nucleus, the alpha hexa-chloride being easily decomposed by boiling potash, while the beta compound is less easily decomposed.—A discussion followed the reading of the paper.—Mr. Dunstan said that the application of the theory to all possible cases was of great importance, as it is only in that way that its value is determined, and Dr. Matthews was therefore doing a great service in bringing this work before the Society.—Dr. Wynne asked whether the 1, 2, 4 trichlor-benzene is formed by the splitting off of hydrogen and chlorine atoms in the ortho position.—The President inquired whether all the hydrogen atoms and their substitutes maintained a constant relation to each other, all rotating with equal periods. The question as to what experimental data had led to the formulæ assigned to the two hexa-chlorides of benzene was asked by another member, and also why in the chlorination of chlorobenzene twice as much of the ortho compound as of the para compound was not produced.—Dr. Lapworth pointed out that the existence of two benzene hexa-chlorides could be accounted for in another way. There is a fumaroid and malenoid condition to each of the double bindings and corresponding cis and trans formulæ account for the production of the two substances.—Dr. Matthews, in replying, answered Dr. Wynne's and the President's questions in the affirmative, and explained that in reference to the production of ortho and para dichlorbenzenes from monochlorbenzene it was not claimed that the reaction took place in the three possible ways, but that in the three possible ways only ortho and para compounds were capable of formation. The next paper was by O. Rosenheim, Ph.D., and P. Schidrowitz, Ph.D., on the

Compounds of Piperidine with Phenols.

In the absence of the authors it was briefly summarised by the Secretary, Mr. Dunstan. Experiments had been undertaken with the object of obtaining compounds by the interaction of the diatomic and triatomic phenols with piperidine with the elimination of a molecule of water. It was found however instead, that addition compounds were formed. The substances were mixed in solution either in ether or petroleum, and in almost every case a well-crystallised compound was produced. They were for the greater part colourless or white, and soluble, but gave no characteristic decomposition products. The number of

combining molecules appeared to be uninfluenced by the atomicity of the phenol employed. No discussion upon this paper ensued, and the President thereupon invited any member who had a contribution to bring before the Committee to do so then, as there was time to spare. This he held to be perfectly in order if only an abstract of the contents were handed in at the same time.—A member asked whether the publication of such a paper would be guaranteed, to which question the President replied i n the affirmative, publication being subject, of course, to the ecision of the Publication Committee.

Protoplasm of Seeds at Low Temperatures.

The business of the Society being concluded at an early hour, the President said that after he had resolved the formal meeting into an informal one he would invite Dr. Brown, who was then present, to give an account of the paper he had recently read before a meeting of the Royal Society. The chairs of the President and Secretaries were then vacated, and Dr. Brown, complying with the request, proceeded to describe the effects—or, as it proved, the absence of effects—of very low temperatures on the living protoplasm of resting seeds. The experiments were undertaken for the purpose of determining whether any change whatever goes on under ordinary conditions in resting seeds. There were three cases to consider: respiratory changes, intra-molecular respiration, and changes not attended with the evolution of gas. With reference to the first, it had been shown long ago that no gas was given off when the seed was kept for a year *in vacuo*. Their vitality was retained also when the seeds were kept for nine months in the vapour of ether and in hydrogen. The existence of intra-molecular respiration was disproved by keeping the seeds for several months in Geissler tubes, the absence of nitrogen and carbon dioxide being shown by the spectra. To attack the third question the author had subjected the seeds to low temperatures, with the idea that if any activity existed in the seed its vitality under these conditions would be destroyed. About eight or ten species, taken from five or six families, had been treated. After being kept for 110 consecutive hours at a temperature of about −190° the seeds were carefully thawed and set to germinate by the side of untouched seeds of the same samples for comparison. In all cases the frozen seeds grew as well as the others. That life is attended by continuous changes in protoplasm, as laid down by Herbert Spencer, can evidently be no longer held. Dr. Brown reminded the audience further that when Lord Kelvin suggested a few years ago that life might possibly have been brought to the earth by a meteorite, instead of having originated here, the objection was raised that the temperature of a meteorite in space, being near absolute zero, would have destroyed the life of all spores; but after the facts now brought to light, this objection could no longer be held.—After a discussion, in which the members expressed their interest in the paper and their thanks to the author for his account of it, together with various opinions on the meteoric origin of life, the meeting terminated.

LINNEAN SOCIETY OF LONDON.

At a meeting held on Thursday, November 18, Dr. A. Günther, F.R.S., President, in the chair, Mr. Alan F. Crossman, F.L.S., exhibited photographs of a fasciated lily (*Lilium auratum*), on which some information was given by Mr. A. D. Michael, F.L.S. —Mr. R. Morton Middleton, F.L.S., exhibited and made remarks on some ants received from Ephesus. These had been referred to in a previous communication as being made use of in Asia Minor for the purpose of holding together the edges of incised wounds by means of their strongly hooked and sharp mandibles (*Journ. Linn. Soc., Zool.*, vol. xxv., p. 405). The species was now identified as *Cataglyphus viatica*, Fabr. Mr. Thomas Christy, F.L.S., gave some additional information resulting from inquiries he had made of foreign correspondents.—Mr. J. E. Harting, F.L.S., exhibited a specimen of the great black woodpecker (*Picus martius*) lately received from Col. W. C. Dawson, of Weston Hall, Otley, Yorkshire, where it had been shot in his presence by a friend on September 8 last. It was shown that this could not be the bird which had recently been lost from the Zoological Gardens, since the latter did not escape until October 9. Allusion was made to the numerous records of the occurrence of this species in England, some of which at least seemed worthy of credence, since the recorded specimens had been obtained and were preserved in the possession of trustworthy persons.—Mr. Howard Saunders expressed the opinion that there was no sufficient ground for including *Picus martius* in the list of British birds, as from its partiality for pine forests and its stationary habits, it was not likely to be a voluntary visitor to this country.—The President remarked that the perfect state of plumage of the specimen exhibited was satisfactory evidence of its not having recently escaped from captivity; and that the late Lord Lilford, the year before his death (which occurred on June 17, 1896), had two black woodpeckers in his aviary in Northamptonshire, and in consequence of their ailing in health, had given them their liberty. It seemed possible that one of these might be the bird lately shot in Yorkshire.—Mr. J. E. Harting also exhibited in the flesh a hybrid pheasant and black grouse, which had been received that day from Shropshire. In appearance it precisely resembled a similar hybrid of which a coloured figure is given in early editions of White's 'Selborne.'—On behalf of Mr. Leonard Lush, of Stonehouse, Gloucestershire, three white partridges (*Perdix cinerea*) were exhibited, which had been shot by him on the Berwyn Mountains in Wales, early in October last. It was remarkable that in the covey, which consisted of nine birds, no less than five of them were white, four only being of the normal colour.—Mr. Hamilton Leigh, F.L.S., exhibited the skull of a red deer recently shot by him in Scotland, in which there was a singular distortion of the pedicel, resulting from an ancient fracture of the left temporal bone.—A paper by Professo A. Dendy, D.Sc., F.L.S., of Canterbury College, N.Z., was read, o

Pontobolbos Manaarensis (Gen. et. spec. nov.),

a problematical cushion-shaped marine object, measuring from 13 to 36 Mm. in transverse diameter, found attached to rocks in shallow water in the Gulf of Manaar, of which he had received 15 specimens among a collection of sponges sent to him by Mr. Edgar Thurston, Superintendent of the Madras Museum. The object was found to be concentrically laminated and to contain calcareous material, and a "ground-substance," the various micro-chemical reactions of which were carefully described, and which, if protoplasmic, yielded no traces of nuclear structures. Minute algæ were also detected, and in the deeper layers foreign particles in the form of sand-grains. The predominant component was found to be a dense feltwork of minute filaments, for the most part radially arranged and destitute of contents, which after prolonged study the author had come to regard as bacterial. Comparison was instituted between these filaments and certain Schizophyta, and between the entire object and certain calcareous algoid "pebbles," described by Murray, from Michigan and elsewhere, as also between it and the gigantic Rhizopod *Loftusia* (Carp and Brady); and as an admittedly tentative conclusion, the author, anxious to record the existence of so remarkable an object, inclined to the belief that it may be a symbiote involving some gigantic rhizopod undetermined and a bacterial organism. Professor Howes, in reading the paper, submitted some microscopic sections of the object which had been made at South Kensington from material sent him by the author. He pointed out that spicules apparently of sponges could be detected among the foreign particles, and remarked that to him and his colleagues at the Royal College of Science it appeared that while bacteria were present, algal filaments were overwhelmingly predominant, and that the evidence for the supposed presence of a gigantic rhizopod was exceedingly slender. In this criticism he was supported by Mr. George Murray, who had also examined the material, and who, after considering the comparison with the afore-mentioned "pebbles," put forward a suggestion of probable similarity to the algal "pseudomorphs" apparently parasitic on sponges, first recorded by Carter in the 'Annals and Mag. Nat. Hist.' for 1878.—Mr. F. Chapman, A.L.S., read a paper on

Haddonia, a New Genus of Foraminifera,

from Torres Straits. He explained, with the aid of lantern slides, that *Haddonia* is a calcareo-arenaceous type, of the sub-family Lituolinæ (of Brady). The species *H. torresiensis* is adherent to coral-rock, and resembles an attached and well grown *Haplophragmium*. The test, which measures from half to nearly two-thirds of an inch in length, is sinuous and irregularly septate. The shell-wall is of complex structure, being porous, rough on the exterior, and polished within; and on the buttress-like projections on the interior are hyaline non-tuberculate layers of shell material. The aperture of *Haddonia* is partially closed by a flap or valve, sometimes directed towards, sometimes away from, the attached surface of the test. The genus bears some affinity with the little-known genus *Bdelloidina* of Carter, and to a lesser degree with the hyaline genera *Rupertia* and *Carpentaria*. The specimens of *H. torresiensis* were found in great abundance on two specimens of coral-rock collected by Professor A. C. Haddon in the Torres Straits in 1889.

THE STUDENTS' PAGE.

THE FIVE SENSES IN PHARMACY.*

BY WM. MARTINDALE, F.L.S., F.C.S.

When I was asked by your Dean to address you I felt somewhat diffident about undertaking the duty, because, being a busy man with many avocations and engagements, I considered that it would be presumptuous in me to offer you advice in the presence of your professors, who are much better able to do so. Still, I remembered that I performed a similar task before the Sheffield School of Pharmacy some seven years ago, and although it might read like a sermon twice preached, I should not like to inflict the hearing of it again on you, not that I have anything to withdraw of what I then said. Copies of the address are here, if any of you would like to have them, but it may read to you like the prayer of the ancient Greek, who, lazily inclined, tired of repeating his prayer to Jupiter every night, wrote it out, hung it by his bed, and said, "There, Jupiter, those are my sentiments," and went to sleep. You come to this School, gentlemen, and associate yourselves together for discussion, mutual improvement, and help, and to cultivate and train your minds on certain lines by applying your reasoning powers and memory to the study of chemistry and botany and the allied subjects, materia medica, and pharmacy, which are founded on them. You will be aided in this by your senses of touch, sight, taste, smell, and hearing, which, I trust, have been trained by your earlier education, as in all our elementary schools there are now better opportunities than was formerly the case. I will refer to these senses *seriatim*.

(1) That of *touch* first. The early training of this by modelling and other exercises tends to induce neatness and expertness in work, the use of the fingers, manipulation, and the handling of things in general, but particularly glass vessels and apparatus; the absence of this training employers often know to their sorrow, hence the necessity and advantage of apprenticeship, which is a period of training more especially of the sense of touch.

(2) Next the sense of *sight*. You have to cultivate your powers of observation. I have not the extract pot to which Professor McLeod referred to when addressing you, where he said a lecturer dipped one finger in the pot and licked another finger, then passing the jar round, told the students to do the same and cultivate their powers of observation. This, unfortunately, they had not done; but failing to observe his action, with wry faces licked their finger coated with the extract. The sense of sight is best trained in early life by lessons in drawing; the power of committing to paper what you see, it is said, enables you to see twice as much, and this with minute observation and little effort, which, if carefully trained, can be easily sustained. Botanical study, especially field botany, develops this power of observation. The trained botanist readily detects the smallest plant new to him. To illustrate my point, I was once walking with a young farmer along a lane where I was told a certain small fern grew, and asked him to search one hedge while I did the other. After walking fifty yards he gave up the search, saying he was "not going to spoil his eyesight looking for brackens."

(3) *Smell.*—It is generally considered that the olfactory nerve, by which this sense is conveyed to the brain, of the pharmacist, is blunted by its constant use. You have heard the riddle, "What smells most in a chemist's shop?" Although not of such importance to the pharmacist as the senses I have mentioned, it is generally about the first we apply in our diagnosis of a drug or chemical; still, we are least able to define it, and that only by comparison.

(4) *Taste* also is used as a test. The employment of this sense requires caution, and the exercise of it before our clients in the pharmacy is to be avoided; still, it is a character of great service in diagnosis. We can vary it by the terms "bitter," "sweet," "pungent," "acrid," "aromatic," etc. This sense is, however, mostly appreciated, and by the connoisseur cultivated, in the pleasures of the table.

(5) Lastly, *hearing*. We probably can all enjoy the sweet solace of music, but for its full enjoyment this sense requires cultivation; unfortunately, we are much distracted by the discordant noises which fall upon our ears in London, and our weary brains are irritated to such an extent that concentration of thought is well-nigh impossible. Of late years much has been done to lessen the noises of the street by wooden pavement and indiarubber-tired wheels, but there is still room for improvement in this direction. Why are we content to be pestered with German bands, barrel-organs, and street cries of various kinds, which are quite unnecessary?

I have touched upon the cultivation of your senses, your reasoning powers, and your memory. Another of your faculties is imagination. Perhaps you may think that the pleasures of a cultivated imagination do not come within our scope, but applied to chemistry, pharmacy, and even to business, this helps to develop our ideas, and take away the reproach that an individual "could not see beyond the end of his nose." It enables us to devise, and to conceive what may take place under certain conditions, which we can prove by experiment, and thus by induction and deduction, store our minds with facts.

Your Association gives you the opportunity of meeting to discuss problems which are of interest to you as students, but which would not at first interest outsiders, yet I am glad to know that your work has not been unobserved; the germ of original work requires a beginning, and may often be incubated at the suggestion of another. Your professors inspire you with enthusiasm, zeal, courage and hope by personal contact. In your discussions you are developing your reasoning powers and preparing for your examinations and your work in life.

Since my address to the Sheffield students, the examinations have been much improved; probably in part resulting from the criticisms I then made; the Qualifying, or Minor examination has been divided, and is conducted on two separate days; the examiner is brought more into personal contact with the candidate by seeing him work a longer period, and not merely answering questions.

But, you will ask, after all your training and your examinations passed, what is there at the end of it? From the complaints one hears, the times would seem to be against us. It is proverbial that the apothecary's calling is but a poor one, but the man who has knowledge has power, and the ever-increasing field of work and remuneration for the pharmacist and chemist, even within his legitimate calling, will absorb his time, and happy is the man who can find a hobby in the scientific side of his daily occupation. Pharmacy has produced many shining lights too numerous to mention, but to one I may refer, one who worked for several years in your laboratory as student and demonstrator, and who by his original work has done much to increase our knowledge of the drugs we use. I refer to Dr. Tilden. You cannot all follow in his footsteps, but his chemical career is one well worthy of emulation.

Lives of great men all remind us
We can make our lives sublime,
And, departing, leave behind us
Footprints in the sands of time;

Footprints that perhaps another,
Sailing o'er life's solemn main,
A forlorn and shipwrecked brother,
Seeing, shall take heart again.

* Address to the School of Pharmacy Students' Association, delivered on Thursday, December 9, 1897

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RETAIL PRICES AND DISCOUNTS.

Reference has recently been made in the Journal to the question at present agitating the bookselling world, in regard to the retail prices of books, and the similarity of this to a problem that vexes the minds of many pharmacists affords sufficient justification for bringing it to the front once more. As is well known, it is nowadays customary for booksellers to allow a discount of twenty-five per cent. off the prices of most new books, but of late an outcry has been raised by the trade against the practice, in the hope of securing a reversion to a lower rate of discount, just as chemists and druggists are agitating to advance the excessively low prices at present charged in many instances for proprietary medicines, etc. As a result of this movement, the leading publishers have been induced to propose that—subject to the approval of the representatives of the interests of authors—an attempt should be made to compel all retail booksellers to limit the discount they allowed to one-sixth of the published price, instead of one-fourth. Publishers and booksellers being agreed on this point, the Society of Authors appointed a committee to consider the matter, and the report of that committee has now been published. It may be stated, at the outset, that it is totally opposed to the suggested plan of campaign and, as might therefore be expected, it has been the cause of great disappointment to both publishers and booksellers. Efforts may possibly be made to carry out the proposed coercive measures, without the assistance of the authors, but there seems to be little prospect of success attending such steps as may be taken.

It is stated in the report that retail booksellers in town and country allege the impossibility of making a living profit by the sale of copyright books at the discount now given of threepence in the shilling, and that the publishers' proposal to remedy this grievance amounts briefly to giving the present trade terms to those booksellers only who agree to allow no more than twopence in the shilling on ordinary books, whilst selling net books at full prices. The result of this would be that anyone allowing twenty-five per cent. discount would be selling the books at cost price. The committee points out, however, that the discount question is not one of sentiment, but purely an economic question, which must be considered from a commercial point of view. The difficulty is produced by modern competition, and is to be paralleled by examples in many other trades, chemists and druggists being instanced as making the same complaint of excessive reductions in the retail price of patent medicines and well-known drugs. It may be pointed out that the analogy is not quite perfect here, for whereas chemists who sell proprietary articles at reduced prices frequently secure no more than five or ten per cent. profit, booksellers can allow a discount of twenty-five per cent. to their customers, and yet make a profit of thirty per cent. on the transaction. That this is so is clearly shown by the writer of a letter in the *Times* of the 4th instant. But, to return to the report, the committee is decidedly of opinion that the proposed coercive measures could not be carried out, and doubt is expressed whether the country book trade can be restored to prosperity by any comparatively superficial methods. It is pointed out that, owing to the operation of economic forces, destined in the future to increase and not to diminish in energy, the old-fashioned methods of bookselling cannot possibly survive. "Rapid and cheap means of communication tend to place all small local dealers at a disadvantage, and no formation of trading rings, or limited monopolies of sale, can invert the normal development of the processes of trade. It is only by following and taking advantage of new opportunities afforded by that normal development that injuries suffered can be repaired."

The opinions expressed in the report and the conclusions quoted therefrom are not those of mere theorists, but of a large number of shrewd business men, who have learned by experience how difficult it is to control economic movements of a more or less revolutionary character. Though to some extent personally interested in the matter in question, they seem nevertheless to have been able to consider it fairly from an external point of view, without prejudice, and there is little reason to doubt that their conclusions are fully justified. Even assuming that all publishers assented to the scheme proposed, there is nothing to prevent other publishers coming into existence who might be antagonistic to anti-cutting methods, and success would also be largely dependent upon authors, any one of whom might publish a new book himself or through a printer, a literary agent, or a draper. He could then supply it to booksellers at cheaper rates than those previously charged for his books by ordinary publishers, and leave the booksellers to give what discount they chose, so that instead of retail discount being reduced by the combination of publishers, it might be increased. Over and above this and similar difficulties, the members of the committee say they know of no reason why the retailer of books should be fettered as to the prices he charges, more than the retailer of any other commodity. On this point, it may be remarked, the public would probably have something to say. So far the discussion has been carried on with little or no reference to the individuals who have to pay the bill, whatever the amount of that bill may be, but it would be strange if any widespread attempt to exploit the man in the street should be altogether or even partially successful. The moral of the affair is what has been again and again pointed out, that when once the face price of an article is departed from, there is no sure resting place left, for variation is a law of Nature, whilst, as pertinently remarked in the report of the Society of Authors' Committee, "no formation of trading rings, or limited monopolies of sale, can invert the normal development of the processes of trade."

ANNOTATIONS.

The Benevolent Fund Election on Wednesday was, of course, a mere matter of form. The number of candidates nominated being identical with the number to be elected, no voting papers were sent out, and consequently there were no votes to be counted. In fact, Mr. Hampson's ideal was realised for once, but, judging from the strong expressions of disapproval with regard to the change, there is not much encouragement to the Council to repeat the experiment. Of course, as explained by Mr. Butt, the circumstances on this occasion were exceptional, and there need be no suspicion of any attempt to create a precedent. For once the funds available sufficed to justify the election of every deserving candidate, and the fact that there were not more candidates should be cause for congratulation in what so many regard as a time of unexampled commercial depression.

An Evening Meeting of the Pharmaceutical Society will be held in the Society's House, 36, York Place, Edinburgh, on Wednesday next, December 15, at 8.30, when the chair will be taken by Mr. J. Laidlaw Ewing. Mr. Peter Boa will read a paper on "Fluid Extract of Liquorice"; Dr. T. T. Dewar, B.Sc. and Mr. James Jack, F.L.S., will treat of "The Metric System in Prescriptions," and Dr. Gordon Sharp will describe the "True and False *Cactus grandiflora*." Additions to the Library and Museum will be referred to by Mr. J. Rutherford Hill.

The Proposed General Index to the Journal is the subject of a communication from another correspondent who thinks a guinea too high a price to pay for a copy of the work, and though reference has already been made to the fact that the price named is only the outside limit, it appears necessary once more to point out that the actual price must be strictly proportionate to the number of subscribers. Not nearly sufficient names have yet been sent in to enable us to produce the index at a guinea, whilst the number of readers who have sent orders conditional on the price not exceeding five shillings or half a guinea can be counted on the fingers of one hand. If, as this correspondent suggests, a "crowd of subscribers" would be willing to pay five shillings for a copy of the index, though not prepared to pay more, it is quite open to them to write and say so. To facilitate matters the order form printed in this week's inset is so arranged that it may be used either for a definite or a conditional order. In any case the price (5*s*., 10*s*. 6*d*., or 21*s*.) should be specified on the order; otherwise the highest sum will be assumed. Roughly speaking, there must be two hundred subscribers at a guinea, about twice that number at half a guinea, and one thousand at five shillings. Will those, therefore, who are interested in the matter kindly direct the attention of their friends and acquaintances to the exact position of affairs, as it is desirable that a decision should be arrived at, one way or the other, before the end of the year. The order form will be found in the Inset.

The Glasgow Conference—one of the pleasantest meetings of its kind—is recalled to mind by the receipt of a copy of the Local Committee's financial abstract, and a brief study of this document suffices to show with what enthusiasm the pharmacists of the West of Scotland took upon them the self-imposed duty of entertaining the representatives of the craft from other parts of the British empire. If anything, the thing was rather overdone than otherwise, to the extent that the guarantee fund raised was so large that other places may be deterred from attempting to compete with Glasgow in entertaining the Conference. It appears from the printed statement that a sum of £201 5*s*. 6*d*. was subscribed by the local chemists, whilst the sale of tickets realised £391 14*s*. 6*d*., the total receipts amounting to £593. Of this sum £49 10*s*. 9*d*. was subsequently returned to contributors, £44 18*s*. 6*d*. was devoted to donations to the Conference, the Pharmaceutical Society's Benevolent Fund and Orphan Fund, and the Library Fund of the local association, whilst no less than £498 10*s*. 9*d*. was spent on entertainments or used to defray incidental expenses. To put the matter briefly, the cost of entertaining the Conference was £106 16*s*. 3*d*., that being the amount spent over and above what was realised by the sale of tickets. A similarly large guarantee fund has been raised at Belfast, and it seems necessary to point out that the burden of such a sum would be seriously felt by many towns which might otherwise be expected to take their turn as the scene of the annual meetings. The ideal state of affairs would be for nothing to be spent locally, the price charged for the tickets sufficing to cover all expenses, as at Oxford, so that, except for their indebtedness to the local committee in organising matters, the members of the Conference might feel free from further obligation, and smaller towns would feel no obstacle in the way of entertaining the Conference on similar terms.

Popular Medical Works, so-called, are the cause of much mischief, and a medical correspondent of the *Lancet* reports a case which he regards as shedding a vivid light on the evils caused by such works, from which many victims of morphine and cocaine have derived their knowledge of these drugs. The perplexing symptoms manifested by a female patient were eventually explained by discovery of the fact that she had been taking Indian hemp as a remedy for headache on the recommendation of a book on family medicine. She had obtained a dozen pills each containing half a grain of the extract from a local chemist, and finding that neither one nor two of the pills gave the expected relief, she took the remaining nine pills at once, with a result approaching the production of mania. The writer considers that it was very injudicious of the chemist to have supplied the pills without medical sanction, and he condemns the dispensing of such medicines unless the prescriptions are authorised, but he does not point out how chemists are to distinguish an authorised prescription from one that is medically unauthorised, nor does he suggest how the public could be induced to acquiesce in such a limitation of the supply of medicine as he thinks desirable.

The American Patent Law has been amended recently, and the *Daily News* warns inventors and others proposing to take out patents in the United States that they would do well to make a note of the amendment, which comes into operation on January 1 next. Under the existing law, which expires with the year, a patent can be obtained in the United States at any period, provided the subject matter of the application has not been in public use or on sale in that country for two years preceding, but the same influences which have sought by protected tariffs to exclude foreign competition for the benefit of the "boss" and the trusts and corporations over which he presides, appear to have aroused a feeling that this state of affairs was not sufficiently advantageous to the citizens of the Republic. The law has therefore been amended, and applications for United States patents must in future be made within seven months of the date of the first application for a patent for the same invention in any other country. It is pointed out that patentees and others interested in placing new inventions on the American market as a rule take the precaution of applying for their American patent before publicity is afforded of the nature of the articles. It sometimes happens,

however, that secrecy cannot always be observed by the inventor, and the curtailment of the period during which inventions so situated have hitherto enjoyed rights to protection becomes a matter of considerable moment. Already, it is stated, certain American papers are pointing out that the chances are in favour of the period of grace allowed up to January 1 being in many cases allowed to lapse, and that American citizens will then have the privilege of selecting and using without payment any foreign devices and inventions which have thus been left without protection. "American manufacturers," says one journal, "will be able to make a thorough overhauling of foreign patents and select all valuable devices covered by such foreign patents which are not patented as well in America." "Overhaul" is a good word, the *Daily News* remarks—as a euphemism for utilising free of cost the product of another man's brains, provided he is a foreigner. But the state commercial morality thus disclosed is most lamentable.

The Coral Island Dispute appears to be practically settled in favour of the Darwinian theory, according to which the original foundations of coral reefs have gradually subsided, whilst the necessities of the coral polype, which cannot live more than a certain depth below the water, have resulted in a perpetual re-building of the reefs. Dr. Murray, the naturalist of the "Challenger Expedition," thought, on the other hand, that the ocean floor has risen, owing to the heaping up of the remains of marine organisms, and that the coral builders have lived and worked on those elevated banks. To settle the matter, Darwin suggested that a boring should be carried below the coral builder's life zone—120 to 150 ft.—and at last an expedition in charge of Professor David, of Sydney University, with Mr. G. Sweet, F.G.S., of Melbourne, as second in command, has reached a depth of 643 ft., the result being to demonstrate the truth of Darwin's theory. The whole of the core is being sent to the Royal Society.

Unqualified Assistants to Medical Men must cease to exist if the General Medical Council follows up the warning recently recorded, and decides to erase from the Medical Register the name of any practitioner who is proved to have employed an unqualified assistant in connection with his professional practice. But it is to be noted that the "infamous conduct in a professional respect" will only be charged against him if he knowingly allows a person who is not duly qualified, or registered under the Medical Acts "to attend or treat patients in respect of matters requiring professional discretion or skill"; it is expressly provided that the notice shall not apply to the "legitimate" employment of dispensers, etc., "under the immediate personal supervision of registered medical practitioners." A correspondent points out the inconsistency of thus requiring legally qualified assistants to be employed for one kind of professional work and not for another; but it may be observed in reply that even registered chemists do not invariably employ legally qualified persons as dispensers, and it is quite inconceivable that medical practitioners could be compelled to do so, even by the General Medical Council.

Reporting by Phonograph is the latest threatened terror, the municipal authorities of Etampes having decided that the experiment shall be made of reporting its proceedings by means of that instrument. If the experiment is successful, the report proceeds, the phonograph will be used regularly for the purpose in future, instead of shorthand writers being employed. But, apparently the Councillors little realise how vengeance may overtake them if the supplanted journalists should arrange to have the phonograph reports printed *verbatim*. Public speakers but rarely realise how much they are indebted to reporters for rendering their speeches intelligible, and frequently expressing what they meant to say rather than what they did say.

The Jubilee of Anæsthesia was recently celebrated by the Society of Anæsthetists, a conversazione being held which was attended by a number of men distinguished in science and medicine. Dr. Dudley Buxton, the President of the Society, delivered an address upon the progress of anæsthetics during the past half-century. He pointed out that although the period when anæsthesia was established as a surgical possibility could not be absolutely settled, there could be no doubt that the practical use of nitrous oxide was demonstrated in 1844, and that of ether in 1846. The horrors of pre-anæsthetic surgery even told upon the strong nerves of such men as Abernethy and Liston, and appalled the sensitive nature of Simpson. His use of ether led him to seek for a more efficient substitute, and this he found in chloroform. Simpson obtained a sample of the chloroform in 1847, and was the first to discover its value. He taught that death from the drug might arise from direct action upon the heart, and that most of the fatalities occurred in this manner. Snow at once investigated the subject from the physiological standpoint, and his remarkable researches had been confirmed and extended by the more modern experimenters. Indeed, it was extraordinary that Snow, with the inexact methods at his disposal, should have produced such accurate and lasting contributions to our knowledge.

The Conclusions of the Medico-Chirurgical Commission were shown to have accorded with those of Snow, although as a half-way plan the employment of a mixture of chloroform, ether, and alcohol was recommended, as suggested by Harley. The name of J. T. Clover was associated with the report. By his rare gifts and ingenuity the disadvantages alleged against ether were completely disproved. After alluding to the investigations of Benjamin Ward Richardson, Lauder Brunton, MacWilliam, Hare, Thornton, Gaskell, and Shore, Dr. Buxton remarked that, if incautiously administered, chloroform would assuredly kill by paralysing respiration. All medical men believe that the circulation of the blood is depressed by it, while some consider that this depression may actually cause the heart to stop and the breathing to cease. Chloroform is capable of acting directly upon the blood, the muscles of the heart, and the nervous system, and unless it be given by experienced men it may destroy the tissues of the body. This knowledge of the potent character of the drug is in itself a great advantage. Persons who know very little about it administer it recklessly, and jeopardise lives. In knowledge lies safety, and it has been abundantly proved that safety depends more upon the skill and experience of the chloroformist than upon any particular form of inhalation.

The Royal Photographic Society will hold its next ordinary meeting on Tuesday next, December 14, at 8 p.m., in the theatre of the Society of Arts, John Street, Adelphi, a large audience being expected on the occasion to hear Professor Gabriel Lippmann read a paper on "Colour Photography." Non-members of the Royal Photographic Society who would like to attend the meeting will require admission tickets, for which application must be made to the Secretary of the Society, 12, Hanover Square, W.

The Reading Appeal Case came on before Justices Hawkins and Channell late on Wednesday afternoon, and was continued on Thursday. It therefore became necessary to print the report in the Inset, but as the pages are numbered consecutively with those in the body of the Journal, they can easily be placed in position when arranging the numbers for binding.

THE WORLD OF PHARMACY.

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN LONDON.

The second evening meeting of the Session was held on Tuesday, the 7th inst., when the chair was taken by Mr. Walter Hills, President of the Society, at 8 o'clock. A paper was read by Messrs. Farr and Wright, entitled,

"A Note on Some of the Official Extracts,"

In opening the discussion on the paper, which is printed at p. 517,

The President said Messrs. Farr and Wright, who had long been associated in pharmaceutical investigations, had placed the Society under a further obligation by the production of this eminently practical paper. The subject of extracts was one with which they came in daily contact. Looking at an old dispensatory of the Royal College of Physicians, he found there not more than ten extracts mentioned, nearly all of which were prepared by a process of decoction; in the present Pharmacopœia there were about fifty extracts, and looking into one of the books of his own business he found there were about 300 extracts, fluid and solid, mentioned. He supposed the days of the green extracts were numbered (though he must confess he had a sort of sentimental affection for them) because they were not very definite and perhaps did not represent the full value of the drug. Assuming always that the alkaloidal strength was the right standard to take, there could be no doubt that the alcoholic extracts now described were a great advance on many others at present in use.

Mr. E. White suggested that the use of the green extracts might be accounted for in great measure by the fact that when they were introduced very little was known about the constituents of plants, and it was supposed that they represented the whole activity of the plant, and, at any rate, that if there were any doubt about what the active principle was the juice was the safest thing to use. There was also a prevalent idea amongst medical men at one time that the activity of a drug was not due to one constituent only, but to several, and even that it might be due to the particular combination of substances present in the plant. Now that much more was known, both of the active principles of drugs and how to extract them, such a paper as this would be very useful. The question of strength was important, but that of the variation in strength was much more important. An alcoholic extract was capable of much easier standardisation than one obtained from the juice, where the active principle was associated with a large amount of foreign matter very difficult to separate. This paper was therefore a distinct step towards the scientific development of the subject, for everyone would agree that extracts prepared in the manner suggested would represent a better product pharmaceutically, and he thought the medical profession would now be inclined to accept the definite chemical statements here made as being of some importance.

Mr. E. M. Holmes, after expressing the pleasure it gave him to listen to a paper of so purely pharmaceutical a character, said he remembered that some years ago he asked Professor Dunstan, who was then examining aconite, whether the expressed juice of the plant contained the greater portion of the alkaloid, and he was informed that it contained comparatively little. It was therefore evident that in order to get an extract on which medical men could rely, the root must be exhausted by some suitable menstruum. How far the same thing might occur in the case of other aqueous juices he did not know, but the question was certainly worth investigation, especially in the case of digitalis. He should be glad if any further information could be given as to the sugar found in the aconite root—at what time the root was collected, whether it presented the resinous appearance which had sometimes been ascribed, and if the sugar was cane sugar.

Mr. Martindale said a question of some practical importance was the best means of evaporating solutions, whether by fire heat, a Bunsen burner, or over a water-bath. In dealing with an alcoholic extract, the temperature at which alcohol boiled was the most suitable, but when one was dealing with the weaker alcohols there was a difficulty in the later stages of the process in getting the somewhat aqueous remanet into a sufficiently concentrated form for commercial purposes. By the use of a water-bath or steam or by a vacuum exhausting apparatus one could bring the extract more quickly to the desired state, and the quicker it was done the better because the more prolonged the exposure to heat, the greater was the danger of injury to the product. As a rule, though there were many exceptions, one part of a drug could be exhausted by three parts of suitable alcohol; to attempt further exhaustion was only waste of time, material, and labour. In the old-fashioned green extracts there was undoubtedly a considerable portion of inert matter, in fact the amount of what was termed simple extractive—gummy mucilaginous matter which remained when the green extract was exhausted by alcohol—was astonishing. He was surprised at the amount of sugar found in aconite root, but it would probably depend on the time of year when it was collected. The crystals found in some of the green extracts, especially conium, were potassium chloride. The authors had been careful to specify the strength of alcohol to be used in extracting the drug, but he feared that when that alcohol came to be distilled off, they would find towards the end of the process that the extract was not soluble in the supernatant liquid, and it occurred to him that it might be better to use a stronger alcohol. There had been a tendency of late years in America to use alcohol of higher strength as a solvent, and to produce dry extracts which could be left in powder. These were termed eclectic remedies, and their names generally ended in "in" such as gelsemin, though they possessed none of the properties of a glucoside or alkaloid. The extract of aconite leaf was of so uncertain and variable a character that he thought it would be parted with without the slightest regret; it had never been in much favour, and was rarely prescribed. In fact it was hardly ever in a fit state to mix with other drugs unless quite freshly made. The acetic extract of colchicum was certainly a mistake; an extract could be obtained from colchicum corms which would keep its character and possessed all the virtues of the drug without the use of acetic acid.

Mr. C. B. Allen said this subject was one of the highest pharmaceutical importance, and he thought the authors had condensed the results of an immense amount of work into a short paper. It was evident from Table II. that the amount of variation in extracts was something astonishing, and he should like to know if any reason could be given for such great discrepancies. The presumption was that they were all prepared much in the same way, and being made from fresh plants, they must all have been gathered at about the same time. Perhaps some might be made from wild and others from cultivated plants. Seeing that these extracts represented some of the most potent drugs employed in medicine, it was certainly very important that one pharmacist should not use an extract three times the strength of that employed by another.

Professor Greenish asked if Mr. Wright could give any reason why so large a proportion of the alkaloid was left in the marc. It occurred to him that possibly it might be connected with the fact which had been established by histologists, that the active principles, such as alkaloids, were often localised in certain parts of the plant, say in belladonna leaf, in or near the epidermis, so that when pressed or bruised, for one cell which discharged alkaloidal contents there might be a dozen which discharged a liquid containing none. He did not know whether that would explain why so much was left behind in the marc compared with what was found in the juice, as the alkaloid was supposed to be in solution in the sap in the living leaf, but possibly the portion containing the alkaloid might not be so much crushed as the thicker parts.

Mr. Wright, in reply, said there was no doubt the introduction of juice extracts into the Pharmacopœia was due to Mr. Peter Squire more than anyone else. In the very first volume of the *Pharmaceutical Journal* there were several papers on the preparation of extracts from vegetable juices, and he believed Mr. Squire took the lead in the movement which led to their introduction. At that time no methods were known for determining the value of such juices, and one could quite understand how pharmacists, and even physicians, should be deceived by the characteristic appearance and odour of the expressed juices, into the belief that they represented more perfectly than any other preparation could do the physiological activity of the drug. They had now shown that this was not the case. Why it was not so he could not say fully, because so many factors had to be taken into account. The amount of juice obtained from a fresh herb varied considerably according to the amount of moisture present, and also according to other circumstances. As a matter of fact, the juice was not obtained

from the leaf alone; generally speaking, there was also the flowering tops, and this was rather a question for the histologist and the practical botanist than for the pharmacist. They had studied the matter up to a certain point, and in the case of conium they found the leaf contained less alkaloid than any other part of the plant; when the flowering tops were included, the proportion increased some 300 or 400 per cent, and when they took the young green shoots it increased about ten times. Again, one had to take into account the solubility of the alkaloid in the juice of the plant. In the aconite almost the whole of the alkaloid was in a free condition, and for that reason it might not be so soluble as where it was combined with vegetable acids, as was the case in other plants. That was a matter for careful and thorough investigation. He must ask Mr. Farr to reply to the question about the sugar in aconite; he could only say that the sugar was produced from the root, and that as tested by Fehling's solution it was not pure cane sugar. With regard to the process of evaporation and the temperature, in no case was it much above 70° C. The great objection to using stronger alcohol was that unless one was very careful to get rid of as much as possible afterwards, the extract would be hygroscopic; in fact the only thing he was afraid of in connection with any of these things was that there might be danger from that quarter. In one or two instances if exposed to a damp atmosphere they showed signs of giving way to a certain extent, more especially the acetic extracts, and that of hemlock. If, however, the process were continued until a nearly dry extract was produced, that danger was minimised. With regard to the American powdered extracts, they knew that a number of them had been introduced, but he believed most of them had been dropped. Some drugs lent themselves readily to such treatment, but it was a matter in which considerable judgment had to be used. Some would preserve their activity in powder, others would begin to go wrong almost as soon as they were made. He thought the preparations of euonymin were about the most unsatisfactory ever introduced. The crystals found in the extracts varied according to the drug; in conium he believed they were ammonium chloride. With regard to the variations, the whole thing resolved itself into a question of standardisation. Mr. Farr and himself never lost an opportunity of pointing to that as the logical outcome of the whole inquiry. Take the extract of conium. No. 1 contained ·64 per cent. of alkaloid, whilst another yielded 7 per cent. They did not pretend to say that these galenical preparations could be made so as always to possess a certain degree of physiological activity, but if a pharmacist could guarantee a percentage of alkaloid within certain narrow limits there was almost a certainty that it would represent far more efficiently the activity of the drug. He did not think medical men would expect pharmacists to guarantee a particular degree of activity, but they had a right to demand, and pharmacists might undertake to guarantee, that the extract they furnished was not absolutely inert for want of alkaloid. The authors recommended, therefore, that a certain alkaloidal strength should be set up as the standard. The standardisation of any drug should be carried up to the limits of the knowledge they possessed with regard to the chemistry of it. It might be said, on the other side, "Oh, you must wait until we know what is the active principle, and until a satisfactory process has been devised for isolating it in a state of purity." But if they waited till that was done in the case of every drug they would have to wait a long time. The degree of standardisation they advocated was both practical and within the powers of the rising generation of pharmacists.

Mr. Farr added, in reference to the sugar found in aconite root, that part of it reduced Fehling's solution directly, but the larger portion only reduced it after inversion, indicating that the bulk of it consisted of cane sugar. What the other might be he could not say. In 'Pharmacographia' it was stated that there was also another body present, which reduced Fehling's solution in the cold, but he found no trace of such a body after leaving it in contact for twelve hours.

The President having proposed a vote of thanks to the authors of the paper, which was carried unanimously, the next paper was read by Mr. E. M. Holmes. This dealt with

Some Recent Additions to the Museum.

At the conclusion of the paper, which is printed on p. 519,

The President said they were much indebted to Mr. Holmes for this paper, and he might emphasise his remark as to the desirability of young pharmacists exercising their senses on any drugs with which they came in contact. With regard to the mescal buttons, the effects of which seemed to vary a great deal, as was the case with *Cannabis indica*—partly on account of individual idiosyncrasies—attention was called to that point in one of the medical journals last week. Further investigation of the drug was evidently desirable.

Mr. White said he could confirm what had been said as to the curious effect produced by the mescal buttons. Sometimes persons taking them had to be placed under restraint, and it was quite true that they lost all sense of time and space. The subject was being investigated, and Mr. Braithwaite was isolating some of the constituents for experiment.

Mr. MacEwan said the subject of cayenne pepper was interesting to many chemists quite apart from medicinal purposes, probably more capsicum being sold for feeding birds than for any other purpose. The pepper used in that way was tasteless, and seemed to contain a large amount of fatty matter. It was dark in colour, and the object was to heighten the colour of the feathers. It was supposed to come from *Capsicum annuum*, and he should much like to know where it came from. It was only supplied by two or three houses, and attempts by others to obtain it had not been very successful. There was no doubt that the pepper as used was an untreated product. The late Dr. Brady, on his return from Japan, passing through Vienna, came across a comparatively tasteless pepper, which caused considerable discussion at the time, as there was a large amount of it on the market, but the substance had been pretty much lost sight of since. He thought it would well repay inquiry, as very little had been done on the subject of peppers since Dr. Thresh dealt with it about eighteen years ago.

Mr. Wright said this discussion reminded one of the fact that we were in far more intimate communication with certain parts of the world than we were not long ago, and also suggested that in future Pharmacopœias it might be useful to define the geographical source of particular drugs. As an old apprentice of Dr. Thresh, he had good reason to remember his researches on capsicum.

Mr. Bowen asked if the active principle of the *Eupatorium ayapana* had been obtained. It had been found that most of those plants which were now used for beverages contained theine or caffeine.

Mr. Martindale said they were at present quite in the dark as to the geographical sources of cayenne pepper. It was originally supposed to come from the northern part of South America, but now they found that some came from the Cape and some from Japan. The public liked a capsicum of a bright red colour, but for pharmaceutical purposes he preferred the small capsicums of a dull yellowish red.

Mr. Holmes said the pepper used for birds which had very little pungency was the one to which Mr. Thos. Greenish called attention some years ago. It was very largely used in Hungary and in Spain, and he was told by the late Professor Archer that it was produced by *Capsicum tetragonium*, which has a much blunter fruit than the *C. annuum*, and is obtusely 4-angled. He did not think there would be any difficulty in getting it. *C. annuum*, the ordinary source of cayenne pepper, existed in an enormous number of varieties, especially in Central America. It had only one fruit in the axil of the leaves, whilst the *C. fastigiatum* had always two. In the West Indies one could buy a bottle of pickled capsicums containing fruits of all sorts and shapes, from that of a small round bullet up to two or three inches long and nearly an inch broad. He did not think the geographical source of capsicums would be any guide to the species, or even the variety, but it might indicate the commercial kind. That from Sierra Leone was always hot, and the same with the Zanzibar, but the Japanese was milder. The appearance much depended on the preparation. Zanzibar chillies were dirty-looking, of a brownish red colour, and of inferior appearance. Those of Sierra Leone were of a yellowi h red colour. The Japanese carried their artistic taste even into the collection and drying of drugs, which were often far superior to those obtained from Germany, for instance. In some few cases the geographical source of a drug might be important; for example, pareira brava; the genuine came from Brazil, but where other roots sold for it came from no one knew for certain. With regard to the ayapana, it contained not only a fragrant principle, but possessed diaphoretic properties, and if taken too freely it might act as an emetic.

The President proposed a vote of thanks to Mr. Holmes, which was carried unanimously, and it was announced that the next meeting would be on Tuesday, February 8.

BENEVOLENT FUND ELECTION.

A meeting for the election of six additional annuitants on the Benevolent Fund was held at 17, Bloomsbury Square, W.C., on Wednesday, December 8, at 12 noon, Mr. Walter Hills, President, in the chair.

After reading the notice convening the meeting, the President said that in the present instance the Council had thought it well, under the circumstances, to nominate only six candidates for the six vacancies on the Fund.

Mr. E. N. Butt then moved, and the motion was seconded by Mr. W. P. Robinson, that the following persons be elected as annuitants on the Benevolent Fund :—

Charles Clode .....Aged 65....Willesden Green.
Charles Benjamin Collett..Aged 67....Clapham.
Thomas Evans .....Aged 74....Liverpool.
George Foster .....Aged 83....Late of Hampstead.
Jane D. Starling .....Aged 64....Bexley.
Tonkin Young .....Aged 69... Barry.

Mr. G. J. Knight thought it would have been better to have followed the usual course of procedure of election, notwithstanding the fact that it was Jubilee year. The Council had disclaimed any intention of it being made a precedent for the future, but he did not see how they were to prevent any future Council from making it a precedent. He thought there should be no "Tammany" or "bossing" business about the election for annuitants to the Benevolent Fund. In his opinion there were several people other than those mentioned in the motion who should have had a chance "in the running." He would like to know if it was definitely decided by the Council that this mode of election would not be made a precedent.

The President, in answer to the remarks made, said he could only reiterate that the Council desired it to be understood that this election without voting papers was not intended to be a precedent for the future. That was the feeling of the Council at the present time. Of course, they could not answer for the Council in the future, but from its present opinion the existing Council had no intention of departing.

Mr. W. H. Baines thought it would not be in the interests of the Benevolent Fund to have an election without voting papers. The mode of election which had hitherto prevailed had answered very well, and he feared if a departure was made several people whom he knew would retire from the list of subscribers in the future. They took a great interest in the election, and felt a pleasure in being able to vote for and so assist deserving cases that came under their own notice, but if the elections of the future should be conducted without voting papers, as in the present case, their interest in the Benevolent Fund would cease. He had been a subscriber to the Fund for the last ten years, but he could not subscribe if that system of election were to prevail.

The President said he did not quite understand if Mr. Baines intended to continue his subscription or not.

Mr. Baines said that would depend on the action of the Council in the matter before them.

Mr. E. N. Butt said that for many years he had been a member of the Benevolent Fund Committee and Chairman of the Scrutineers, and if they would allow him he would explain the reason for departing from the old system of election. From time to time, once a month, cases are brought before the Committee, and any person whom the Committee thinks it is desirable to nominate as a candidate for an annuity is placed on the provisional list, and at the meeting in October the names of the persons are gone through, and a certain number of persons are selected as candidates for the next election. Owing to the liberality of the members on the occasion of the Jubilee there was a larger amount of subscriptions and donations over and above what has ever been subscribed before, and the result was that at the meeting in October last the Committee found that they were in possession of such a large amount that they felt justified in recommending six candidates for annuities, but unfortunately there were only six names on the list, and there was no likelihood of getting more. As they proposed to elect six annuitants there was, therefore, no necessity for an election. He did not think that this was at all likely to occur again, there were many persons who applied for help to whom it was desirable to give temporary relief, but in many cases it was not desirable to put their names on the list as candidates for annuities. He knew that many gentlemen enjoyed voting for candidates, and he did not think it would ever occur again that there would be no need for an election. He was quite certain that as regarded the present election they could accept it as a precedent which would not be followed.

Mr. Bottle said he was the culprit who was more especially responsible for that particular inversion, but when suggesting it to his colleagues he did not consider that it was a precedent that would be followed in the future. He believed in the process of election by the subscribers, and he believed his friends on the Council were of the same opinion. As Mr. Butt had said, at the October meeting the Committee had only six candidates to deal with, and although it might have been possible to find two more candidates, he did not think it was desirable to manufacture two candidates. They had no idea of perpetuating that mode of election in the future.

Mr. Baines said he still adhered to his view of the case that it would have been better for the Council to send out the voting papers stating that there were only six candidates, and asking subscribers to vote for them. There might be men in the future who would use the present case as a precedent, and he thought it would be well to let well alone.

Mr. Newsholme, Vice-President, said that several members of the Council and himself, as Chairman of the Benevolent Fund Committee, reluctantly gave way in the matter, as they thought it would be a precedent, but they made it a condition that a circular was to be sent to every member of the Society, and to every subscriber, with a footnote to the effect that it was not to be considered as a precedent to be followed in future elections. That note, it was thought, would be perfectly sufficient. Continuing, Mr. Newsholme said Mr. Hampson was of opinion that the election should be in the hands of the Council entirely, but the other members of the Committee did not hold that view.

The President thanked the friends who had expressed their opinions on the advisability of continuing what had been the rule for so long. With regard to those candidates in whom they took special interest he would like to remind them that the Council has always had the power to select candidates for the approval of the subscribers to the Fund, and on this occasion the Council came to the conclusion that six candidates could be elected, and they had only seen their way to produce and to offer for the subscribers' approval a list of six candidates. He could not agree with Mr. Baines that it would be advisable to send out at considerable expense voting papers for those six candidates. He thought they could take it from him that in the future the Council would be loyal to the old system unless there was a very great amount of opinion amongst the majority of the subscribers to the contrary.

On the motion being put to the vote, it was carried, Messrs. Knight and Baines being the only dissentients.

The President having been accorded a vote of thanks on the motion of Mr. Baines, the meeting then terminated.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, December 8, the Librarian and Curator presented the following reports of donations :—

To the Library (London).

University of Durham :—Calendar, 1897-98.
University College, London :—Calendar, 1897.
Missouri Botanical Garden :—Annual Reports, 1-8, 1890-97.
H. M. Secretary of State for India :—Flora of British India, nos. 23-24.
Mr. C. W. Brumwell, London :—Graves and Morries' Hortus Medicus, 1834.
Mr. A. L. Herrera, Mexico :—Recueil des lois de la biologie générale, 1897.
Mr. W. W. Savage, Brighton :—48 volumes and pamphlets from the library of the late Mr. W. D. Savage.

To the Museum (London).

Dr. Foulerton, London :—Specimen of the stem of the plant used in preparing arrow poison in Uganda, and of the roots used as antidotes.

Mr. A. Sharpe, H.B.M. Commissioner and Consul-General in British Central Africa, through Mr. P. L. Sclater, F.R.S. :—Twenty-six specimens of native remedies from British Central Africa.

Messrs. Dalton and Young, London :—Specimens of Penang, Amboyna, and Zanzibar Cloves, of Natal Capsicums, and of Sierra Leone and Zanzibar Chillies.

Messrs. Wright, Layman and Umney, London :—Specimens of Japanese Chillies, entire and powdered ; of Zanzibar Chillies, entire and in powder ; and of ethereal and alcoholic tinctures of each variety ; Capsicum fruits from Natal ; and a specimen of Rectified Oil of Amber.

Messrs. Corbyn, Stacey, and Co., London :—Specimens of Natal Capsicum in powder.

Messrs. T. Christy and Co., London :—Specimen of Ayapana leaves prepared in the form of tea.

To the Herbarium.

Mr. H. N. Ridley, M.A., Director, Botanic Gardens, Singapore :—Twenty-four specimens of native medicinal plants.

Miss E. Gair, London :—Specimen of *Humulus lupulus*.

Mr. H. Elms, London :—Twenty-one specimens of medicinal and indigenous plants.

NORTH STAFFORDSHIRE AND DISTRICT CHEMISTS' ASSOCIATION.

A general meeting of this Association was held at the Copeland Arms Hotel, Stoke-on-Trent, on Thursday, December 2, Alderman J. Averill (Stafford), President, in the chair. There was a large attendance, and after some preliminary business, Mr. Weston Poole gave an address on

The Advantages of Organisation,

and especially on the advantage to all chemists and druggists of joining the Pharmaceutical Society and a local association. In dealing with the first part of the subject it was necessary, he said, to understand what the Pharmaceutical Society was founded for, what its powers were, and what it had done for chemists in the past. A brief historical account of the origin of the Society was then given, and reference made to its objects and work. Though the ideal position—the restriction of the practice of pharmacy to pharmacists—has not been attained, the educational efforts of the Society have borne fruit in other ways. For instance, when technical education came to be recognised as a neccssity in the various callings of life, the General Medical Council and the Royal College of Physicians testified that the regulation of the practice of pharmacy might safely be left in the hands of a society which had been instrumental in so much advancing the knowledge of the arts and sciences connected with pharmacy. That was one tribute to the Society's work. When a few years later the public demanded that certain restrictions should be placed on the sale of poisons, the Council succeeded in obtaining recognition of the important principle that the education of the vendor is the only safe foundation for a Poisons Bill, and in proving to the Legislature that a body of men duly educated was in existence and registered under the Pharmacy Act of 1852. Then the Pharmacy Act of 1868 was passed, and the carrying out of its provisions was entrusted to the Pharmaceutical Society. In later years the Council has also made great efforts in the direction of education. The Society was the first body to erect a laboratory for teaching practical chemistry in this country, and from that small beginning has been developed the School of Pharmacy. It has a museum, one of the most perfect in the world, and a library equally good. For the students there are numerous scholarships, medals, and certificatcs. From all this it is plain to see that from its foundation the Society has expended much time and money on the education of its members in the widest acceptation of the term, and that it is doing all in its power to advance pharmacy and the allied sciences. With regard to the principle of protection, the Council of the Society is doing all in its power to prevent unqualified men from assuming the title of chemist. Whenever definite information of infringements of the Pharmacy Act is placed before the Council steps are at once taken to stop them. The work is done quietly, and as a large number of cases are not reported, people are apt to think that the Council is not doing so much work in that direction as it should. Any chemist can send information to the Council without fear of being complicated or mentioned in subsequent proceedings, and the speaker considered it a duty incumbent upon all chemists to report at once any irregularities. The work involves much trouble and more expense than was recovered by the penalties, and there the Society has a strong claim upon all registered men, whose interests are protected, whether they are members or not. Unfortunately limited liability companies arc able to evade the spirit of the Pharmacy Act, for it was beyond doubt intended that the practising chemist should be the owner of the business, and not that what was illegal for one man to do should become legal when he associated himself with six other men, more or less ignorant. There have been two causes which helped to bring about that state of things—widows being allowed to carry on business with the help of qualified assistants, and branch shops being conducted by unqualified assistants. The exclusion of the "Widows' Clause" might have caused hardship in a few cases, but it would have been carrying out the Act in a more logical manner. The Pharmaceutical Society is quite powerless to stop limited liability companies trading, but had the Council been supported by the whole trade it would have been able to offer much greater opposition to the decision which made that trading legal. In the present state of public opinion it would be perfectly useless to hope to get legislation on the company question, but there is no doubt the Council will do its utmost when a favourable opportunity occurs. If all chemists would but join the Society, its hands would be so strengthened that the Council would be able to make the most of its opportunities. It must be remembered that all privileges and protection of titles chemists enjoy have resulted from the work of the Society, without which they would have been in a much worse plight than they now are. With regard to the Benevolent Fund, the speaker said the money is administered in a very catholic spirit, all chemists, whether members or not, being assisted if in need, even if they have never subscribed to the Fund. There is also an Orphan Fund for the education of children of deceased chemists who have left their families poorly off. That is a cause which should appeal to the best feelings of chemists, and every chemist should endeavour to contribute something to it. Although pharmacy is not in such a satisfactory state as could be wished, the fault is not with the Society, but with chemists themselves, who have ever shown great apathy towards the Society. Those chemists who grumble at the Society have the power to put matters right to a great extent, but they do not exercise it. It seems very strange that whereas all other professions and crafts have been so largely combined to protect their privileges and acquire new ones, chemists have only done so to a limited extent. Many chemists forget that legislation in pharmacy can only come through the Pharmaceutical Society, and that each chemist who remains outside the Society is a cause of weakness, and is delaying progress. They must firmly grasp the fact that combination is absolutely necessary if they wish to become a strong body and so improve their position. As to local associations, their duties should be to assist the Pharmaceutical Council in its deliberations on all those matters which pertain to chemists as a body, and discussing purely commercial matters and the particular needs and requirements of its own district. It is only through the existence of local associations that the Council can find out the real wants and requirements of chemists as a body, and so be able to approach the Legislature with practically the full support of the trade behind it. Associations can do much to supplement the educational progress of the parent Society by commencing classes where such a course is practicable. Much has been done in that direction by many Associations, and situated, as the members of that Association were, in an industrial district, with technical schools and evening classes at hand, they might with advantage follow the example set them. One of the chief aims of local associations should be to raise the practice of pharmacy. To accomplish that the aid and sympathy of every man in the business is required, and by joining the Association that would be given. The Pharmaceutical Society must never do anything which would lead the public to look upon it merely as a trade union, and to obviate that, purely trade questions are more satisfactorily settled by local associations. Such associations also bring about a feeling of mutual respect and good-fellowship among the members, and lead each one to endeavour to do all he can to promote the best interests of the calling to which he belongs.—Mr. Jenkins, in proposing a vote of thanks to Mr. Poole for his address, said it applied very closely to them, and the best way they could show their appreciation would be to get every non-member to join.—Mr. Hankinson seconded, and said that if their Association represented the full strength of the practice in the district, any recommendation from them to the Pharmaceutical Council would have great weight.—Mr. Moore, in supporting the motion, expressed the opinion that Mr. Poole's suggestion that prizes should be offered to the students in the district was an excellent one. That was a detail that should not be lost sight of by the Association. The resolution was carried unanimously.

Suggestions for Improvement.

Mr. Edmund Jones had given notice that he would move the following resolution:—

> "That this Association regrets the apparent apathy of so many chemists and druggists towards the Pharmaceutical Society, which was founded and exists for the benefit of the trade, and suggests as the best means of increasing, popularising, and consolidating the Society:—
>
> "(1) That the Society shall admit all present associates to the rights and privileges of membership, and entitle them to assume the title of pharmacist or pharmaceutical chemist, and be eligible for election as members of the Pharmaceutical Council on payment of an annual fee of 21*s*.
>
> "(2) That the present 'Minor' be divided into two parts, the first to be called the 'Intermediate,' and the second the 'Final,' the qualifying fee to be divided between these two examinations.
>
> "(3) That there shall be an interval of not less than three years between the passing of the 'Preliminary' examination or Registration as students, and the 'Intermediate,' and one year at least between the 'Intermediate' and 'Final,' entries for the final not to be admitted under the age of twenty-one years.

"(4) That apprentices or students who have passed the Preliminary or its equivalent be admitted as students of the Pharmaceutical Society on payment of an annual fee of 5s., which would entitle them to the *Pharmaceutical Journal*, the receipt of which would probably tend to create greater interest in the Society and pharmacy generally.

"(5) That the present terms 'Minor' or 'Major' be substituted by the terms 'Intermediate' and 'Final' respectively. That 'Honours' examination be established, carrying with it 'Fellow of the Pharmaceutical Society,' and that all present holders of the Major Diploma be admitted as 'Fellows.'"

—Mr. Jones, in moving the first clause, with the permission of the meeting, substituted the words "chemists and druggists" for the word "associates." He expressed himself as being very strongly in favour of the clause, because he believed that everyone qualified to practise pharmacy had the necessary qualifications for membership of the Pharmaceutical Society.—The Chairman seconded the adoption of the clause.—Mr. Cornwell did not consider that the question of titles should be interfered with in any way. It would not be fair that men who had gone to the trouble of passing the Major should have their honours nullified by men who had not done so being allowed to assume the title pharmaceutical chemist. He moved, as an amendment, that the words "pharmacist" and "pharmaceutical chemist" be left out of the clause.—Mr. Weston Poole, in seconding the amendment, said that when he first saw the clause he was totally opposed to it. He did not believe that for the sake of getting a few new members they should make a present of the title of pharmaceutical chemist—a title which Major men had to work hard to gain—to all manner of men, with the idea that out of gratitude they would join and remain members of the Society. He was sure all the chemists and druggists there would be opposed to anything which would bring an injustice to the present holders of the title.—Mr. Moore supported the amendment, speaking as a Minor man. The title should remain with the Major men and the Major men only.—Mr. Wain also, as a Minor man, supported the amendment.—Mr. Jones, in reply, said he did not regret having moved the proposition as he had done, because it had produced a spirited discussion, and he believed the remarks which had fallen from the Major men would have a beneficial effect. What he desired most, because he believed it would be the means of increasing the membership of and interest in the Society, was the admittance of those who were qualified. He therefore desired to move the proposed resolution with the amendment as suggested by Mr. Cornwell, which then read—

"That the Society admit all chemists and druggists to the rights and privileges of membership, and so make them eligible for election as members of the Pharmaceutical Council on payment of an annual fee of two guineas."

—The Chairman seconded the amended proposition which, in its amended form, was carried unanimously.—Mr. Jones, in moving the second clause, said his object was to give young men who were not too plentifully blessed with this world's good things an opportunity of passing some of their examinations while remaining in their situations. They would also be able to divide the subjects, and by devoting more time to them do away with cramming. The idea was very favourably received throughout the country. Of course, the final arrangements and details would be left in the hands of the Pharmaceutical Council.—Mr. Poole: Suppose a man passes the first half, the "intermediate," will he be able to act as a cheap qualified assistant?—Mr. Jones: Certainly not; no qualification is claimed.—Mr. Poole: Do you think there is much to be gained unless there is a compulsory curriculum?—Mr. Jones: Most decidedly.—Mr. Poole: I think it is a little bit unnecessary.—Mr. Cornwell did not see anything so very difficult about the Minor that a man could not pass it at one time. Dividing would only make matters complicated.—After some further discussion, the Chairman, who seconded the motion, said the Medical Council had split up their examinations into several parts, and the scheme produced much better qualified men than the other system. Under the proposed system men would pass more economically and, in the end, more satisfactory. The resolution was carried with four dissentients.—Mr. Jones then formally moved the third clause.—Mr. Poole said it appeared to him to be a matter of the highest importance that youths before entering into apprenticeship should have passed their Preliminary examination or its equivalent. He would like the clause to be amended to give expression to that opinion.—Mr. Jones considered that the point was one that should be left alone for the present.—The Chairman: I think it is a very important point indeed.—Mr. Poole: It is the foundation of good education, and it would do away with much of the cheap drug store business.—Messrs. Cornwell, Hankinson, Moore, and Allison supported Mr. Poole, and the resolution was passed as amended, it reading:—

"That youths and boys pass the Preliminary examination or its equivalent before commencing apprenticeship. That there shall be an interval of not less than three years between the passing of the Preliminary examination or registration of students and the Intermediate, and one year at least between the "Intermediate" and the "Final," entries for the "Final" not to be admitted under the age of twenty-one years."

—Mr. Jones, owing to the late hour, withdrew the remaining clauses.—Mr. F. Adams, Vice-President, who had taken the chair, owing to the President having left for his train, moved—

"That this Association offers its hearty congratulations to Mr Walter Hills, President of the Pharmaceutical Society, upon the distinguished honour conferred upon him by being made the recipient of a Jubilee Medal at the hands of Her Majesty the Queen."

—Mr. Jones said he had exceptional pleasure in seconding the motion. He had had the privilege of serving under Mr. Hills as an assistant, and he consequently knew something of the qualities which had won for him the proud position of President of the Pharmaceutical Society—a position he filled with such marked ability.—The motion was heartily carried.

New Pharmacy Bill Wanted.

Mr. Jones moved on behalf of Mr. Averill—

"That the Pharmaceutical Society of Great Britain be requested to formulate a Pharmacy Bill for presentation to Parliament, on such terms as may appear to them to meet the wishes of the majority of the chemists and druggists, and submit the same to a conference of delegates from each association or district for their consideration and approval, so that the Bill, when presented to Parliament, may have the united support of the trade in general."

—Mr. W. Poole seconded, and the resolution was adopted.—Votes of thanks to the Chairman closed the meeting.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

The ordinary monthly meeting of this Association was held in the Hotel Métropole on Wednesday evening, December 1, at 8 o'clock. The President of the Association, Mr. T. Maltby Clague, was in the chair, and there was a good attendance of members. The usual routine business having been transacted, and eight new members elected, the Chairman introduced Mr. F. C. Long, pharmaceutical chemist, who was to open a discussion on

The Proposed Amendments to the Pharmacy Acts.

Mr. Long said: Before going into the actual questions which presented themselves for discussion in the subject before us to-night, I think it will be well if we refresh our memories with a few facts regarding the origin of the Pharmaceutical Society, and its relation to pharmacy. I propose, then, to give you a short review of its source, with a few observations upon the work it has done in the past. We shall then be in a better position to consider the merits and otherwise of its administration, and discuss with greater facility the advantages likely to accrue from such alterations of its bye-laws as we shall deem advisable to-night. The suggested alterations I shall submit to you in the form of resolutions later on in the evening. The Pharmaceutical Society was founded in 1841 for the purpose of advancing chemistry and pharmacy, and promoting a uniform system of education on the part of those who should practise the same, and also for the protection of those who carry on the business of chemists and druggists. A Royal Charter of incorporation was granted in 1843, after which date the passing of an examination was required prior to the admission of any person to membership. In 1852 the passing of the first Pharmacy Act imposed upon the Society the duty of regulating the examination under that Act, and the right of granting licences to carry on business of pharmacist. The Government, at the instance of the General Medical Council and of the Royal College of Physicians, recognised the fact that the regulation of the practice of pharmacy might safely be left in the hands of a society through whose instrumentality the knowledge of arts and sciences connected with pharmacy had been advanced so much throughout the kingdom. Henceforward it became illegal for anyone to style himself chemist and druggist or pharmaceutical chemist, or pose in any way as a member of the Pharmaceutical Society, without first passing the examination prescribed by the Act. Anyone could keep open shop and sell as many poisons as he liked at his own risk, provided he did not infringe upon the rights and privileges of members of the Society. The Act of 1868, however, changed all this. It amended and confirmed the Act of 1852, and in the interests of the public safety, added the well-known regulations relating to the sale of poisons. It made the Minor examination the qualifying one required for the

carrying on of the business of pharmacy, and provided for a register being kept of persons practising the same. Many attempts, more or less successful, have been made from time to time to improve the status of the pharmacist by legislation, and several extremely useful bye-laws have been added, but no measure of importance has been passed since 1868. The membership of the Society has from the commencement consisted of three grades, admitted then as now by examination, viz., members, associates, and apprentices or students. The associates were assistants to pharmacists who were members of the Society. These assistants were required to pass the Minor examination, and had it not been for the unfortunate error in the Act of 1868, of making the Minor instead of the Major the qualifying examination, there would have been no occasion to discuss this evening the advisability of admitting chemists and druggists to the rights and privileges of full members of the Pharmaceutical Society. We have seen, then, that the Society was founded upon excellent principles, that its chief objects were to promote the education of members of the craft to advance chemistry and pharmacy, and later, to administer the pharmacy laws in the interests of the public safety. I think that we shall all agree that these objects and duties have been ever kept in view and acted up to by the Society. Serious mistakes have, of course, been made, and the unwarrantable slowness of its action on some occasions has excited much hostile criticism. No one, however, can for a moment doubt that the Society has been chiefly responsible for the great advance pharmacy has made during the last fifty years, nor that but for the fact of its having been deprived of a large section of the trade through the legalisation of the Minor qualification for business purposes, it would have done much more. The question we have now to consider is—What is the best way to rectify the errors of the past to secure for the future a consolidated and representative Society, and to promote among the members of the trade that unity and singleness of purpose which can alone give us the power to take strong and decisive action in questions affecting our calling? When we consider the small advance which education had made at that time, that the only inducements to take the higher qualification were the membership of a society whose aims and objects were only partially recognised by the rank and file, and exemption from jury service, it is not surprising that by far the greater number of those entering pharmacy should content themselves with the Minor qualification, and, on the principle that a bird in the hand is worth two in the bush, pocket their guineas and prefer to wait until some tangible proof should be forthcoming that membership would bring with it some direct personal advantage. Time has done much to remedy this state of affairs, and the jealousy existing between the two sections of the trade has given place to a much better feeling on both sides. It is a generally recognised fact that the public safety and the interests of pharmacy would be much better promoted if the Society were backed by the unanimous voice of the trade. I think that the time has arrived when a good and practical scheme for strengthening and consolidating the Society would be hailed with good will by all concerned. The first step in this direction is obvious. It was the original intention of the founders of the Society that every fully qualified person in the trade should be eligible for membership, and, therefore, the idea is no new departure. The suggestion has been brought forward from time to time since 1883—most recently in the form of a draft Bill in 1893, and although received each time with increasing favour, it has always been dropped through lack of support—It is with the object then of inducing others to discuss the question, and by an expression of opinion to stimulate the Council to take further action, that the subject has been brought before you to-night. I am quite aware of the danger involved in placing power in the hands of men who from lack of a due sense of their responsibility would be likely to abuse it, and fully recognise the fact of the existence in the rank and file of pharmacy, a class (happily a small one) to invest whom with the full rights and privileges of membership of the Society might endanger its best interests. I am convinced, however, that this class is rapidly diminishing. Increased education has done much to convince the majority that the best interests of the trade are embodied in the highest interests of the profession, and I think that the interests of the Society itself would be sufficiently safeguarded by deferring this particular alteration of the bye-laws for a term of years to be decided upon. That this step would bring the rank and file crowding with membership is not at all certain, but there is no doubt that until it is at least possible for every fully qualified person in the trade to become a member, the Society will never be able to do what it might in the interests either of the trade or of the public by legislation or otherwise. In order to keep an honorary distinction between the ordinary members and those who pass the Major examination, and to hold out some inducement for entering upon the higher course of study, it has been suggested by some that the Major qualification should confer the title of Fellow of the Society or some such other distinctive title. With regard to the proposed promotion of students to the rank of Associates of the Society, I do not see that this is at all necessary. It is even open to grave objection. They are students, and as there is no intermediate examination, let them remain as such until they pass the Minor, when they become cligible to full membership. There is one more suggestion which I should like to add to those which I have already given—it refers to apprentices or rather intending apprentices, as to the advisability of which I think there cannot be two opinions. I will not discuss it. I consider that the examination in lieu of the Preliminary should be passed before entrance upon apprenticeship. In conclusion, I may say that in my opinion the Society as it is at present constituted fails to be entirely satisfactory on account of its non-representative character. Many reforms advantageous to pharmacy it is unable to negotiate on this account, and I hope that any resolutions which you may pass to-night will be instrumental in bringing about such an alteration of its bye-laws that all qualified pharmacists will in the new future give it their hearty co-operation and full support.—In the discussion, which was well sustained and animated, Mr. John Gibson, Jun. (Hexham), said he considered that the Minor man had an equal right with the Major man to style himself a pharmacist and his shop a pharmacy, seeing that the higher qualification did not include any further examination in pharmacy or dispensing.—Mr. F. R. Dudderidge was inclined to oppose the admission of Minor men to full membership, but would like to see them have a greater voice in the management of the Society, and to have exemption from jury service. He considered that the Preliminary should be passed before entry upon apprenticeship. He wished it to be distinctly understood that he cast no slur upon those who, at present, had the lower title only, as at the present day a Minor man was probably equal to many of the Major men of some years' standing. —Mr. George Foggan (Bedlington) considered that all registered chemists should be admitted to membership, as it would tend to consolidate the Society.—The President said it was hopeless to expect to get the Juries Act altered, and that being so, the only means of getting exemption from jury service for Minor men was by giving them the title of pharmaceutical chemists, who alone under the Act were, if in actual practice, exempt. The ground covered by the present-day Minor examination he considered was sufficiently wide to warrant this.—Mr. Kerse said that if any change on suggested lines was made, it would have to include those who were registered previous to December 31, 1868, and also those who had since then passed the Modified examination.—Mr. Long, having replied to several points raised during the discussion, then submitted the following resolution :—

> "That the examination in lieu of the Preliminary, approved by the Council, be passed before the commencement of apprenticeship."

—Mr. Ellis (South Shields) thought this very necessary. By taking young men as apprentices before they had passed the Preliminary examination, chemists were simply training men, many of whom in all probability would drift into business on their own account as unqualified traders.—Mr. Graham found that it was almost impossible to get boys able to pass the Preliminary when they left school. A sa rule they had no Latin. He thought that so long as they took the examination three years previous to entry for the Minor it would be sufficient. He moved that the proposed resolution be altered, and was supported by Mr. Gibson. —Mr. Buckley (North Shields) supported the original motion.—Mr. Merson thought that in the interests of the boys themselves, passing the Preliminary before entering upon their apprenticeship should be compulsory. At the present time lads required all their time to be devoted to the technical and scientific side of their business in view of the Minor requirements, and if the Preliminary was still before them it interfered very much with their other work.—He was of opinion that when the new Bye-laws came into force it would be absolutely necessary for youths who intended to enter the drug

trade to go through a systematic course of study at an organised school and that fact alone would render it advisable to pass previous to apprenticeship.—The resolution was carried with only two dissentients.—The next resolution, submitted by Mr. Long, was also carried unanimously :—

"That it is inadvisable to admit students of the Society to the title of associates."

The third resolution, also carried unanimously, was—

"That registered pharmaceutical students, on passing the Minor or qualifying examination, be entitled to assume the title of pharmaceutical chemist and be eligible for election as members of the Society."

The fourth resolution, carried unanimously like the rest, was :—

"That of the titles suggested as a distinction for members of the Society who pass the Major examination that of Fellow of the Pharmaceutical Society best meets the requirements of the case."

—Mr. Dudderidge moved that Resolution I., in the event of becoming law, should be suspended for three years, to allow those already in the trade exemption. This was carried. Mr. Long was cordially thanked for opening the discussion, and Mr. Kerse afterwards brought forward the subject of explosives' regulations. He referred to the difficulty wholesale firms had in executing orders for small quantities of picric acid when wanted for medical purposes. He suggested that the matter should be discussed at a future meeting, and a resolution forwarded to the Pharmaceutical Society with a view to getting some alteration on behalf of *bonâ-fide* dealers in drugs.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS.

A meeting of this Society was held on Tuesday, December 7, to allow the members an expression of opinion on the new

Draft Pharmacy Acts Amendment Bill.

—Mr. John Johnston, President, occupied the chair.—Mr. Weir initiated the discussion, and thought the admission of associates to the membership of the Society a step in the right direction.—Mr. Johnston said it was desirable to have a non-contentious Bill, seeing there were so many associates not connected with the Pharmaceutical Society, and added that at the proper time this Society should urge the M.P.'s for the City and County to attend and vote for the Bill.—Mr. J. Cruickshank submitted the following resolution :—

"That the Aberdeen and North of Scotland Society of Chemists and Druggists supports the action of the Pharmaceutical Council in drafting the new Pharmacy Acts Amendment Act, and trusts it may open up the way to further legislation."

—Mr. Wm. Reid seconded, and it was unanimously adopted.—Mr. Weir proposed, and Mr. Craig seconded, the following motion :—

"That the Council further consider the question of territorial representation."

Mr. Reid moved a direct negative.—Mr. Urquhart seconded, and the amendment was carried by a large majority. Most of the members present, although in favour of territorial representation, along with other reforms, thought it would be better not to have the Bill encumbered with these meantime, but hoped, if the draft Bill became law, there would be a large augmentation of members of the Society to strengthen the hands of the Council, who would, no doubt, be the first to initiate fresh legislation.

SOUTHAMPTON AND DISTRICT CHEMISTS' ASSOCIATION.

The first meeting of this Association was held on Thursday, December 2, when the rules of the Plymouth Association, with a few omissions and alterations, were adopted after a long discussion. The first ordinary meeting is to be called in January. The following gentlemen have been elected as officers for the first twelve months :—President, Mr. Harry Wilson (Randall and Son); Vice-President, Mr. Harry Johns; Hon. Treasurer, Mr. W. Bates; Hon. Sec., Mr. G. H. Bishop; Committee, Messrs. Hodges, Hughes, Johnson, Pell, and Walter.

THE P.A.T.A. IN DUBLIN.

On Friday, December 3, a meeting of the chemists of Dublin and the surrounding districts was held in the Hibernian Hotel, Dawson Street, Dublin, at 8 o'clock p.m., for the purpose of hearing a statement from Mr. W. S. Glyn-Jones, Secretary of the P.A.T.A., and also for the purpose of considering the advisability of forming a local chemists' association for the district. There were present: Messrs. R. J. Downes (President of the Pharmaceutical Society of Ireland), H. F. Conyngham, T. J. Robinson, Dr. Walsh, Wm. McCarthy, W. F. Wells, W. H. Boyd, W. H. Smith, George Grindley, James Campbell, James A. Walsh, James Michie, J. J. Bernard, J. Turner, John Burnet, G. M. Ryan, J. B. Jackson, M.D., T. Batt, L. Kingsmill, and J. E. McWalter. The chair was taken by Mr. R. J. Downes.—Mr. Glyn-Jones, on being introduced by the Chairman, expressed his pleasure at meeting his fellow-chemists in Dublin. He then spoke at length on the widespread evil of cutting, and especially "excessive cutting," and asked, What is the remedy for this? He went on to explain the objects of the P.A.T.A., and to show that the only way of dealing with the matter is to get the proprietors themselves to fix an irreducible minimum price, below which the articles should not be sold by any trader. There were about 150 articles in the Association list, of which about 30 were of absolute importance; and the Association system meant that no man dare sell one of these articles below the fixed price without having the whole lot withheld from him. About 190 wholesale houses had agreed to do this.—Mr. J. J. Bernard moved—

"That this meeting of pharmaceutical chemists and druggists in Dublin expresses its cordial approval of the aims and objects of the P.A.T.A., and respectfully urges all proprietors to co-operate with the movement."

—Mr. Conyngham seconded the motion, which was supported by Messrs. Wells, Conyngham, and Dr. Walsh.—Mr. T. J. Robinson was of opinion that the salvation of the chemists of Dublin depended on co-operation amongst themselves to maintain prices. He had always held that it was a weak point of the Association that it did not go in for the "face" value of an article or patent medicine. Uniformity of price was imperative, but he laid no stress on uniformity of profit. The profit they wanted was the profit the manufacturer would give them.—Mr. Glyn-Jones, in reply, said that any attempt on the part of the chemists of any place in the United Kingdom to work together and co-operate locally with regard to prices was doomed to failure. The only result of such action would be a great deal of ill-feeling amongst themselves. Outsiders would tell the public that they were in a better position to serve them, and it would always be in the power of any dissentient minority, no matter how small, to smash up an arrangement. As to "face" value, prominent members of the Association were opposed to it on the ground that it was not fair to charge cash customers the same prices as people who ran accounts for two or three years. —The motion, moved by Mr. Bernard, was then put and carried unanimously.—Mr. Glyn-Jones then asked the meeting to form a local organisation to deal not only with P.A.T.A. matters but with all trade matters.—On the motion of Mr. Grindley, seconded by Mr. Conyngham, the following resolution was unanimously passed :—

"That all present form a Committee, with Dr. Walsh as convener, to take the necessary steps to form a local organisation."

Thanks were then voted to Mr. Glyn-Jones and to the Chairman, and the meeting separated.

THE P.A.T.A. IN BELFAST.

On Friday, December 3, Sir James Haslett, M.P., presided over a large and representative gathering of the drug trade of Belfast, called under the auspices of the Ulster Pharmaceutical Association and the Northern Branch of the Chemists' and Druggists' Society of Ireland, to consider the P.A.T.A. scheme. The Chairman said the question of the prices of proprietaries was increasingly important. Advertising was responsible for the demand, and between the proprietor and the consumer the distributor was being badly sandwiched, to the advantage of neither. The profits accruing to wholesalers as well as retailers had worn exceedingly threadbare. The leverage necessary for improving those profits must be exercised by proprietors, but manufacturers must be influenced by retailers if they were to exercise that leverage. He called upon Mr. Glyn-Jones to address the meeting.—Mr. Glyn-Jones having spoken at some length on the history of the P.A.T.A., and pointed out that the Association was constantly increasing in numbers and influence, the Chairman moved—

"That this meeting of the pharmaceutical chemists and chemists and druggists of Belfast expresses its cordial approval of the aims and objects of the P.A.T.A., and respectfully urges all proprietors to co-operate with the Association."

—Mr. Jamison seconded this, and after other speakers had supported or opposed the proposition, it was carried with one dissentient (Mr. Hogg).—It was decided that a special committee

should be formed consisting of those who became members of the P.A.T.A., and Messrs. Guiler and Rankin were appointed by the meeting to act as joint secretaries for that committee.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday, the 1st inst., the monthly meeting of the Council was held at 67, Lower Mount Street, Dublin, at 3 o'clock, the PRESIDENT, Mr. R. J. Downes, in the chair, and the other members of Council present being the Vice-President, Mr. Beggs, and Messrs. Wells, Grindley, Porter, Bernard, and Dr. Walsh. A letter was read from Sir George Duffey thanking the Council for their vote of condolence on the occasion of the death of his son. A letter from Mr. Sparkhall Brown and Dr. B. C. Tweedy, the Society's Examiners for the Preliminary examination, submitted that having regard to the recent addition of chemistry as a compulsory subject, the examination had become too long for a single day, and in number and variety of subjects was getting beyond a "preliminary" character, and that in their opinion Euclid might be made an optional subject.—Mr. WELLS said that if they left out Euclid it would look as if they did not know their own minds. Every schoolboy should know something of Euclid.—Mr. BERNARD: Are there any marks for handwriting?—Mr. WELLS: It is taken into consideration.—The VICE-PRESIDENT: Not one man in fifty writes a legible hand.—The letter was referred to the School Committee.—Other business having been disposed of, the Council adjourned.

POOR LAW DISPENSERS' ASSOCIATION.

A meeting of the above Association was held on Monday evening last at the Sessions House Hotel, Clerkenwell Road, E.C. Mr. R. E. JONES (Poplar) presided, and there was a good muster of Poor Law Dispensers present. The chairman, in the course of his opening remarks, referred to the success which had attended the association since its re-constitution a few weeks ago. The temporary executive, he said, had had several meetings, and had revised the rules and bye-laws, and brought them more up to date. These would be submitted to them by the Hon. Secretary that evening for their adoption or amendment if thought necessary.—Mr. MONTAGU G. SMITH (Lewisham), Hon. Secretary, then read the revised Bye-Laws, and after a discussion of a most friendly but animated character, they were put to the vote and declared to be carried unanimously. The next business was the election of an executive of nine members for the ensuing year. The result of the voting upon this showed that a very representative committee had been elected, being composed in nearly equal proportions, of dispensers employed in the indoor, outdoor, and infirmary service. The Hon. Secretary then read the correspondence, from which it was gathered that there was a general desire on the part of the writers to become members of the Association, and wishing to be informed of the amount of the annual subscription. This the meeting decided to fix at the sum of 2*s.* 6*d.* per annum, payable on January 1 in each year, the Hon. Secretary being instructed to reply to this effect. Business of a routine nature having been disposed of, the CHAIRMAN appealed to the meeting to do all in their power to make the Association a real live one. He referred with satisfaction to the fact that already more than forty Poor-law dispensers had joined it, and he trusted that it was destined to secure the support of every Poor-law dispenser. A number of those present then tendered their subscription for the ensuing year, and the meeting, which throughout was most cordial and enthusiastic, closed with the customary vote of thanks to the Chairman.

PUBLIC DISPENSERS' ASSOCIATION.

A meeting of the above Association was held on Tuesday evening, the 7th inst., at Trinity Church Schools, Gray's Inn Road. The minutes of the previous meeting having been read, Mr. WELFORD was voted to the chair. The CHAIRMAN said he regretted very much that their meeting took place under such inauspicious conditions; doubtless many who would have been present that evening had been deterred from coming owing to the very boisterous weather. He was glad to say, however, that their Secretary had reported that he had received a considerable number of promises of support from all parts of the country; in fact, he had not the slightest doubt that when their Association became more fully known and its objects better understood, that they would have a large accession of members, and that they would before long be a power for good, and would make their influence felt. Continuing, the Chairman pointed out that for too long had dispensers been isolated and their just rights ignored, but they intended now to demonstrate that they were a compact body of skilled workers, who had spent long time and no inconsiderable amount of money in qualifying for their present arduous and responsible posts, and all that they asked for that the position they had attained should be frankly acknowledged and fairly remunerated. In conclusion, the Chairman said that as the meeting had to consider the rules and constitution of the Association, he would not detain them longer, but would call upon the Secretary to read the rules.—The SECRETARY then put the rules to the meeting, and they were, with slight additions, adopted by the meeting *nem. con.* The most important addition was one adopted on the motion of the Secretary, that all members residing at a greater distance than twelve miles from Charing Cross should have the right of voting by post on any motion to rescind any rule or alter in any way the constitution of the Association.—A vote of thanks to the Chairman brought the proceedings to a close.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

A meeting was held at the Prince of Wales Hotel on Friday, December 3, Mr. Alderman DECK in the chair. In the course of his Presidential address he stated that, among other advantages of the Association, it was the means to bring chemists into closer social contact and goodfellowship that would otherwise be unknown to chemists. It was, after some discussion, decided to postpone the debate on the proposition down in Mr. C. S. Addison's name owing to the too recent publication of the Draft Pharmacy Bill, which has considerable bearing on the subject in question.

LETTERS TO THE EDITOR.

CHEMISTS' JOURNALS AND MEDICAL MEN.

Sir,—I am very pleased to see "Sinbad's" protest against the lowering tendency of some chemists' trade journals. It has often surprised me that chemists do not appreciate the great mischief one in particular of those journals is doing their profession. Week after week it panders to the lowest trade instincts, derides all professional etiquette, medical or pharmaceutical, and belittles every aspiration for professional advancement; but what to my knowledge most directly injures the chemist is its abuse and jealousy of the sister profession. I doubt whether a week ever passes without some more or less offensive remark against the medical profession appearing in its pages; indeed, its chief function almost appears to be the setting of chemist against doctor. Anyone would imagine on reading its pages that the chemist and doctor were natural enemies—born foes—while nothing can be further from the truth. As a medical man I can most positively assert that the medical profession as a whole have the greatest respect and good feeling for the sister profession, and all know and appreciate their indebtedness to scientific pharmacy. Indeed, a large number have been themselves pharmacists or are the sons of pharmacists, and I am sure every respectable druggist can number medical men amongst his friends. I am aware that the publisher of this particular journal says it is only supplied to druggists, and doubtless the editor of it imagines his jealous diatribes against the medical profession are only seen by the druggist, but I can assure him that this is a great mistake. I know several medical men who occasionally borrow it from their pharmaceutical friends, and numbers of others pick it up and glance at its pages in their friend's pharmacies. Some years ago I was present at a medical meeting where some of the more offensive paragraphs were read, and every medical man present said he should take care to send all his patients to the stores when it was not convenient to send them to his own chemist. When I have shown some of these paragraphs to my friends they have all disclaimed any sympathy with the remarks on the part of any chemist, but the fact remains that the journal referred to is evidently supported by some part of the trade, and some chemists are therefore encouraging and identifying themselves with this envy, hatred, and malice against their medical friends. Surely they must know that nothing could be more disastrous to the higher branches of the profession than the alienation of the goodwill of the medical profession. Doubtless there are a few of the type which the trade paper appears to desire all chemists to become reduced to—the quack and huckster, whom this would not at all disturb; indeed, letters that have appeared in its columns from such boasting of their independence of the medical profession show that this is evidently the case. But even from

a mere trade standpoint it is a mistake. If only one or two medical men in a hundred are induced by their indignation at these articles to send all their patients to the stores, what a loss that entails to the drug trade. Apart from this money loss I am quite satisfied that the great majority of the chemists are just as anxious to continue on cordial terms as are the doctors on their part. That the trade has continued to support this organ can only be explained as "Sinbad" says was the case with him, because it contained useful trade matter that could not be found in the more professional journals, but now this inducement exists no longer. The more professional articles in the *Pharmaceutical Journal* are infinitely superior, and as far as I am able to judge those relating to business matters are quite equal to what appear in the other journal. If, instead of supporting a journal that is doing them incalculable harm, pharmacists would concentrate all their support on their own publication, it would necessarily become still more interesting and valuable by being thus enabled to give more matter, and by the advertisements being all condensed in one journal.

Newcastle, December 7, 1897. L. R. C. P. (119/5).

The New Pharmacy Bill.

Sir,—I read with much interest Mr. Hocking's very sensible letter in your last week's issue of the Journal, one suggestion by him being well worthy of attention. I refer to his suggestion that a circular should be sent to every registered chemist outside the Society (every non-Society chemist) asking whether he would be prepared to join the Society in the event of certain changes taking place. I think that should really be done at once. The question is, whether it is the associates or non-associates who want to become members. If it is only the associates, what difference will it make? The number of chemists connected with the Society will not be increased. If, on the other hand, the Society has proof that non-associates would join the Society if certain changes were made, then by all means let them have what they want. Let them be called Masters of Pharmacy, Doctors of Pharmacy, members of the Pharmaceutical Society, or pharmaceutical chemists if they like, so long as proof can be had that they will join then. That is the main object, is it not? If possible, let reasonable means be found to bring about that happy consummation, but by all means let it be done.

Maybole, December 6, 1897. Robert Tocher.

Sir,—I for one am strongly opposed to Clause 3 of the Pharmacy Act Amendment Bill, 1898, and trust it will not pass unless part is altered, to please all classes and not one section only. It seems to me most unjust to Major men, and will, I should imagine, turn many away from the Society when "associates" are made "members" and nothing else is offered to them. It will also, in my opinion, lower the number of those entering for the higher examination, as there will be little to entice them. It would appear only fair to pharmaceutical chemists if the title of "Fellow" was conferred on them, even though purely honorary. If Minor men wish to be exempt from jury service they know what to do, viz., to pass the Major examination and not want the privileges without working for them. What is the use of spending time and money for the higher examination if Minor and Major men are to be treated alike in that respect, as the benefits arising from that are few enough, and I do not consider the difference between "pharmaceutical chemist" and "chemist and druggist" is altogether sufficient for what has to be done to become the former. I trust this will awaken some interest in other pharmacists.

28, Northgate, Halifax. W. Haigh, Ph.C., M.P.S.

Sir,—May I be permitted to express the views of one who for many years took great interest in the practice of, and I may also add in the practical teaching of pharmacy? It appears to me, sir, that as a radical change in the constitution of the Pharmaceutical Society is contemplated, as also an addition, or alteration of title in the pharmaceutic body, a more favourable opportunity could not possibly occur for making such change in a logical manner, and to meet the requirements of the present conditions of pharmacy. The changes I would recommend are as follow:—(1) The Pharmaceutical Society to be affiliated with some university already established, or about to be established, which should have the power of granting degrees in pharmacy. (2) Such degrees to be three in number, viz., graduate, pharmacist, and Doctor of Pharmacy—to be granted after having passed the respective examinations. (3) The title of graduate to be acquired after passing the first examination—or educational test—which must take place before entering upon the study of pharmacy. (4) The second, or qualifying examination for the degree of pharmacist, to be passed after having attained the age of twenty-one. (5) The title of pharmacist to have the same signification and privileges as that of pharmaceutical chemist. (6) The third and final examination (optional) for the higher degree of Doctor of Pharmacy cannot be attempted before the age of twenty-two. (7) All pharmacists and Doctors of Pharmacy to become members of the College (Royal?), under an obligation to pay such annual fee as may be deemed adequate by the Pharmaceutical Council to meet the necessary expenses. (8) Graduates to be exempt from such payment. (9) I would abolish all such delightfully vague terms as chemist and druggist, cash chemist, medical hall, drug stores, and Drug Supply Co., Ltd. (10) The word pharmacy to be substituted for the style and title of the above confusion of terms. (11) It necessarily follows that there would arise pharmacies of the first and second class (as in France), which the public would have no more difficulty in discriminating and recognising than in the case of M.D. Lon., or M.R.C.S. In conclusion, I am of opinion that a multiplicity of titles, concerning which the public neither know nor care anything, is a thing to be carefully avoided. I believe there would not be any serious opposition to the reforms herein shadowed forth—since the higher attainments of the present pharmaceutical chemists should still enable them to maintain their position in the struggle for existence.

Woolsthorpe, December 7, 1897. George Welborn.

Note on Tinctura Cannabis Indicæ.

Sir,—In the preparation of this tincture, 1 oz. of resinous extract is required to be dissolved in 1 pint of sp. vini rect. It will invariably be found that the whole of the extract does not dissolve, and yet no mention is made in the directions about filtering the final product. In an experiment which I have lately conducted, making $\frac{1}{10}$ of the B.P. quantity, it was found that a residue was left behind. This was collected, washed with a further quantity of spirit to remove that which was soluble therein, then dried on the water bath and weighed. The amount, which was 0·225 gramme, corresponded to a deficiency of 8 per cent. on the extract employed, and is sufficient to call for notice. It would seem, therefore, that this tincture is liable to considerable variation owing to the amount of insoluble matter present, and also that, to make a preparation as clear as possible, filtration must be resorted to. It may be mentioned that the residue above referred to dissolved almost entirely in chloroform with the production of a beautiful, clear, deep green colour, but whether it possesses any physiological action was not determined. One is tempted to ask whether sp. chloroformi would not, under the circumstances, be a better solvent, and result in a more uniform product.

Stourbridge, December 6, 1897. Joseph Ernest Jones.

The Elevation and Protection of the Qualified Chemist.

Sir,—Are the new Bye-laws likely to elevate and protect the qualified chemist? For my part I fail to see wherein we are to obtain any benefit from them. Under existing conditions we have many unqualified men, either carrying on business for themselves or managing for others. Will increased fees and more difficult examinations do anything to terminate such a state of affairs? The Society ought at once to awaken to the fact that herein lies the main evil, and the longer such exists the lower will our calling fall in the eyes of the public, and the more difficult it will be to grapple with success against the evil. If the Society has not the funds to carry on at once a vigorous attack and thoroughly root out this evil, let the Council appeal to the members and associates for help, as I am sure, if asked for in such a cause, it would be freely given. The Council ought also to do away with our present system of local secretaries, as it is an entire failure. The duties of local secretaries may be many, but their actions are *nil*.

December 1, 1897. Justice (118/25).

[Several Letters and Many Answers are unavoidably held over on account of pressure on our space.]

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Betts, Bishop, Branson, Browne, Bührer, Butler, Carter, Chambers, Cracknell, Crook, Davidson, Duncan, Fisher, Flockhart, Gibbons, Haigh, Hogg, Hooper, Jackson, Jones, Lloyd, Macdonald, McMillan, Matthews, Miller, Morkill, Oram, Osborne, Parker, Purvis, Robertson, Rowland, Salter, Short, Simpson, Standage, Tayler, Tocher, Walker, Weary, Welborn, Welford Wills, Wright.

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TRUE AND FALSE CACTUS GRANDIFLORUS.*

BY GORDON SHARP, M.D.

Explanatory.

In the end of 1891 my attention was directed to the night-blooming Cereus, a so-called heart tonic, the correct botanical name of which is *Cereus grandiflorus*, Miller, although it is commonly known as *Cactus grandiflorus*, Linné. I made several bedside observations with a tincture which had a greenish colour. Sometimes I thought I obtained good results; at other times I had difficulty in deciding whether the preparation had any virtue at all. This, however, is not unusual in treating of disease, especially heart disorders. But between these conflicting opinions I resolved to place the drug on further trial. In time the supply of tincture ran down and another was ordered, but when it came to hand I was astonished to find that, although like the former, it had a pleasant orris-like odour, the colour was different, being of a yellowish-brown hue. The pharmacist from whom it was obtained made inquiry, and was told it was quite right and was the genuine drug, and no further questions were asked. My bedside observations were continued, and sometimes I had a greenish and sometimes a brownish tincture or liquid extract, but oftener the latter. After several further trials I decided to make my own tincture, and with this purpose in view I got a pharmacist to procure me the dried flowering tops, and this he did from a Manchester house. Mr. J. H. Hoseason at this time joined me in investigating the chemistry of the drug, and either jointly or alone we had an agent to obtain supplies from Manchester, Leeds, London, and Edinburgh houses. In one way or other we employed many pounds weight of the drug, and each parcel was certified to be the true Cactus. For reasons which will be obvious later on, I have made particular mention of these facts. We had previously searched the literature of the subject from every possible source, but could find no mention of any analysis of the drug. We resolved to start at the beginning, and I think I may be pardoned when I say we expended endless labour in our task. Our results have been partially recorded in the *Practitioner* of September, 1894, and in the *Pharmaceutical Journal* of November 24, 1894. But the chemistry is the chemistry of *Opuntia decumana*, Haworth, not of *Cereus* (*Cactus*) *grandiflorus*, Miller. We owe the unearthing of this blunder to the learned Curator of the Pharmaceutical Society's Museum in London, Mr. E. M. Holmes. Mr. Holmes investigated this subject last summer and communicated with me, and I sent him a specimen of the drug we had worked with, and at once the fallacy was discovered. He has written an article on the subject of Cereus and Opuntia in the *Pharmaceutical Journal* of August 21, 1897. The pharmacology of my article in the number of the *Practitioner* already quoted is really the pharmacology of Opuntia, not of Cereus.

The question of therapeutical action does not concern a company of pharmacists, but it is almost necessary for me to refer shortly to this aspect of the subject. The therapeutic observations were made from specimens of both Cereus and Opuntia, and also from small pills prepared from the formula of Mr. T. W. Sultan. Each pill contains a 1/100th grain of extract of genuine Cereus. Mr. Sultan does not say in his pamphlet whether this preparation is an alkaloid or a resin or a glucoside; he merely calls it the active principle. After all, then, my practical results are not much affected, if affected at all, by my pharmacological and botanical blunders. I am not alone in my experience, for I have had sent me from various sources samples of tincture, labelled *Cactus grandiflorus*, but which were preparations of Opuntia, and yet medical men had assured the senders that they possessed the virtues ascribed to the genuine drug. Since the publication of my article in the *Practitioner* I have had opportunities of carefully testing genuine Cereus alongside strophanthus and our old friend foxglove, and I have come to the conclusion that Cactus, whether genuine or spurious, is worthless, and should be discarded by both pharmacist and physician. Why should Opuntia have been so widely sold for Cereus?

From the fact that we obtained spurious specimens from so many sources, we must conclude that Opuntia has been widely distributed. On first consideration we are strongly tempted to blame the drug merchants for imposing a spurious drug on the buyer. I do not share this view. I believe the mistake arises largely owing to the carelessness of botanists in often calling Cereus by the name Cactus. I do not know whether *Opuntia vulgaris*, Miller, is another name for *Opuntia decumana*, Haworth, but I do know that *Opuntia vulgaris* is also known as *Cactus opuntia*, Linné. Here, then, may be an explanation of the whole difficulty. The generic name Cactus having once got afloat, merchants, pharmacists, and medical men have concluded there could be but one Cactus.

Chemistry of Cereus and Opuntia.

Cereus.—In Mr. Holmes' article in the Journal, he tells us that Bonnett and Bay-Tessier discovered an alkaloid which they named cactine. Mr. E. H. Farr examined the drug in quantity, and found among other substances "glucosidal resinous bodies," and "also an alkaloid which is present in very small quantities only." The alkaloid must be present in very small proportions, for I failed to get any reaction with Thresh's reagent with three fluid drachms of a one in one extract. I do not like the name "glucosidal resinous bodies," which Mr. Farr employs, and I hardly appreciate the meaning of the term, but I am perhaps as worthy of blame myself, for I find that I suggested that resins might play the part of glucosides. Of one thing I am certain, and it is that some resins do reduce weak Fehling's solution when allowed to stand for an hour or less at the temperature of a water bath. Cereus stems contain a large proportion of chlorophyll, and to this the extracts and tinctures of the genuine drug owe their beautiful green colour.

Opuntia.—Still referring to Mr. Holmes' essay, Mr. Farr says: "On working on a quantity I did get an indistinct reaction for alkaloids and also a very slight reduction with Fehling's solution." Further, referring to the resins, Mr. Farr adds: "The most characteristic one is but very slightly soluble in aqueous solutions, and gives with ammonia a deep yellow colour. This one, with at least two of the other resins, reduces Fehling's solution on boiling, and to a fair extent." The experience of Mr. Farr with regard to the resins of Opuntia agrees in many points with that of Mr. Hoseason and myself, but we found no alkaloid, and we worked on large quantities and made a large number of trials. However, a significant point is that Mr. Farr only got an "indistinct reaction for alkaloids." The flowering tops and stems of Opuntia contain a pigment which I imagine is xanthophyll, and hence the alcoholic tinctures and extracts of the drug have always a yellowish or light-brownish colour.

How came Cereus to be employed as a heart tonic? In view of the somewhat dogmatic opinion I have expressed of the worthlessness of Cereus and Opuntia, one must ask how the drugs came to have tonic properties ascribed to them? Before answering this query, we have to pause and ask ourselves how we have acquired our knowledge of many of our most valuable drugs. We civilised races who have an intimate acquaintance with the

* Read at an Evening Meeting of the Pharmaceutical Society in Edinburgh, on Wednesday, December 15.

sciences upon which is built the rational treatment of disease, have to acknowledge that to savage tribes or unlettered peoples belongs the credit of bringing under our notice the action of valuable drugs. Only to name one, sacred bark. The Spanish settlers of the Pacific Coast employed this agent long before it was known to us, and those Spanish settlers we can hardly doubt, got their information from the original occupiers of the soil. In like manner *Cereus grandiflorus* has been long employed by the West India Islanders in dropsy. Opuntia is also employed in the form of decoction as a demulcent drink.

Both drugs contain a certain amount of resins and pectin (or a similar agent), and these substances have a stimulant action on the kidneys, and would, of course, be useful in dropsies. Now many dropsies, if not most, have their origin in heart affections. The transition from the treatment of dropsy to the treatment of heart affections is an easy one. But then these peoples employ decoctions in which a large proportion of pectin is present. We employ alcoholic tinctures or extracts in which practically no pectin is present. Besides, these resins and pectins have no action on the heart itself. It must not be inferred from this that I advocate decoctions of Cereus and Opuntia. Although useful in dropsies, they are no more efficacious than the demulcent drinks known to us, such as barley water, gruel, and others, which we are in the habit of employing as aids in the treatment of dropsies. They are aids, nothing more. We use what lies to our hand, and the West India Islanders do the same.

I have so many people to thank for help in my work on these drugs that I hardly know where to begin, but I must not forget to mention Mr. J. H. Hoseason, late Lecturer on Pharmacy in the Owens College; Mr. E. M. Holmes; Messrs. Parke, Davis, and Co.; Burroughs, Wellcome, and Co.; Evans, Gadd, and Co.; Wyatt (Lancaster), and others.

THE METRIC SYSTEM IN PRESCRIPTIONS.*

BY T. F. DEWAR, M.D., B.SC., AND JAMES JACK, F.L.S.

On the appearance of the long-expected new edition of the British Pharmacopœia the metric or decimal system of weights and measures will become official in the realm of British Pharmacy. Its real value may, however, be for some time hidden under a cloud of criticism, adverse and otherwise, but ultimately it is sure to replace the present puzzling and cumbersome system, and it will become the recognised standard for Great Britain and the civilised portion of Europe.

The system is of French origin and may be said to have had its birth in that time of French upheaval associated with the Reign of Terror. A clamant demand for change filled every mind. Old customs and usages were ruthlessly slaughtered upon the sacrificial altar of novelty, and among the new ideas of the period none can now claim more careful consideration than the decimal system, so simple, so perfect, and so easy of application. This simplicity has commended the system to traders throughout the world, and it is only a matter of time ere the arbitrary standards now used in this country shall become obsolete. It is a system certainly to be preferred if for no other reason than that the relation of the metric weights and measures of all denominations are based upon one primary unit—the metre, whilst with our own present arbitrary standards the weights have no such relation to each other or to the various measures.

The two standards with which prescribers and dispensers have most to do are those of capacity and weight. As is well known, the unit of capacity is the litre or cubic decimetre; in other words, the capacity of a cube measuring one decimetre each way. The unit of weight is the gramme, which is the weight of a cubic centimetre of distilled water at 4° C. The kilogramme contains 1000 grammes, and is the weight of a cubic decimetre of distilled water at 4° C.

Having had about six months' experience of the system as prescriber and dispenser respectively, and upwards of 1000 prescriptions having been written and dispensed in that period, we are fairly in a position to mention the elementary difficulties which have been felt and met with, or which may be expected to arise on making the change of system.

We shall treat the subject first of all from the point of view of the general practitioner, and then from the point of view of the pharmacist.

First, then, as to doses. We should mention that alike in prescribing mixtures, pills, powders, or any remedy intended for internal administration, the quantity specified (whether in solid or liquid) is the quantity of each drug which is to be contained in each dose. The number of doses is separately specified. In remembering the dose and stating it in metrical notation, there is very little difficulty, especially to one who has not only learned a little dispensing, but has also worked in a chemical laboratory. We can readily conceive that to a medical man who lacked either of these advantages there might be more trouble and some temporary confusion in making the change. A good deal thus depends on the facility with which one can employ a sort of mental vision, knowing, for example, what a gramme of antipyrine or of rhubarb looks like, as regards bulk. Of course, with regard to substances whose dose is 0·01 of a gramme or so, this advantage does not hold.

The second difficulty which we would mention only concerns the physician indirectly, namely, the difficulty which dispensers find in translating into the old system, so as to make sure that the dose prescribed is not too high. Thus we have found, that when morphinæ hydrochlor. 0·004 is prescribed, the dispenser is apt to find it a matter of some difficulty to assure himself that the quantity prescribed is a proper one. This difficulty would speedily vanish with experience of the system, as the dispenser would speedily learn to "think" in grammes and cubic centimetres.

With regard to pills and powders there are no other difficulties than those above-mentioned, so far as we are aware. But with regard to compressed tablets and capsules and the like, there is no alternative but to specify the dose in the old method, because only in doses which are multiples of grains and minims are they prepared. After the regular introduction of the metric system in British use, this difficulty would also disappear.

The really formidable troubles which we have encountered relate to the prescribing and dispensing of liquid preparations only. The bottles in use in dispensing in this country are of course intended to measure multiples of ounces. Unfortunately it happens that the fluid ounce has for its nearest equivalent 26·5 C.c. We have found that there are three methods by which metrical prescribing may be made to harmonise with dispensing in bottles measuring so many ounces. The first and simplest, if least correct, is to consider the fluid ounce as equivalent to 32 C.c. instead of 26·5 C.c. Thus one writes:—

℞ Tinct. Nucis Vom.	1·0
Tinct. Podoph.	0·5
Sp. Myristicæ	0·5
Aquæ	14·0

M. (For one dose.)

In this case the dispenser understands *not* to measure and add

* Read at an Evening Meeting of the Pharmaceutical Society in Edinburgh, on Wednesday, December 15.

14 C.c. of water, but to make up the quantity to half an ounce by adding really about 11·5 C.c. of water.

The second method is to dispense the above as written with absolute correctness by adding 14 C.c. of water. In this case, if twelve doses were ordered, the total quantity of 192 C.c. which results is sent out in an 8-ounce bottle, since a 6-ounce bottle will only contain 159 C.c. The result, however, is that the 8-ounce bottle (which will hold 212 C.c. if full) is not completely filled, and this is often the cause of considerable perplexity to the patient or his friends. The third alternative is to prescribe thus :—

℞ Tinct. Nucis Vom. ..... 1·0
Tinct. Podoph. ..... 0·5
Sp. Myristicæ ..... 0·5
Aquam ad ..... 13·5
M.

Even with the latter method the difficulty remains, that since the bottles are made to hold 4, 8, 12, or 16 doses instead of decimal multiples (10, 20, etc.), the calculation necessary in order to dispense a mixture, where the quantity of drug specified is that in each dose, is unnecessarily complex.

The only remaining difficulty which we can recall is one which affects the old and new systems alike. It is that, as you know, the sizes of spoons are far from what they are usually considered to be by those who prescribe and dispense. Thus, while teaspoons contain approximately 1 fl. drachm or 4 C.c. (the latter equal really to about 73 minims), a dessertspoonful, instead of equalling 2 drachms or 8 C.c., is in reality about equal to 3 or 4 drachms or 12 C.c., while tablespoons, instead of containing 4 drachms or 16 C.c., range up to almost twice as great a quantity. Of course, as we have indicated, this source of error does not attach itself to either system, and can be got rid of by having standard measures instead of domestic utensils for the administration of medicines.

Speaking now from the point of view of the pharmacist, we may say that the action of one of us in adopting the metric system in prescriptions has had the effect of practically compelling the local pharmacists to equip their counters with the necessary weights and measures, and in this respect apparently Arbroath is in advance of most other towns, and has in a measure anticipated the appearance of the new Pharmacopæia.

As with every other good thing that has come to stay those who were to benefit by it most were the first to throw obstacles in the way of its adoption. We tried to meet the difficulty by issuing notices to all the local pharmacists of our intention to adopt the new system, with the equivalents thus :—

One gramme (1·0) = 15 grains nearly.
0·1 = 1½ ,, ,,

One cubic centimetre (C.c.) = 15 minims.
1·25 = ℈i.
4·0 = ʒi.
32·0 = ℥i.

also

4 C.c. = A teaspoonful.
8 ,, = A dessertspoonful.
16 ,, = A tablespoonful.

Also specimens of prescriptions thus :—

Old style.		New system.
℞ Tinct. Nucis Vom.....	℥iv.	1·0
Ferri et Ammon. Cit. ..	ʒii.	0·5
Sp. Chloroform.	ʒiii.	0·75
Aq. Pimentæ .....ad	℥viii.	ad. 16·0 Tales 16.
Sig. : ʒss. t.d.s.		Sig. : A tablespoonful three times a day.

Old style.		New system.
℞ Hydrarg. Subchlor.	gr. iii.	0·2
Pulv. Doveri	gr. x.	0·7
Pulv. Sacch. Alb.	gr. xv.	1·0 M. Tales 12.
Sig. : Pulveres.		Sig. : The Powders.

Old style.		New system.
℞ Lin. A B.C.	ʒi.	32·0
Sig. : The liniment.		Sig. : The liniment.

These prescriptions and equivalents when used together would appear easy of manipulation, but really were the cause of endless worry. Conversion had to be checked as well as weighing and measuring. With the gramme and decigramme there was not the same trouble as with the centigramme, but when the following prescriptions had to be dispensed the futility of using gramme equivalents becomes at once apparent :—

℞ Apomorphinæ Hydrochlor..... 0·001
Syr. Scillæ ..... 0·5
Syr. Tolutan ..... 1·0
Aq. ..... ad. 4·0
M. Tales 24.

or,

℞ Acid. Arsenios 0 0015
Quininæ Tannat. ..... 0·12
Ferri Redact. ..... 0·3
M. ft. pil. Mitte 16.

It was determined, therefore, to dispense every prescription as written, and to weigh and measure everything by the metric system. The difficulty here was that in dispensing a mixture of 16 C.c. et tales 16, the prescriber, while presumably meaning an 8-ounce bottle filled, had really ordered a considerable quantity more, and the question that arose for the dispenser was whether to send out an 8-ounce or put the 256 into a 10-ounce bottle. To follow the equivalents as mentioned would have settled the doubt, but would the patient have been more likely to get the proportion of 16 C.c. by a tablespoonful from an 8-ounce bottle, or would it not have been more likely to be nearer correct to send the 256 C.c. in a 10-ounce bottle, and thus allow for the ever varying tablespoon. After due consideration, and with the consent of the prescriber the latter system was adopted, and now every mixture is made up to measure, and the nearest size of bottle used.

This plan, of course, will only hold good until the glass companies send out bottles of, say, 15, 30, 60, 90, 120, 180, and 250 C.c. capacity, corresponding to our ½ oz., 1 oz., 2 oz., 3 oz., 4 oz., 6 oz., and 8 oz. Or until such other cubic centimetre bottles as may be found most convenient are available for trade purposes. No doubt some of our wholesale export bottle makers may be able to assist here. I may say that I wrote the manager of the York Glass Company asking if the sizes of dispensing bottles most in use on the Continent were to be had in this country. He replied that there was no demand for such, and that bottles of gramme capacity were not usually stocked. They were, however, supplied occasionally, but were mainly for export to South America, the sizes, indeed, being 70, 100, 130, 160, 240, and 260 grammes. The series, he said, though made from present existing moulds, was fairly uniform, and his company would be very glad to further the movement of using the metric measurements by supplying any of the ordinary shapes of medicine bottles and vials, taking a gramme as the standard instead of an ounce.

Another difficulty we had was the glass measures. To have them conical like our ordinary dispensing measures was to court blunders and mistakes. We therefore got the York Glass Company to send us cylindrical measures for from 10 C.c. up to 250 C.c., using the conical only for minims, drachms, and ounces. Assistants and apprentices grasped the system at once, and we have not had to check a single error. There is one measure which is placed on the market against which we would utter a word of warning. That is, the conical series with cubic centimetres on one side and drachms, etc., on the other. As you will see from the samples on the table, nothing worse could be taken into any chemist's establishment. If a mistake occurred woe to the unfortunate who, at the saving of a few shillings, laid himself open to such by using such a complicated measure.

Another measure on the market is the conical or taper one, graduated both in British and metric systems on the same side of

the measure. This may be good enough for comparison of bulk volume, but equally bad for the dispensing counter. It is, however, a better one where comparisons are required than the one with the graduations of the metric system upon the back, but in our opinion it also should be expelled from any careful chemist's establishment.

For the measurement of quantities less than 5 C.c. we had graduated pipettes made with divisions of 0·1 C c. For dispensing one does not often find less than this wanted, but if so, recourse must be had to a diluent, and then take the proportion, a similar process to that employed when making pills where odd fractions are ordered.

One source of error and a troublesome one, in the first pipettes used by us, was that the graduations started at the thumb-closing end.

In measuring off a cubic centimetre of a tincture one had to subtract and read backwards, which, like the conversion of solids and liquids to grain and drachm equivalents, was a worry and vexation, entailing constant checking of every measurement, due to the innumerable wrong readings made. The only explanation I had from the glass manufacturers, on pointing out the trouble, was that these graduations were preferred by the Board of Trade. The glassmakers have now made the pipette tubes as wished, and it is as easy of manipulation to put a pipette tube into a tincture bottle and let the liquid run up to the point required as to run the same into an open cubic centimetre tube.

A further source of error, which has not yet been got over, though very much reduced, is in the amount of liquid retained by the point of the tube. Of course no pipette will absolutely clear itself, owing to the capillary attraction, and it is also pretty well known that the exact line at which the pipette will clear itself under some circumstances is not always exactly the same under other circumstances, such as the state of the atmosphere or the nature of the liquid. A construction a little above the point, as in clinical thermometers, increases the capillary attraction at the point, and it is at this point where the graduations usually begin. As the length of the point in no two pipettes was alike, and as some of them admitted errors to the extent of one-tenth of the liquid measure between the first graduation and the quantity retained by capillary attraction, this difficulty became serious when dealing with say 2 C.c. of acid. hydrocyan. dil. or liq. strychninæ. We succeeded in getting the manufacturers of the pipettes interested in an endeavour to have this surplus of unmeasured fluid reduced to a minimum, and by having the pipettes made of such width of bore as to allow of distinct decimetre graduations and drawing them to as short a point as possible, making the point V-shaped. Then by beginning the graduations where water would stand by capillary attraction we believe we have reduced the error as far as these tubes will allow, consistent with strength and stability.

We have mentioned that we determined to throw aside the system of conversion from the equivalent of the gramme, and to weigh and measure by the metric system. This is at variance with the Continental system, where liquids and solids are both weighed, with few exceptions. Of course, in forestalling the issue of the new Pharmacopœia we have laid ourselves open to adverse criticism, but in following the habit of use and wont of our present established British system, we believe we have been using a method which will commend itself to every good dispenser. We shall never take kindly to weighing liquids, and we trust the new Pharmacopœia will give authority to weigh all solids and measure all liquids. With Continental recipes Continental methods must be adopted. The difficulty, of course, must be met by those firms who have the good fortune to have a connection of that sort, but for the general trade of Great Britain, where French or German prescriptions are the exception, we do not think the question need be seriously faced.

Medical men realise the drachm to be the volume of 60 minims, and the equivalent of this to be approximately 4 C.c. We do not think they will ever associate it with a solid cube of given dimension. They have been too long accustomed to order and to understand that they obtain 1 fl. drachm when a drachm (symbol) of liquid is ordered, and 60 grains by weight when a drachm (symbol) of solid is prescribed. It must be stated, however, that where an English dispenser has to convert items of Continental mixtures into equivalents, he must not only divide the metric prescription which is expressed in grammes, by 4, but also by the specific gravity. On the other hand, if expressed in cubic centimetres, he must multiply by 16·9 and divide by sixty in fluid drachms, as 1 C.c. equals 16·9 minims. As with measures so with weights. To obviate errors a special set of weights and a balance were obtained. The grammes and up to 20 grammes were round brass ones, with a small knob on the top, the decigrammes and centigrammes were square brass weights, and all were lettered in large figures, 2 Deci, 5 Centi, or 1 C.g. and 2 C.g. The result has been most satisfactory. No trouble has been experienced by the introduction of the new system of weights, whilst the conversion from the gramme equivalent was not only troublesome, but necessitated checking of every such conversion. The next trouble and most serious to face was in checking doses, for here both prescriber and dispenser were opening up new ground, and were liable to errors of dosage. With no authority such as the Pharmacopœia to consult, we feared misfortune daily. A mistake might readily be made, and one cannot be too careful at present. Suppose ·02 of apormorphin. hydrochlor. was ordered in 4 C.c. of mixture instead of ·002, and this was inadvertently dispensed where a valuable expectorant was required. Violent sickness would be produced, to the annoyance of the medical man and the alarm of the relatives of the patient, not to speak of the unenviable position of the chemist.

In conclusion we must admit that the probability of the metric system soon becoming general is becoming very doubtful. Medical men and chemists who have all their lives been accustomed to prescribe and dispense by drachms and grains will trust to the old system seeing them through life's journey. We must therefore look to the younger men who take their places to see that education is advanced and bettered by adopting a system at once simple and comprehensive. Our Continental *confrères* find no insurmountable difficulties, and why should we fail to grasp the value of so many milligrammes, when we have done so with one-hundredth, one-sixtieth, and one-twelfth of a grain?

Organic Bismuth Salts.—Wilcox has continued his researches on the therapeutic value of the organic bismuth salts, and finds certain of them to be valuable remedies. Bismuth-naphtholal, a combination of bismuth oxide and β-naphthol, containing 20 per cent. of the latter, has given excellent results in cases of typhoid, intestinal putrefaction, and in the diarrhœa of phthisis. It is given in doses of 60 to 120 grains per diem. Bismuth tribromocarbolate has also been tried and found useful in gastric fermentation in daily doses of 90 to 120 grains. Bismuth tetraiodophenolphthaleinate, or "eudoxine," was also successfully employed as an intestinal disinfectant. The author regards the organic salts of bismuth as greatly superior to the inorganic combinations usually prescribed.—*Med. Chron.*, vii., 452, after *Med. News.*

FLUID EXTRACT OF SENECIO JACOBÆA.*

BY WILLIAM KIRKBY, F.L.S.

Having regard to the experimental work which has been already done in the direction of isolating the active constituents of the drug, it was decided to adopt a menstruum containing a moderate proportion of alcohol, and proof spirit was accordingly used :—

Fluid Extract of Senecio Jacobœa, 1 in 1.

Senecio Jacobæa, herb, in No. 20 powder	3 pounds
Proof spirit	A sufficiency

Moisten 1 lb. of the powder with 14 oz. of the spirit, and allow the mixture to stand in a covered vessel for 12 hours, then pack in a percolator and pour over it another 14 oz. of spirit ; when the fluid begins to drop close the outlet for 24 hours, after which time percolation may be allowed to proceed until a sufficiency of extract has been obtained to exhaust the second pound of the herb. This portion is to be treated in precisely the same manner as the first, substituting the extract from the first percolator for the proof spirit. The third portion also is to be similarly exhausted, using the extract from the second percolator as menstruum. The first 48 fl. oz. from the third percolator is to be reserved for use. Made in the above manner the finished product has a specific gravity at 15°·5 C. of ·985, and yields 13 per cent. of extractive when dried at a temperature of 100° C. The sample exhibited had been made nine months, and during that time it had only deposited to a very slight extent. The writer expressed his thanks to Messrs. Jewsbury and Brown for the use of their laboratories while making these experiments.

SENECIO JACOBÆA IN FUNCTIONAL AMENORRHŒA.*

BY W. E. FOTHERGILL, M.A., B.SC., M.D.

The utility of the common ragwort in restoring the menstrual function in women suffering from functional amenorrhœa was recorded by Murrell in 1894 (*Brit. Med. Journ.*, vol. i., p. 679). Dalché and Heim, also Bardet and Bolognesi described further experiments in 1896 (*Bulletin gén. de Thérap.*, July 8 and 23). During the last year I have made a number of clinical experiments with a liquid extract of *Senecio jacobœa* made by Mr. Kirkby, who now publishes the formula employed. In the *Medical Chronicle* of November, 1896, I published abstracts of previous work upon the Senecios with bibliography, and in the same journal for September, 1897, will be found an account of my own experiments. The nature and results of these I briefly indicate below. In order to demonstrate that Senecio will not cause abortion, I gave the extract in considerable quantities to a number of pregnant women. In no case did any symptom of miscarriage follow the administration of the drug. In order to test the effect of Senecio upon normal menstruation, ♏xx. of the extract was given four times daily to healthy women of regular menstrual habits during the intermenstrual period. The result was that in each case menstruation occurred earlier by some days than it was expected, but the duration of the period was shorter than usual. The extract was given in the same doses to a number of patients suffering from amenorrhœa. In those cases where there was marked anæmia, advanced phthisis or other exhausting disease, there was no result. In other cases, however, where the amenorrhœa was due to hope or fear of pregnancy, to nervous shock, to sleeping in damp beds or accidental immersion in water, Senecio never failed to cause a reappearance of the menses in from two to fifteen days. Some girls who, though otherwise healthy, had never menstruated, took the extract with the result that the menses appeared. In some cases of dysmenorrhœa in which the drug was tried no very definite benefit followed.

If we allow that menstruation is presided over by a special centre in the lumbar portion of the spinal cord, it would seem that Senecio has a stimulating effect on this centre. Cases of so-called functional amenorrhœa are caused by a want of activity in the nerve-centre for menstruation, and are cured by Senecio. This drug therefore acts through the nervous system, and not by causing pelvic congestion or contraction of the uterus. There is a wide range of utility for such a direct emmenogogue ; for our present emmenogogues all act indirectly, and most of them may, if given during pregnancy, cause abortion. Senecio, however, may be safely given to any patient whose chief symptom is amenorrhœa, before submitting her to the unpleasantness of a physical examination.

* Abstract of paper read before Manchester Therapeutical Society

NOTES AND FORMULÆ.

(Specially abstracted for the Pharmaceutical Journal.)

Soap Dentifrice.

Thymol, 25 ; extract of rhatany, 100 ; glycerin (warm), 600 ; calcined magnesia, 50 ; borax, 500 ; oil of peppermint, 100 ; medicinal soap to produce 3000. Mix the thymol and the extract with the warm glycerin and add the other ingredients.—*Pharm. Era*, xvii., 600.

Coryza Snuff.

Camphor, 20 ; tannin, 20 ; milk sugar, 4. To be used as an insufflation.—*Pharm. Zeit.*, xlii., 354.

Polish for Aluminium.

Dissolve borax, 30, in water, 1000, and add a few drops of solution of ammonia.—*Bull. Gén. de Thérap.*

Stable Starch Indicator.

Place 200 C.c. of water in a deep capsule with 5 C.c. of hydrochloric acid and boil the mixture. The heat is then removed and 20 grammes of starch, previously rubbed smooth with a little water, is added. The mixture is stirred until a uniform liquid results ; it is again boiled, neutralised with normal soda, and made up to 1000 C.c. with glycerin.—*Répert. de Pharm.* [3], ix., 158, after *Chem. Zeit.*

Iodovasol.

Iodovasol is introduced as a stable iodised ointment basis. It is prepared by treating an excess of oleic acid with iodine chloride, washing the resulting oily liquid first with water, then with dilute solution of sodium thiosulphate, finally drying with anhydrous sodium sulphate, and mixing with a prescribed quantity of vaseline. A little absolute alcohol is then added and the mixture treated with a stream of ammonia gas until the oleic acid is saturated. The resulting brown liquid contains 7 per cent. of iodine. It is very hygroscopic, and should, therefore, be kept in well-closed vessels.—*Pharm. Zeit.*, xlii., 63.

Quinine Nasal Douche.

Horn recommends a nasal douche of the following quinine solution for acute catarrh :—Quinine hydrochlorate, 2 ; dissolve without acid in distilled water, 180. The remedy is said to be absolutely effective in all cases.—*Pharm. Zeitsch. f. Russ.*, xxxvi., 97.

Potassium Chlorate as a Tooth Powder.

Unna finds that a small quantity of chlorate of potassium, spread on the tooth-brush and rubbed on the gums in the ordinary manner, acts both as an antiseptic and as a deodorant, as well as strengthening the gums. Nothing is known which so thoroughly removes *fetor oris*, even in cases which have been treated unsuccessfully with internal medicines.—*Brit. Journ. Dent. Soc.*, xl., 323.

DENTAL NOTES.

On Toothache Remedies.

Dr. Frederick C. Coley, in an article on the medical treatment of toothache in a recent issue of the *Practitioner*, states that of all medical remedies for toothache he knows of none which is so successful as salicylate of sodium. He believes it is especially useful in those cases where the pain is started by "taking cold." Even in the condition which is called by dentists "periostitis," where the carious tooth becomes slightly loosened and projects beyond its neighbours, and is exquisitely tender when eating is attempted, he has often known sodium salicylate to be completely and permanently successful. "A dose of gr. xv. will usually relieve the pain very promptly, and if this is repeated every four hours the inflammation may entirely subside, leaving, of course, a carious tooth to be disposed of according to circumstances. The addition of belladonna is often advantageous. Fifteen grains of sodium salicylate, with 15 minims of tr. belladon., will often procure refreshing sleep instead of a night of agony." Dr. Coley believes that this use of salicylate of sodium is not generally known. He first became aware of it by experience on his own person, and since then he has used it with many brilliant successes and few failures in a very large number of patients. He has once, however, known phenacetin to succeed where salicylate failed, but he finds the salicylate is much more worthy of confidence as a rule. It is especially valuable with children, where extraction of teeth is to be avoided, if possible, lest the development of the maxilla should be injured.

A Noted Lady Dentist.

An interesting figure has passed away from the French dental profession in the person of Madame Berthaux, of Soisson, the wife of a dentist of that town. This lady was seventy-four years old, and had been practising dentistry for forty-five years, and as there were but few women in the profession at the commencement of her career, she may be said to be the doyenne of French women dentists.—*Journal Brit. Dent. Assoc.*

Duplicating Models and Impressions.

The *Dental Record* recommends the use of printer's roller composition for duplicating models and impressions. It is to be melted in a water bath until dissolved, grease the model slightly with lard, and place it the same as if to mould a metal die, cover with a metal ring (a tin can, open at both ends, will do), and pour the melted composition over the model. Let this stand overnight. By morning the material is hardened and the model can be withdrawn. The composition being elastic it retains its shape, and a hundred models may be poured if necessary. Printer's ink rolls are, of course, made from glue and molasses.

Blindness Caused by Crowding of Teeth.

A case of blindness through crowding of teeth is referred to by the *Dental Record*. A boy aged eleven is stated to have awakened one morning to find he was blind. When he went to bed on the previous evening nothing was wrong with his eyes. The pupils were dilated, fixed, not influenced by light, could not tell light from darkness. The suddenness of the attack pointed to functional derangement. Several causes were looked for, but examination of the teeth showed them to be crowded and wedged together. Two permanent and four temporary molars were extracted. The same night he could distinguish light from dark, and next day could distinguish objects, sight being restored in a few days. He received no other treatment.

Mounting Carborundum on Chucks.

In *Ash's Circular* sulphur is recommended as being superior to shellac for mounting carborundum wheels on lathe chucks. To mount a wheel heat it and chuck over a Bunsen flame, put sulphur in the hole of the wheel—fit the chuck on the lathe-head—turn the wheel while the chuck is warm, secure the wheel in position by tightening the screw against it, and hasten the setting of the sulphur by pouring cold water over the wheel and chuck.

Polishing Instruments.

Oxide of zinc used on a piece of thick spongy sole leather is recommended in the *Dental Record* for polishing instruments, and is said to impart to them a high polish.

ACETYLENE GAS.*

BY H. INGLE, F.I.C.

Acetylene was discovered by Edmund Davy in 1836, and in 1894 Moissan in France, and T. L. Willson in South Carolina, as the result of independent research, discovered a ready and inexpensive method of obtaining calcium carbide by means of the electric furnace. This rendered the use of acetylene as an illuminant possible, for its preparation from calcium carbide, first noted by Wohler in 1862, was a very simple and easy operation, consisting merely in treating the carbide with water, when acetylene was evolved very rapidly and slaked lime remained. In the operation great heat was evolved, and care is necessary in the preservation of calcium carbide, for contact with water may not only generate the extremely inflammable acetylene, but may also, under certain circumstances, cause its ignition when mixed with air. Explosions may arise in two ways. The combustible material may be mixed with some substance rich in oxygen and ready to part with that oxygen. In such a case a rise of temperature of a certain portion of the mixture may determine the rapid firing of the whole mass, with the production of great heat and great expansion. To this class belong the explosions of a mixture of coal-gas and air.

Acetylene, like all combustible gases, is liable to explosion in this way, and the limits of the proportion of acetylene and air which will thus explode are very widely separated. Such a mixture may be fired at a lower temperature than is requisite in the case of a mixture of coal-gas and air. A chemical compound may tend to split up into other compounds that will explode without admixture with air or other substances. To this class belong gun-cotton, nitroglycerin, etc., whose explosive detonation may be induced by a shock. It has been shown that acetylene, if compressed by more than two atmospheres pressure is liable to such explosive decomposition. Hence the extra danger in using liquefied acetylene. Indeed, almost all the serious acetylene accidents has been caused by the use of compressed acetylene. The employment of liquefied or compressed acetylene is to be condemned, unless used in the state of solution in acetone, a method of using the gas which recent experiments seem to show is much less dangerous than when the acetylene is compressed alone. In association with acetone, acetylene may with safety be subjected to a pressure of ten atmospheres.

The allegation that acetylene is poisonous seems to have been clearly disproved. In large quantities, like every other gas than air, it is poisonous, but an admixture containing up to 9 per cent. may be breathed without serious effects. Acetylene must be supplied at a much greater pressure than coal-gas, and for that reason there is a risk in supplying it to a house containing ordinary gas-fittings, as a weak spot, which would resist the pressure of coal-gas, might not be able to resist the higher pressure of the other. In no case should copper be used in fittings brought into contact with acetylene in any form. Owing to the cost of production, it will be long before acetylene becomes a serious rival to coal-gas in large installations, but in small installations, and in districts where the latter is not obtainable, acetylene has many claims for consideration. Its flame has fifteen times the illuminating power of a jet of coal-gas, its candle-power being from 200 to 240, and similar jets will burn 1 cubic foot of acetylene and 5 or 6 feet of coal-gas in the same time.

* Report of a lecture delivered under the auspices of the Insurance Institute of Yorkshire, at the Yorkshire College, Leeds.

BOTANY IN DECEMBER.

There are comparatively few medicinal plants in blossom in December as a rule, but the autumn has been so mild that many flowers are still left in the fields, hedges, and gardens, and the student of botany may still be able to study plants of many different natural orders. The early variety of *Helleborus niger* is already in blossom in Kew Gardens, and one or two cruciferous plants, *e.g.*, *Aubretia*, *Arabis*, *Capsella*, stocks, and wallflowers may still be seen in gardens. The red poppy has even yet a few scarlet blossoms visible. *Geranium sanguineum* and the scarlet *Pelargonium* are obtainable. *Linum trigynum* is in flower in greenhouses, and *Ulex europæus* is plentifully in bloom on commons. *Potentilla reptans* and *Geum urbanum* have been noticed in blossom. *Viburnum tinus* is opening its flowers in shrubberies. *Senecio vulgaris* and *Petasites fragrans* represent the Compositæ out of doors, and *Eupatorium ageratoides* in green- houses. *Lobelia fulgens* is not quite over. *Lamium album* is still plentiful on hedgebanks. Primroses, auriculas, polyanthuses, and cyclamens are obtainable in blossom in many gardens. The Ericaceæ is represented in shrubberies by *Arbutus*

unedo, and in greenhouses by two or three species of *Erica*. *Poinsettia pulcherrima* serves to illustrate the Euphorbiaceæ, *Schizostylis coccinea* the Iridaceæ, *Narcissus* and *Eucharis* the Amaryllidaceæ, the lily of the valley and the Roman hyacinth the Liliaceæ, and various species of *Cypripedium* and *Dendrobium* the Orchidaceæ. Several of the less important natural orders also furnish flowers suitable for examination this month, viz., *Hamamelis virginica* (Hamamelidaceæ), *Chimonanthus fragrans* (Calycanthaceæ), and *Jasminum nudiflorum* (Oleaceæ).

Mr. R. Goodwin Mumbray sends from Kew specimens of the *Galinsoga parviflora* in flower, showing the mildness of the season, and reports come from various quarters recording the unusual number of both wild and garden flowers, usually seen only in springtime, that are now in bloom, so that December cannot at present be called a flowerless month. The species which are specially worthy of examination are *Helleborus niger*, in which the calyx is petaloid, and the petals are green and tubular, forming nectaries. *Poinsettia pulcherrima*, in which there are large, bright, scarlet, leafy bracts, and the involucre is small and cup-like, with the male flowers arranged in five rows, the central ones elongating first. Each stamen represents a small flower, the green part below the joint being the pedicel, and having a feathery minute bractlet at its base, the upper part or filament being scarlet. The female flower is solitary and occupies the centre of the cup shaped involucre. In *Eucharis*, the filaments are expanded so as to form the corolla. *Hamamelis* has already been described (*P. J.* [3], vol. xi., p. 509). *Chimonanthus* is remarkable for the resemblance of its fruit to that of the dog rose, the achenes being situated in a tube below the flower, and the bracts, calyx and corolla running one into the other. From the rose family, however, it is at once distinguished even when the leaves have fallen, by the scars of the opposite leaves. The inner stamens are usually barren, and after flowering, form a cone over the carpels. *Cypripedium* is of interest in having two anthers instead of one only as is usual in Orchidaceæ. The Cryptogams are also well represented at this time of year. Various members of the Oscillatoriæ may be found in damp fields, and on the ground at the base of damp walls. *Protococcus viridis* (Protococcaceæ) is abundant on tree trunks, and the blood-red *Porphyridium cruentum* (Palmellaceæ) lines the base of damp walls. Many of the marine algæ are in fructification during the winter, including *Fucus vesiculosus*, *Laminara*, *Delesseria*, etc., and the fructification of the common mosses, *Mnium hornum*, *Funaria*, and *Polytrichum*, etc., are in good condition for examining the antheridia and archegonia. There is no lack, therefore, of material for botanical work.

THE NEW PHARMACY BILL.

DISCUSSIONS BY LOCAL ASSOCIATIONS.

MANCHESTER.

At a meeting of the Manchester Pharmaceutical Association, held on Wednesday, December 8, Mr. William Kirkby moved—

> That this meeting is of opinion that between registration of a student and presentation for the qualifying examination, an interval of three years should intervene.

It seemed to him, he said, the difficulties chemists were labouring under were very largely difficulties of education rather than difficulties born of the trade, and he felt that at the present time they were no doubt labouring under a difficulty in regard to the men who were coming into the trade. They were getting apprentices, from the country districts particularly, who were not up to the standard which they would desire to have. That, possibly, might be diminished somewhat by the new Bye-laws which have been recently approved by the Privy Council, in so far as the Preliminary examination is to be made somewhat stiffer than it is at the present time. However, he thought there was a possibility, and a great possibility, of having to contend with the same thing they had had in the past, that men or youths could go into the trade who were totally unprepared to pass the Preliminary examination, and they trusted to be able to work the subjects up in the next three or four years and then afterwards spend a few months at school, and then pass on to the final examination. He thought if they had some interval elapsing between the Preliminary and final examinations, that would deter a great number of men coming in under those conditions. That was looking at it from the point of view of those who were already in the trade, but it seemed that was not really the whole of the matter, and they ought to have some broader view of it. They should, he thought, make some sort of provision for men of that class or for their apprentices in general, or they ought to eliminate that class altogether and make some sort of provision for men having at least two or three years—three years preferably—in which they might turn themselves round before they felt bound to pass the Minor examination. As it was, a youth might defer consideration of the matter too long and then become anxious to get through. The consequence was he not only "rushed" the matter himself, but his parents might also rush it for him, and too frequently, alas, his master might do the same thing. If a man had three years in which he knew he would be at liberty to follow some definite course of study, that would certainly be for the good of himself and for the good of the trade at large. It was not necessary to spend much time over this proposition, because he could not help feeling that it would commend itself to the majority of those present. It was not a novelty. It was a regulation which prevailed amongst most licensing bodies, and perhaps the latest to adopt an interval of that kind was the body of dentists. They, however, had an interval of four years in which a man must undergo a definite course of study and technical training before he presented himself for the qualifying examination. He proposed, therefore, that there should be an interval of three years intervening.—Mr. A. Blackburn having seconded the motion, Mr. C. Turner said it was a wise one, and certainly worthy of their entire support. With regard to the matter of the younger members of the trade, he thought there was not such difficulty now with regard to the Preliminary that there used to be. He was very glad to see that the examination was going to be stiffer. That matter was moved some years ago by Mr. Young, if he remembered rightly, and he was glad it was so. With regard to the other, the old members and the generation of the older students were dying out. They did not find men going in at 35 years of age and upwards. They were men generally of 22 or 23, and they had commonly passed the Preliminary examination at the age which Mr. Kirkby suggested they ought to pass it. For his own part he did not wish to pose as an old man, but he had been connected with the Society for twenty years in one form or another. He did not find they had older men coming forward to pass, and he had only had one this year who wished to pass at the age of sixty.—Mr. J. Rymer Young did not see any reason why he should hesitate to express his sympathy with Mr. Kirkby's motion, for he quite agreed that he was correct in principal, but he might say that the view of the Council was in effect the raising of the standard, and would produce very largely the effect which Mr. Kirkby desired. It was scarcely correct to describe the new Preliminary as slightly more difficult; it was about double in difficulty, and not only double in its number of subjects, but a higher standard would be required in every subject. The Preliminary examination was one which should be passed during school days, and though there were some foolish chemists in the world, he could hardly think any chemist in future would be so dishonest in view of the recent Bye-laws, and in view of the future of the Pharmacy Acts, as to take an apprentice, who had not passed the Preliminary examination, for doing so was positively an act of dishonesty to the youth himself. He should say it had been felt that their chance of getting the new Bill through the House of Commons depended solely upon its being quite unopposable. If they started a question which would have any element of opposition in it their Bill was doomed! He might remind them that three or four attempts had been made to pass Bills which contained clauses that roused opposition in certain quarters. Now that they were appealing for a Bill which was one of consolidation it seemed to him they disarmed opposition, and as he had recently indicated, it was possible for a body of men to revolutionise the Pharmaceutical Society. His sympathies were entirely with Mr. Kirkby, but he would suggest that in view of the raising of the standard of examination in accordance with the new Bye-laws, it would scarcely be wise to put that matter into the Bill. In point of fact, if they took a step further and suggested that their Bill should contain any of the many things they all desired, it would mean the introduction of at least five or six clauses, every one of them debatable and certain to raise prolonged and mighty opposition. The Council, to his mind, had acted wisely in keeping to matter which concerned themselves, and which might make anything possible to themselves in the future. After a prolonged discussion, in which Messrs. Pidd, Young, Kemp, Lane, and Grier

took part, the previous question was carried on the motion of Mr. Pidd.—Mr. Kirkby next moved—

> That the consolidation of the Pharmaceutical Society would be promoted by making eligible for election as members of the Society all those who pass the Minor or qualifying examination.

This was seconded by Mr. Pidd and, after a prolonged discussion which had very little bearing on the question before the meeting, unanimously agreed to.

LIVERPOOL.

At a meeting of the Liverpool Chemists' Association on Thursday, December 9, Dr. Symes opened a discussion on the draft Pharmacy Bill by observing that discussions have already taken place in some of the larger towns in Great Britain on this subject, and it seemed quite appropriate that it should receive some consideration in Liverpool. Continuing, he said: In opening the discussion, I need not go into details on the various Bills which during the last fifteen years have been drafted by the Council of the Pharmaceutical Society with a view to bettering our position and protecting our interests or remark on the little interest they have created, or the lack of support they have suffered. The only occasion on which there was anything like due interest shown was during the time when Mr. Carteighe, as President of the Society, held meetings in various parts of the kingdom. He did much in the way of educating those who had not followed the course of legislation or interested themselves in the work of the Society as to what the Society could and could not do under existing powers, and what it could hope to accomplish by new enactments. Much good was done by this bringing chemists together and greater loyalty to the Society resulted, but the general feeling was that the proposed legislation was not sufficiently comprehensive, and so it came to nothing. Some years have passed; the position of chemists has not improved. There has been increase of opposition in trade, and the craft is looking for salvation, but is not finding it in the ordinary course of events. We all know what we want, and that put briefly is a greater measure of protection, but we also know that if the protection we seek is not for the benefit of the public, but for ourselves, no Parliament of the present day is likely to give it to us. The proposed Amendment Act does not therefore attempt more than what may be primarily regarded as the greater consolidation of the Pharmaceutical Society, and, seeing that the Society does not constitute more than one-third of the craft, it is to be expected that there would be some criticism as to whether it is really worth attempting so small a matter. Fair criticism is healthy, and should always be acceptable, and increases the general interest in anything that we attempt; we often learn much from it. The Bill proposes to replace Students and Associates by "Student-Associates"; to offer membership to everyone who passes the qualifying examination; to cause one-third of the Council to retire annually by rotation, and to allow voting papers for the election of the Council to be received by post up to noon on the day of election. It has been stated that of the 10,000 chemists in business 9500 are too much concerned in trying to get 2*d.* where 1*d.* formerly came, to concern themselves about this measure. Further, that it operates unfairly towards Major men by doing away with the distinction which membership of the Society now confers upon them. My impression was that the great majority of chemists were now endeavouring to get something more than 1*d.* where 2*d.* formerly came in, but I do not wish to dispute an authoritative statement to the contrary. Certain it is that these are very trying times for our craft, and most of the members of it are looking for some means whereby an improvement can be initiated. More *esprit de corps* and greater unity seem to be the factors which are generally regarded as necessary before anything can be accomplished. It is well known that I have from time to time advocated that every man who passes the qualifying examination should be registered as a life member of the Society without necessarily incurring an annual subscription. But the critics say, "No, no, we will not have this, it means more guineas to the Society in some way." Well, gentlemen, what are we to do? Are we to stand still and do nothing because the time is not ripe for the larger scheme? For my own part, although I once hoped for more, I am now willing to accept any step in the direction of my ultimate desire, viz., to see the whole craft consolidated. You may remember that some seven or eight years ago, I proposed in the Pharmaceutical Council that we should bring the Society as a centre into closer touch with the provincial associations, and members of the trade generally, by making annual grants of money to such associations as were willing to federate themselves with it, and show the results of their working and the expenditure of the money by sending annual reports, etc. This was generally approved, but the question of providing means blocked the way. Since then a Federation of Pharmaceutical Associations has been started, and although up to the present it has not been very successful, I say most distinctly it ought to succeed. It is a factor towards consolidation. Then there is the question of our fairness to Major men. They will still have the distinctive title of pharmaceutical chemist, and the privilege of exemption from the jury service. But they have something of more importance and of far greater value than these, and which does not appear to have received due consideration in the discussions which have arisen on this subject; something which no legal enactment can take from them; something which if properly applied will enable them to hold important positions, and all else being equal may enable them to make a living where a less educated man may fail to do so. I mean his higher educational attainments, the knowledge which he necessarily acquires to enable him to pass the higher standard. Surely it cannot be seriously contemplated that a man who would otherwise go on to the Major qualification would decline to do so because membership of the Society was offered to those who had been satisfied with the Minor. I will not say more, as it is my desire to hear the opinions of others on a subject which is of deep interest to us all.—Mr. A. C. Abraham held that the principle of the Bill was laudable, and the attempt to reduce the number of distinctions between the individuals composing the Society decidedly worthy of every encouragement. The manner in which Dr. Symes had treated the subject was one with which they all would agree, but coming down to details the only one worthy of alteration was the title Associate, Student, or Student-Associate, which in his opinon was excessively clumsy and unnecessary.—Mr. T. F. Abraham thought one view of the subject had not been emphasised enough. Whilst agreeing to the necessity of attracting the great body of registered chemists to the Society by giving them an extension of privileges, it would be as well to remember the old proverb, "Be just before being generous." In other words it would be wrong to allow men who had been content with the Minor examination only to come into the Society and adopt titles which heretofore had been almost entirely held by pharmaceutical chemists. The terms "Member of the Pharmaceutical Society" and "pharmaceutical chemist" were inseparably associated in the minds of the members of the medical profession and of the general public as meaning one and the same thing; consequently, the proposal would tend to extinguish the title, or rather prestige, of the Major men. If all registered chemists were promoted to the rank and title of Members of the Society, the least that the Major men should have was a proportionate advance, such, for instance, as Fellow of the Society, Graduate in Pharmacy, or some similar appellation.—Mr. R. C. Cowley also spoke to like import.—Mr. J. Smith, the local secretary for Liverpool, welcomed the Bill as at last doing graceful justice to the chemist and druggist, who had for years been labouring under very great disadvantages in his connection with the Society. There could be no injustice done to Major men by following the course mapped out in the new Bill, and he ventured to think that it would be, if passed, one of the most important and powerful instruments from a pharmaceutical politician's standpoint ever brought forward for ameliorating, consolidating, and advancing the condition of the whole body pharmaceutic.—A feeling of disappointment was the chief sensation the new Bill caused Mr. Bain (the President-elect of the Association), for he said after weary waiting for sixteen or more years a more important Bill than the present was surely not too much to look for. However, he would support it, small as it was, for the all-sufficient reason that it would admit chemists and druggists to full membership—a measure, in his opinion, more calculated to interest the generality of the trade in the Society than any other of the provisions it contained.—The discussion was carried on to a late hour, and finally culminated in the following resolution, proposed by Dr. Symes, seconded by Mr. T. F. Abraham, and passed unanimously. Resolved:—

> That this meeting of the Liverpool Chemists' Association supports the new Pharmacy Bill, but regrets that no provision has been made in it for a higher title for pharmaceutical chemists.

LEEDS.

At a social meeting of the members of the Leeds Chemists' Association and friends, held in the Grand Restaurant, Leeds, on Friday evening, December 10, Mr. E. Yewdall, President, who occupied the chair, brought under the notice of the meeting the Pharmacy Act Amendment Bill, and shortly explained its provisions as given in the *Pharmaceutical Journal* of the 4th inst., and then invited expressions of opinion from those present.—Mr. S. Taylor thought it would be an advantage to bring all registered chemists and druggists into one body, and as the Bill had this object in view, he could heartily approve of it.—Mr. Branson said he thought there would be a unanimity of opinion with regard to the main feature of the Bill, the object being to consolidate the forces of the Pharmaceutical Society, also that there would be a similar concurrence of opinion that such a consolidation would tend to give increased force to any future movement to secure new legislative enactments. Further, that it was desirable that such appeal should emanate from a well-trained body of pharmacists, and for this reason he advocated that the examinations should be divided into three distinct and well-marked stages: First, a preliminary; second, a scientific; third, a qualifying examination. Such alterations would stimulate apprentices to give early attention to the study of chemistry, botany, and physics, and thus render easy the adoption of a compulsory curriculum.—Mr. Geo. Ward remarked that it must be admitted the Pharmaceutical Society at the present time only represented a small proportion of the registered chemists and druggists of Great Britain, and it was important in any application to Parliament that they should all be associated together. The Bill it was now proposed to bring into the House was intended to do this, and on that account it had his support. It must be remembered that any steps taken must be in the interests of the public and intended to safeguard the people. In no other way and in no other spirit would Parliament alter or amend the Acts relating to the sale of poisons; even the Judges interpreted the present Acts in the same spirit. Referring to the new Bye-laws, he thought they were a step in the right direction. He was in favour of allowing a youth to take his examinations in sections as was allowed at some of the universities, where a student passed a first or preliminary, an intermediate, and a final examination. He was disposed to let him pass an examination in chemistry and physics, and then have done with those subjects; then another in botany, finishing with it in like manner, and then a final in materia medica and pharmacy. If the proposed Bill became law it would give more interest in the Society, inasmuch as all chemists and druggists could not only become members but also be eligible to be elected on the Council, if they had the time and desired thus to forward its interests. In this way new blood might be infused, and young men who had been trained in the more recent requirements of the trade be brought forward to introduce further alterations of the law for the mutual benefit of the public and future chemists and druggists.—The discussion was continued by Messrs. P. Jefferson, E. Brown, Anning, Worfolk, Hardman, Fourness, and others, and it was resolved unanimously—

(1) That this meeting of chemists and druggists of Leeds and district approves of the Pharmacy Act Amendment Bill, and promises to aid in promoting its passing through Parliament.

(2) That the Leeds Chemists' Association take steps to secure the support of local Members of Parliament in favour of the Bill when it is introduced into the House.

As there were other subjects which it was thought might be discussed, it was decided to adjourn the meeting until the latter part of January, 1898, of which notice would be given by Mr. Pollitt, Honorary Secretary.

The Action of Diuretin.—Sievers and Tallqvist consider that diuretin acts directly on the kidneys and that its action on the heart is of a secondary nature. Diuresis generally results the day after the first dose. It has been found useful in most cases calling for a diuretic, but if diuresis does not ensue after a week's treatment it may be considered to have failed. The dose recommended is 4 grammes per diem, although the authors have been in the habit of giving 6 grammes. It should be given in solution in peppermint water. The first doses may produce intense headache, nausea, vomiting or diarrhœa, but no collapse or other dangerous symptoms were observed.—*Bull. Gén. de Thérap.*, sec. Pharm., ii., 384.

NOTICES OF BOOKS.

'Quantitative Practical Chemistry,' by A. H. Mitchell, B.Sc. Lond. (Reading: The National Publishing Association, Ltd., 26, Bridge Street, 1897), is a useful little work in two parts. The first part (cloth, 1*s.*) contains exercises for beginners in chemisty; part two (cloth, 10*d.*) treats of volumetric analysis. The fifty odd pages of the elementary part are occupied with instructions for weighing, measuring length and volume, determining density and specific gravity. Then follow experiments with air, water as a solvent, and in crystallisation, gain or loss in weight on heating, displacement of one metal by another, and a variety of other useful exercises. Both this elementary course and that on volumetric analysis are well worthy of attention from pharmaceutical students. Anyone working carefully through the two books is certain to obtain a fair grasp of the principles of quantitative practical chemistry.

Should Pharmacy and Chemistry Speak the Same Language? asks Seward W. Williams, in two reprints from *Merck's Report*. The reply is obviously Yes, but it is doubtful if either pharmacists or chemists as a class will consider so much writing necessary to persuade them of the desirability of retaining the prefix "hydro," and conforming to the use of the termination -ide instead of -ate, for hydracid salts. In what is termed a "scrio-commacal" suggestion the author proposes that medical men should abbreviate the names of such salts as hydrochlorides by replacing the prefix "hydro" with an apostrophe!

'Watt's Dictionary of Economic Products' is being supplemented by certain numbers of the *Agricultural Ledger*. In one of these (1897, No. 6) the tinctorial properties of kaiphal bark (*Myrica nagi*) are treated from a chemical point of view by Professor J. J. Hummel and Mr. A. G. Perkin, whilst a comprehensive summary of information on the subject, by Mr. David Hooper, serves as an introduction. Cinnamon leaves (*Cinnamomum tamala*) are fully dealt with by the Acting-Editor (? Dr. George Watt) in an earlier issue (1896, No. 38). Another supplement to the Dictionary, forming No. 10 of the 'Imperial Institute Series of Handbooks of Commercial Products,' is occupied by an exhaustive monograph on *Adhatoda vasica*, by Mr. David Hooper. The vernacular names, habitat, and description of the plant are referred to in detail, as well as its uses in medicine, as a dye, and for various other purposes. The chemistry of the plant and its insecticidal properties also receive attention, whilst the monograph is illustrated with an excellent coloured plate, representing parts of the plant half life size.

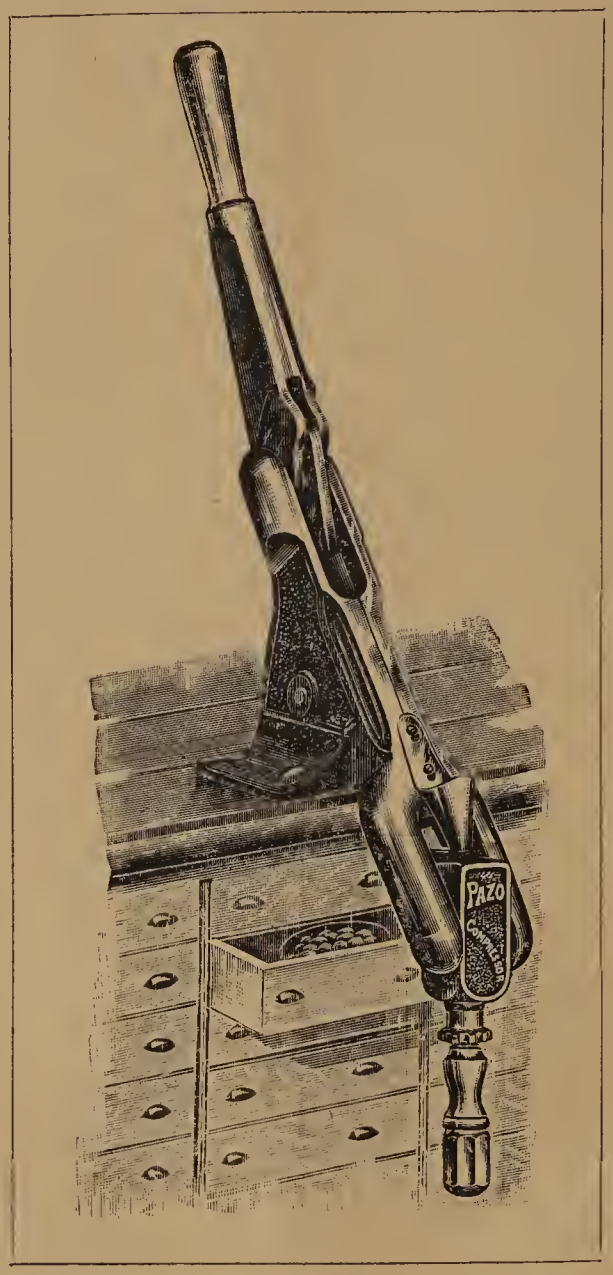
The 'Researches on Molecular Asymmetry' of the late Louis Pasteur are now republished in a convenient form as one of the Alembic Club Reprints (Edinburgh: W. F. Clay. 1*s.* 6*d.* net.). The two lectures which compose the volume give in brief form an account of Pasteur's brilliant investigations on optically active compounds. They are remarkable for describing the only way known of separating optical isomers, and also for the close approach made to the theory of Van 't Hoff and Le Bel, promulgated some thirteen years after the lectures were delivered.

The Chemists' and Druggists' Diary for 1898 (London: 42, Cannon Street. 3*s.* 6*d.*) is likely to prove as useful as any of its predecessors. The "literary" contents include legal notes for chemists and druggists, and an illustrated account of the more important pharmaceutical operations and apparatus used therein, together with the usual postal and telegraphic information, etc.

A NEW TABLET-COMPRESSING MACHINE.

BY R. DARTON GIBBS.

A tablet-compressing machine for the dispensing counter, that should be at once accurate, free from unnecessary complication, convenient in use, ornamental, and yet capable of turning out high-class work, has long been a desideratum. Moreover, such machines as have been placed on the market to meet this want have up to the present been made in Germany or the United States. Some time ago, however, my attention was directed to this matter, and the result of much thought and experiment is a practical little machine which I have named the "Pazo" Compressor. The machine is primarily intended for use at the dispensing counter, where the powder to be compressed will, as a matter of course, be divided by weighing, but by the addition of a feeding arrangement, it is rendered capable of turning out thirty or more well-finished tablets per minute. An important point in connection with the compressor is the fact that weighed quantities of most powders can be compressed into tablets without previous preparation of the material, and a dispenser can make and box a dozen tablets in half the time required to wrap the same number of powders. When a self-feeding arrangement is utilised in such machines, granulation of the powder is generally required, but for dispensing purposes that would be a disadvantage, on account of the time occupied in preparation.



The construction of the "Pazo" Compressor is clearly shown in the accompanying illustration. It is screwed to the edge of the counter, and movement of the upper die is effected by pulling the lever forward. The powder is fed into the mould, through the funnel attached to the front of the machine, and falls into the lower die. At the bottom of this is an adjustable screw, by means of which the thickness and hardness of the tablet can be regulated to a nicety by raising or lowering the die, while at the back, hidden by the framework of the machine, is a rigid projecting spur. On drawing the lever forward, the piston carrying the descending die comes in contact with this spur, and the mould is automatically brought into position; at the same time the upper and lower dies firmly compress the powder between them, whilst on reversing the lever the finished tablet is automatically ejected and falls into an open drawer or other suitable receptacle. It follows, then, that the speed of manufacture is only limited by the rate at which the operator can supply the material to be compressed and move the lever forward and backward. To adjust the machine at the outset, all that is necessary is to place the required weight of powder in the mould, depress the upper die, and screw up the lower die as tightly as possible. Then reverse the lever, give the adjusting screw another half turn, if necessary, and firmly clamp it by turning the milled head seen immediately below the mould. If substances of sparing solubility are to be compressed it will, of course, be necessary to make allowance for this, either by reducing the pressure or by special treatment of the medicament. The machine, when once adjusted, will continue to deliver tablets of the selected material—compressed to an equal degree and of identical weight—until the adjustment is altered.

An important point, which may be referred to here, is that the amount of pressure imparted to the descending die is quite independent of the force employed by the operator in depressing it, the advantage in this respect over other small compressors being very marked. In conclusion, I venture to claim that, by the invention of this simple and inexpensive machine, the extemporaneous manufacture of perfect compressed tablets is placed within the power of dispensers. The advantage of this is incalculable when we consider that nothing is more certain than the fact that the more the modern pharmacist fits himself to meet all demands upon his skill, without having to resort to manufacturers and wholesale dealers, the greater will be his reward and the higher the esteem in which he will be held by the public. Over and above this, he should always be prepared, at the very least, to give a personal guarantee with all medicines he dispenses, and in the matter of compressed tablets this is only possible if he prepares them himself. The means of fulfilling this obligation being now rendered available generally, it only remains for the pharmacist to pursue the course that so obviously presents itself to him.

Lard Analysis.—In order to detect adulteration with vegetable fats, Forster and Riechelmann test for the presence of phytosterin. They boil 50 grammes of lard for about five minutes with two successive 75 C.c. of alcohol of 95-96 per cent., under a reflux condenser, with continuous agitation. The fat is well cooled, and the alcohol which still contains a little fat is drawn off through a filter. The filtrates are then boiled on the water bath with 15 C.c. of 50 per cent. soda solution until about three-fourths of the alcohol has evaporated. The residue is then dried and shaken out with ether. The ethereal extract is distilled, the residue containing a trace of soap is treated with a little ether, and the latter filtered into a drying flask fitted with a glass stopper. After evaporation of the ether the residue is re-crystallised from 95 per cent. alcohol, and is ready for microscopical examination, which is best carried out with polarised light. According to Salkowsky cholesterin of the animal fats crystallised from the alcoholic solution forms very thin rhombic tablets; phytosterin of the plant oils, however, forms stellate, solid, sometimes broad, bundles of needles. If the phytosterin separates slowly, well-formed elongated hexagonal tablets are obtained. Salkowsky states that this is never the case with cholesterin. Even when the needles are separated quickly they mostly show a characteristic point at the free ends.—*Ph. Cent.*, xxxviii., 151.

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"ACCIDENTAL" SALE OF POISON.

The administration of the Pharmacy Act in regard to the sale of poison has undoubtedly had the effect of very considerably reducing the danger arising from accidental or intentional misuse of the articles included in the poison schedule. The protection thus afforded is perhaps still less complete than it might be, because the full restriction of the sale of such articles to persons possessing technical knowledge requisite for the purpose has been to some extent prevented by difficulties in the interpretation of the Statute. An illustration of the mode in which the obvious intention of the Legislature may be frustrated has been afforded by a recent case of prosecution under the Act, which has now been decided by the Court of Queen's Bench. The principal fact to which attention requires to be directed in this instance is the sale of a preparation of arsenic—sufficient in quantity to poison some two thousand persons—without observance of any of the precautionary measures intended for the safety of the public. The article referred to was sold to a stranger in a shop where the business of supplying garden requisites was carried on, and the ostensible use to which the article was to be applied, as a garden requisite was the destruction of weeds. The seller may perhaps have been quite unaware of the fact that the article was in other respects a very dangerous material, but however that may have been, the sale was the means of placing in the hands of an unknown person a quantity of poison which might have been misused, or at least afforded opportunity for serious accident. Neither the actual seller nor the keeper of the shop was entitled to sell poison, and under these circumstances, the sale called for prosecution under the Pharmacy Act, as being a distinct contravention of the law.

At the hearing of the case before the County Court Judge at Reading, the defence put forward was that the "weed-killer" had been procured by one of the proprietors of the shop, living at a distance, for his own private use, and that it had been sold by a shopman without his master's authority. The evidence on this point was not very conclusive, nor did the County Court Judge appear to attach much importance to it, though it might, if substantiated, have been a reasonable ground for dismissing the charge with a caution as to the further sale of arsenical preparations in like manner. Unfortunately the plea of unauthorised sale was not gone into or proved, but was accepted by Judge Lushington apparently as being of little importance, and the decision in the County Court was really given on the assumption that the judgment of the House of Lords in the case of the London and Provincial Supply Association was to the effect that the only person liable for infringement of the Pharmacy Act was the person actually selling with his own hand. As the proprietor of the business had not so sold he was held not to be liable, and being a member of a partnership he was held not to be liable for the act of his shopman, on the assumption that a partnership is as much outside the scope of the Statute as a corporation. But Lord Selborne's view that the performance of the physical act of selling or compounding by an unqualified person constitutes the particular mischief struck at by the Statute, does not carry with it such a limitation of the liability thus incurred. On the contrary, he held that liability would also extend to the master, and Lord Blackburn still more distinctly expressed the same opinion even in regard to a corporation or company.

The decision of His Honour Judge Lushington could not, therefore, be allowed to remain unchallenged. When brought before the Court of Queen's Bench, both Mr. Justice Hawkins and Mr. Justice Channell were decidedly of opinion that a master would be liable under the Pharmacy Act for the act of his servant, whether he was a member of a partnership or not. Their remarks as to the liability of principals for those acts of a servant which are within the scope of his ostensible authority, were perfectly in accord with the opinion expressed by Lord Blackburn in regard to the liability that would attach to a master and even to a corporation causing an unqualified person to infringe the provisions of the Pharmacy Act.

Although from the point of view of the Statute, Corporations do not come within its scope in all respects, it does not follow that they are altogether outside of it. But in the appeal against the decision of his Honour Judge Lushington, the circumstance which chiefly attracted the attention of Mr. Justice Hawkins was the statement that the sale of the "weed killer" had been made without authority from the proprietor of the shop, and as it was alleged, in a manner at variance with the ordinary course of the business. That being accepted as a fact that had been proved at the original hearing of the case, consideration of the points of law raised by the County Court Judge became unnecessary. Admitting the alleged accidental nature of the sale, as to which there was, however, lack of evidence, the proprietor did not come within the provisions of the Statute, and the appeal had therefore to be dismissed.

Some compensation for the trouble and expense incurred in this case may be found in the remark made by one of the learned judges at the conclusion, that the arguments addressed to the Court on the points of law had succeeded in everything of importance from the public point of view, that is to say, that masters are liable for illegal acts of their agents. Altogether the case affords a striking illustration of the difficulties to be encountered in the administration of the Act, and it also shows the necessity of means for preventing sales of poison which might lead to disastrous results.

ANNOTATIONS.

The Duplicate Nature of Selling was very evidently present to the minds of the judges before whom the appeal case was argued last week, and the liability of a principal for the act of his servant or agent was no less distinctly affirmed as obtaining in all cases where the act of the agent is within the scope of his ostensible authority. Apparently, therefore, the sale of a scheduled poison by an unqualified person, say in the open shop of a legally qualified medical practitioner, or in the store of a co-operative company, would not only be in itself an illegal act rendering the physical seller liable to penalty under the Pharmacy Act, but it would also render the proprietors in both instances liable for the act of the vicarious seller acting as their agent. Though a corporation or company cannot qualify by passing an examination, its capacity to pay a penalty is not equally limited, and though a legally qualified medical practitioner is outside the operation of the first fifteen Sections of the Act, his exemption relates only to his individual acts; it does not release him from liability for the acts of his servants.

Protection of the Public is unquestionably the main object of the Pharmacy Act, 1868, and any advantage from its provisions accruing to the legally qualified chemist and druggist is as certainly a secondary consideration. But the *Globe* considers that the judgment given in the appeal on the Reading case appears to leave the public without the protection which the law is supposed to afford. If that opinion of the case be justified from a public point of view, the members and associates of the Pharmaceutical Society who are charged with the duty of administering the Act in the public interest may reasonably complain that the endeavour to carry out the provisions of the Act has proved abortive, and that they will have to bear the cost of an unsuccessful prosecution.

A Rochester Jury has advised the Coroner to write to the Pharmaceutical Society, and suggest that restrictions should be placed upon the sale of carbolic acid, as with all virulent poisons. But both jury and coroner ought to know by this time that the Pharmaceutical Society is helpless in the matter, so long as it pleases the Privy Council to continue to encourage every facility being given for procuring this poison. Accidental deaths and suicides by means of carbolic acid increase in number yearly, but all efforts to alter the existing scandalous state of affairs prove vain.

The Proposed General Index has now a fair prospect of being taken in hand, with a view to publication at a reasonably early date, though the list of subscribers does not increase at the phenomenal rate that some correspondents seem to have anticipated. The "crowd" of potential subscribers willing to pay no more than 5*s*. for a copy of the index at present numbers six individuals, and it is to be feared that all interest in the matter will have subsided long before the remaining nine hundred and ninety-four rise to the occasion. A prominent member of the Society who writes this week says he has no faith in the "crowd" referred to, and he expresses the opinion that half a guinea is the price to be aimed at. But against this must be placed the fact that out of the five hundred required at that price, only seven persons have written to say they are prepared to subscribe half a guinea and no more. However, the next two weeks must decide whether it is worth while troubling further about possible orders that are conditional on the price not exceeding some lower sum than that originally fixed, on the basis of which the vast majority of the orders so far received have been sent in. Attention is again directed, therefore, to the order form in the Inset, and to the stipulation with regard to the date by which orders must be sent in. In considering the matter, it should be remembered that the proposed general index will not only be of value to those who possess a complete set of the *Pharmaceutical Journal* for the period included, but also to anyone who may at any time have occasion to look up matters of pharmaceutical interest.

Two Anonymous Correspondents have amused themselves by writing to the Editor lately; one from Windsor—about "some mismanagement which occurred at the Edinburgh examination," the other from Edinburgh—about the new Pharmacy Bill. Whilst the facts quoted by anonymous correspondents may at times be correctly stated, the opinions expressed under such circumstances can never be worth the paper the communications are written upon. If, therefore, the two correspondents referred to wish any attention to be paid to their letters, they must authenticate what they have written by sending their correct names and addresses.

Colour Photography was the subject of a most interesting lecture by Professor Gabriel Lippmann, delivered in the theatre of the Society of Arts before the Royal Photographic Society on Tuesday. The problem of fixing colours by a direct process, and a single exposure of the plate, is solved by the following method, which has enabled Professor Lippmann to photograph the spectrum, landscapes, flowers, and portraits in their natural colours:—A transparent film is exposed in the camera, then developed and fixed in the usual way. The sensitive film may be of gelatino-bromide or albumeno-iodide of silver, or any other sensitive substance. The only condition required is that it must be transparent and grainless. Moreover, during exposure, the sensitive film requires to be in contact with a metallic mirror; this is effected by filling the slide from behind with mercury, the metal thus being in contact with the sensitive substance. After exposure the mercury is let down into its reservoir, the plate taken out and treated with pyrogallic acid, amidol, or any other appropriate developer.

The Result of the Process is a negative which remains colourless as long as it is wet. The colours appear on drying; they are true and bright, provided the photographic operations, exposure and development, have been properly timed. These colours are visible by reflection, they are completely fixed, and resist the action of light and time. The theory of the process is briefly this:—The use of the mercury mirror is to reflect back the incident coloured rays, and thus make the incident light vibrations stationary. These stationary vibrations fall in the interior of the sensitive film, and thus impress upon it their own structure. When fixed, dried, and examined by white light, the photographic deposit, though in itself colourless, has acquired the property of sending back to the eye those component parts of white light which have impressed it, and thus appears clothed in the same hues as the image in the camera. In the same way a phonograph works by giving back the sound-vibrations which it has first inscribed. The lecture was illustrated by lantern slides showing coloured photographs of the spectrum, stained glass, landscapes, fruit, flowers, etc.; not the least interesting to chemists was a reproduction of the spectrum of argon, showing distinctly the characteristic lines of that gas.

Chemists and Druggists receive an unusual share of attention at the hands of the Registrar-General, in a supplement to the fifty-

fifth annual report of births, deaths, and marriages in England. In referring to what he terms the shopkeeping class, he points out that it consists of 20,194 chemists and druggists, who are included in that category because they are incidentally obliged to keep open shop for the convenience of their customers. It is remarked, however, that this circumstance is in itself no bar to their being considered worthy of a higher position, as is shown by the fact that a large number of apothecaries likewise keep open shop, and yet those are recognised members of the medical profession and classified accordingly. As a matter of fact, the Registrar-General observes, "pharmaceutical chemists are in these days educated men who have passed through the ordeal of a fair examination in the elements of general knowledge, as well as in pharmacy and in the sciences ancillary thereto. I have it on the authority of the Secretary of the Pharmaceutical Society of Great Britain that since the year 1868, when the Pharmacy Act first came into operation, no one who was not so engaged at that date has been registered as a pharmaceutical chemist, or as a chemist and druggist, otherwise than after examination and approval by that Society, and in many cases after a pupilage and course of study satisfactory to the examiners." Judging from the fact that the mortality of chemists and druggists is given for age-periods ranging from fifteen years upwards, readers will gather that the 20,194 individuals classed as chemists and druggists include apprentices and assistants. Taking the mortality of occupied males at each age-period as 100, the corresponding rates for chemists and druggists, reduced to figures proportional thereto, are as follow, the rates of mortality being given in parentheses :—Age 15 to 20 (123); 20 to 25 (123); 25 to 35 (96); 35 to 45 (98); 45 to 55 (111); 55 to 65 (85); 65 and upwards (96). At each of the seven age-groups the mortality in the aggregate is lower than that of occupations other than those of shopkeepers.

The Comparative Mortality Figure of chemists and druggists is stated, however, to be above the average for shopkeepers generally, and to approximate more nearly to that of occupied males generally. As compared with publishers, booksellers, etc., chemists and druggists sustain excessive mortality at ages below twenty-five years, but at all other age-groups except forty-five to fifty-five years their mortality is below the standard. Chemists and druggists would appear to have suffered more severely than occupied males generally from influenza during the recent epidemic. Their mortality from alcoholism and from liver disease is stated to be considerably in excess, as also that from diseases of the nervous system. Their mortality from suicide is given as more than double that among occupied males in the aggregate. Again, chemists die nearly twice as rapidly from rheumatic fever and four and a half times as rapidly from gout as do occupied males generally; their mortality from diabetes and from diseases of the urinary system also appears excessive, but their mortality from diseases of the heart, of the lungs, and of the digestive organs other than the liver is notably below the average. It is more cheering to learn that within the last twenty years the mortality of chemists and druggists has steadily declined. Whilst the mortality figure, modified for purposes of comparison, was 1057 in the earliest period, in the second period it fell to 957, and in the most recent period to 916. As in the case of many other occupations, it is in the earlier life stages alone that the reduction has taken place, the rates at ages over forty-five years having increased since the previous records.

The New Pharmacopœia is announced as the subject of two or three papers promised for pharmaceutical meetings to be held in January and February next, but it may be presumed that the papers will not be written until the Pharmacopœia is published. It is extremely probable, therefore, that the papers will be deferred until later dates than those for which they are provisionally arranged. But the fact that some pharmacists are prepared to read such, presumably critical, papers directly the book is published does not tend to support the reputation of the prospective authors for excessive modesty. Here is a work of national importance, the production of which has occupied leading pharmacists and medical men for the past four years, and yet we find would-be critics prepared to deal with the book within a few days of first handling it. It seems only reasonable to assume that even experts in the art of pharmacy ought to allow themselves at least a month to consider the subject carefully. Criticism to be worth anything ought to be fair and, to that end, based on a correct appreciation of the facts. But it is difficult to see how anyone can presume to such a position after a merely superficial or perfunctory perusal of the five or six hundred pages of matter in a pharmacopœia, and for the sake of the reputation of pharmacists, as pharmacists, it is to be hoped no one will enter upon the delicate task of criticism without due preparation.

The Quality of Soda Water is once more receiving the attention of local authorities. In a case reported in the *Newcastle Daily Journal* a licensed victualler was summoned at the South Shields Police Court for selling to the prejudice of the purchaser three bottles of soda water containing only half a grain of sodium bicarbonate to the half-pint. The Town Clerk, who prosecuted, said the Town Council had no feeling in the matter, but simply regarded it as their duty, and after evidence of the sale and analysis had been given, the public analyst stated, in reply to the Chairman, that for ordinary purposes he thought soda water of a lower standard than 30 grains to the pint should be sold with a label indicating that it was not soda water according to the British Pharmacopœia. On behalf of the defendant the well-known fact was stated that soda water, so-called, is made to suit the taste of customers. If it contained 30 grains to the pint it would be so unpalatable that people would not drink it. Ultimately, the Chairman said the Magistrates were unanimously of opinion that only a technical offence had been committed. They did not think there was any intention to defraud, or that any wrong had deen done, but in order that the objects of the Corporation might be carried out they would impose a nominal fine of five shillings and costs. It was also suggested that manufacturers should label aerated waters to show exactly what they contain.

The Alleged Dangers of Celluloid are shown by a correspondent of the *Birmingham Daily Post*, who appears fully competent to expresss an opinion on the subject, to be in great measure non-existent. In the first place, he says, it is not correct to describe the base of celluloid as gun-cotton, as the strengths of the acids employed in preparing the nitro-cellulose are weaker than those used in the manufacture of the explosive substance properly termed gun-cotton. While not denying that dinitro-cellulose burns rapidly, doubt is cast upon the statement that celluloid could "fire" when struck in any manner; and as for combs worn in the hair catching fire, it is alleged that the hair would certainly burn before the comb. In the manfacture of articles from celluloid it is necessary to subject the material to moulding in hydraulic presses at a very high temperature, also to sawing, planing, turning on lathes, soaking in boiling water, etc.—processes which could not be followed were there any truth in the ridiculous stories that have been so prevalent, and the writer concludes by expressing the opinion that there is no danger in using or storing celluloid unless in actual case of fire.

THE WORLD OF PHARMACY.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

An ordinary meeting was held at the Victoria Hotel on Wednesday, Dec. 8, when Mr. Charles Turner, F.C.S., discoursed on

Handy Tests for Water Analysis.

Mr. Harry Kemp occupied the chair in the unavoidable absence of the President, Mr. J. S. Woolley. Mr. Turner said the subject of water analysis as it presented itself to the average retail chemist was more or less as a "labour of love." As a rule someone came to him who had a well of his own, and was doubtful about the quality of water, and requested some simple test to be applied for which he did not feel disposed to pay a great deal. Of course, in a great many cases the reverse was the case, and a client was quite willing to pay for the trouble which he gave. In the majority of cases greater attention ought to be paid to the sources of water supply, especially of water for drinking purposes. In a general way the problem was connected rather with well water than with that from spring or river water. With regard to waterworks supply he need say very little, that was already dealt with by the authorities to whom the water supply belonged, but there were sources of contamination in connection with the ordinary water supplies which were not looked for in a general way, and perhaps the most fruitful source of contamination was where the supply was intermittent. In regard to well waters the supply from the rain falling upon the ground of course filtered through into the well prepared to receive it, and it was more generally from country places that the water was sent for analysis, and the usual arrangements in farmyards and other places were not conducive to the purity of the water. In regard to the ordinary test, a quantitative and qualitative test to show whether the water was reasonably pure or not might be done in a few minutes, and would give a fair idea of the quality of the water. The chief impurities were nitrates and nitrites, which occurred in shallow well waters, and were derived from the action of certain bacteria upon the products of sewage, so that there might be cases in deep wells, particularly wells sunk in the chalk, where they found nitrates, perhaps nitrites. Where nitrates would not be of any special significance, with regard to the danger or not of the water, in the other case—in the shallow wells—if nitrates were present to a large amount, it became an easy matter to apply the test, and in this connection he suggested that it would be better to acidify the water with tartaric acid rather than sulphuric acid. Mr. Turner gave particulars of various methods adopted to test water for impurities, and the point at which water should be condemned absolutely. In regard to the Manchester water supply, he said it was a very good one. There was a great deal of grumbling about the Thirlmere supply, but there was no doubt the Manchester Corporation were well advised in getting such a supply, for the Manchester supply was quite sufficiently pure for all practical purposes. It gave no reaction whatever for the majority of substances, and the only thing it would give a reaction for would be chlorides, of which there was a small amount. They would not get any reaction unless they concentrated the water for calcium, or anything of the kind. There was still some amount of controversy as to the amount of lead water should contain, but generally they might say that any amount of lead at all was hurtful, because it had been found that as little as one-tenth of a grain per gallon was sufficient to cause serious effects. Microscopic examination of water was not difficult. Perhaps the greatest difficulty was to interpret the results of the things which they saw when they had them under the microscope, but with a good microscope it was not difficult to see them, and to identify the bacteria and so on which caused disease. With regard to that, if they examined the substances which were most likely to be found in microscopic examination of water—fragments of dusters and fragments of household goods generally—all these found their way into the well, as well as other matters. As to diatoms and algæ generally, these were found in well water, but they did not indicate any impurity in the ordinary acceptation of the term. They were perfectly harmless and they generally helped to keep the water pure. With regard to the bacteria, they were not difficult to see provided there were any present. He was well aware that that subject had been frequently dealt with, and most associations had a paper upon it, and he thought it might be of some interest to their members that evening.—The Chairman moved a vote of thanks to Mr. Turner for his paper, and said they were greatly indebted to him for the trouble he had taken.—Mr. Pidd seconded the motion, which was carried with much heartiness. A discussion followed in which several gentlemen, including Messrs. Lane, Kirkby, Young, and Macalley took part.—Mr. Young pointed out that it was not quite so easy as Mr. Turner indicated to do analyses quickly. It required a great deal of experience. He thought too, that a chemist should not be expected to pronounce an opinion upon the water as to its suitability for drinking purposes. It was more a question for a physician rather than a chemist.—Mr. Macalley congratulated the Manchester Association on the excellent papers they had brought before them, and expressed an opinion that water analysis and bacteriological work, and the more scientific part of the profession would be quite as remunerative as any of his ordinary work—Mr. Kirkby informed the meeting that in regard to bacteriological examinations they were prepared to undertake the work at Owens College for public bodies.—Mr. Turner having replied, this concluded the discussion.—Messrs. A. H. Burgess, Altrincham, and Mr. J. Grier, Manchester, were elected members of the Association.—Mr. Kirkby then proceeded to deal with the propositions of which he had given notice. The discussion on the first two will be found at page 545. The third proposition referred to the proposed

Conference on Pharmaceutical Education.

As moved by Mr. Kirkby, it read—

> That it is desirable that a Conference should be called to consider the desirability of formulating a curriculum, and making such other recommendations as may be thought necessary to ensure a satisfactory pharmaceutical education, and that the President of the Pharmaceutical Society be asked to preside at that Conference.

In introducing the subject he said chemists were told they were suffering under considerable disadvantage in regard to their business and the way it had been conducted. He was by no means satisfied that the difficulties under which they laboured were difficulties arising from momentary causes, causes which were acting solely at the present time. If they considered what their business was, what *rôle* the pharmacist filled at the present time, in what light was it regarded by the public? Taking the trade as a whole he was inclined to believe that a large proportion of the pharmacist's business consists of the distribution of goods which are to a very large extent distributed also by other people; "patent" medicines, perfumes, combs, brushes, toilet articles, etc., all of which can be and are being sold by other people; and that possibly not more than 20 or 25 per cent. of the articles which chemists deal in are what may be called his legitimate articles, viz., crude drugs, elaborated drugs, and the dispensing of prescriptions. If that be so, we are brought face to face with another question, Whence does the chemist then derive his income? Does he get it from the larger or smaller proportion of preparations? In a paper read some time ago it was argued that dispensing does not pay to anything like the extent supposed, and the opinion which is generally held that dispensing is a most profitable part of the chemist's business is probably by no means true. When one considers the amount of time each prescription takes, to say nothing of the drugs that go into it, the attendance which is required in the way of cleaning vessels, having them replaced, the average time spent in despatching them, the rent of that part of the shop, the large amount of stock which has to be kept, this conclusion is confirmed, and the "living profit" comes in, in a very large measure, from those articles which are retailed by other people besides chemists. The chemist is suffering to-day not altogether from the diminished profits which come in from any particular branch of his business as from its gradual disintegration, and the same thing is likely to go on, the day of large profits having gone by. A report by a committee of the Society of Authors, with regard to the bookselling trade, alluded to recently in the *Pharmaceutical Journal*, shows that the troubles which the booksellers have to contend with closely bear upon chemists' troubles. Booksellers and wholesale dealers had formulated a scheme by which publishers had consented to practically coerce the retail booksellers into diminishing the discounts they were giving from threepence in the shilling to,

say, twopence, and unanimity was brought about between the retail booksellers and publishers' association. They referred the matter to the Society of Authors, and their report was well worth studying, not only with regard to the particular troubles of chemists, but with regard to the tendency of trade at large. Chemists and druggists made the same complaint of excessive reductions in the retail price of patent medicines and well-known drugs; it would be an unwise thing to look forward to any scheme which would enable them to take advantage of the public in regard to the sale of "patent" medicines or any other articles. The chemists' troubles are much deeper than commercial troubles, and he is suffering from a gradual disintegration of his business. If they are going to make any real progress in the estimation of the public they can only do it by impressing the public more than they have done in the past. Pharmacists do not occupy the position in the esteem of medical men they ought to occupy, and they ought to go most thoroughly into the education question. They should endeavour to disassociate themselves as far as possible from those articles of trade which they recognise can be sold by others just as well as themselves. Let chemists sell them on the same terms, but let them do all they possibly can to show by their abilities that they are able to relieve the medical man of his dispensing. In order to do that they must have men far better educated than many chemists are at the present time. They ought to do all they can to urge on an Educational Conference, so that those who are able to speak on this question may discuss it thoroughly, and if possible formulate some scheme which would be acccptable to the country at large.—Mr. Grier, in seconding the motion, said that a curriculum was very much needed, and it would be a good thing. He thought if chemists were to make progress at all it must be on educational lines. If the chemist could fit himself for water analysis, as Mr. Turner had shown, and develop his business on professional lines, it would be very much better than trying to sell pickles and vending "patent" medicines. —Mr. Blackburn thought all would be in favour of this proposition.—Mr. Rymer Young thought it was admitted that the whole question of pharmaceutical education was in an unsatisfactory condition, and he regarded Mr. Kirkby's remarks as simply indicating that, and he supposed he suggested that a conference be held with a view to educating the pharmaceutical community up to the point of seeing the propriety of instituting a curriculum. A curriculum had been the true chemist's dream—not the oil-vendor's, but the pharmaceutical chemist's dream—for years. He thought they would agree that up to the present time there had been little opportunity of realising such a dream, but he agreed with Mr. Kirkby that they should try to educate the pharmaceutical community into seeing that education was really the only salvation for their calling. Mr. Kirkby had pointed out in a very clear and lucid manner that with regard to that portion of their business which at the present time constituted the larger portion, no legislation proposed by the Pharmaceutical Society or any other body could possibly help chemists, and he thought it was a fact that not more than one-third of the average pharmacist's business needed gigantic improvement before he could make a living at his true calling. He thought, in point of fact, it would be agreed that this showed the need of ventilating this question of education, and he thought that was Mr. Kirkby's notion in instituting a discussion which might become general and national.—Mr. Turner did not agree with Mr. Kirkby in placing the chemists of the present day at such a low standard. There was a lamentable lack of knowledge on certain points amongst the younger chemists, but that was perhaps due to lack of sympathy from the older members. If they received more tuition, or more interest even, from their employers, we should not hear of such things as Mr. Kirkby had mentioned.—Mr. Kirkby briefly defended the position he had taken up, and said he had not been guilty of exaggeration. Young men got their knowledge under very awkward conditions, and they also suffered from men who did not take a scientific interest in their work.—The Chairman said he was quite in accord with Mr. Kirkby's motion. He thought it was extremely desirable something should be done in the way of formulating a curriculum. Evidence came to them frequently of the incapability of the average man who passed his examination, and it could only be attributed to one cause—want of a proper system of study. —The resolution was carried unanimously, and the proceedings concluded with a vote of thanks to Mr. Kemp for presiding.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

At the usual fortnightly meeting held on Tuesday, December 7, Mr. W. L. Currie (President) in the chair, Mr. J. Anderson Russell read a paper on

Pharmaceutical Organisation.

He said there was at present a great unrest among pharmacists throughout the country, who were seeking after means of organising those forces of self-help which had so long been little more than latent. Pharmacists in many centres had formed themselves into local associations with a view to promoting the common pharmaceutical wellbeing. But those were all separate organisms, and, although influenced by many desires common to all, they had not one constitution in common, and the result was much confusion, much misdirected energy, and much disappointment. What was now desired was an organism with a constitution and objects which could be approved by all desirable persons, so as to enable pharmacists as a body to promote their own interests, and he wished to emphasise as strongly as he could the possibilities offered by the Pharmaceutical Society of Great Britain, which, in connection with the question of pharmaceutical organisation, had received but trifling consideration. It was a society with constitution and objects answering fully to the requirements of the situation. It was an organism with special authority to promote those objects which were theirs, and the Legislature had taken precautions to guard against going on wrong lines. Its government had been entrusted to a Council, every member of which was a direct representative of the whole body, being popularly elected, and they must admit that the Council had always sought to promote the objects of the Society. But while the work of the Council lying nearest to it had been attended to, they could not truthfully say the Society had been well organised. Its functions carried out in London and in Edinburgh, excepting certain portions of them which were generally regarded as unsympathetic, did not appeal to pharmacists outside of those centres. Defective organisation had been the Society's greatest defect. The local mind did not readily respond to interests apparently a long way off or affecting it but indirectly, and the appointment of local secretaries had comparatively little effect in arousing enthusiasm. As a contrast to this, reference was made to the fact that local associations unite practically all the pharmacists in their respective districts and arouse enthusiasm to a high pitch by promoting social intercourse. If the Society was to thrive it must do likewise. The need of the Society was now represented in local associations, and the need of local associations was that to be found in the Society. Local associations should be regarded as rallying points for pharmacists, with a view to organising the forces of the whole body, and as those rallying points were increasing in numbers and in importance, it seemed time that an endeavour was made to mass them together. In the local bodies, of course, were many who were not members of the Society, and nothing should be done that would be likely to alienate them from the local bodies. But nearly all the active spirits of the associations were joined to the Society, and practically all the remainder were at least in full sympathy with its objects. Further, nearly all, if not quite all, the members of the Society in a district joined themselves to the local association. In Glasgow they had employers and assistants in the association, and they could as easily distinguish between members of the Society and non-members. There would be nothing to prevent them from associating together. Let the members form a Glasgow section of the Society. In Scotland they had what was known as the North British Branch of the Society, but it fell far short of fulfilling one's idea of a branch and, to avoid confusion, it was desirable to conceive of a Scottish division of the Society, consisting of all persons resident in Scotland and joined to the Society. That division might hold meetings as often as considered advisable for the promotion of its objects, and might promote better organisation of its members. It would be in effect a local association embracing a larger area than usual with, say, Glasgow and the West of Scotland as one section, and Paisley, Greenock, Ayr, etc., as sub-sections. The existing conditions in Scotland would lend themselves admirably to the carrying out of such an arrangement, and it was suggested that chemists should consider the desirability of endeavouring to form some such system of organisation. There might be greater difficulty in connection with other large divisions of the country, but the likelihood was that if they could succeed in one, the others would not be very far behind. It must be borne in mind that the affairs of the Society

must be controlled by its elected Council, and it was not suggested that any portion of the government of the Society should be transferred to a section. There was nothing, however, to prevent them from extending the scope of the Glasgow Association to that of the West of Scotland. In like manner there was nothing to prevent them from extending the organisation, such as he had indicated, over the whole of Scotland. Nor should there be any difficulty in its receiving official recognition. Through its medium the ramifications of the Society could be utilised to the advantage of all in a manner not possible under present conditions. For instance, through its medium it would be a simple matter to make arrangements for appeals being made, upon occasion, to every Member of Parliament within its area by the chemists in his constituency, and so on. Both local and general activity would thus be stimulated. —Mr. Laing said Mr. Russell had said that each member of the Council was a direct representative of the whole body. It was too much so, because, being representative of the whole body, it seemed that they could not take cognisance of sectional meetings. Mr. Russell would like them to have separate sections, but he did not think it was desirable to multiply such things. As it was, their Association was practically a branch of the Pharmaceutical Society, and included all the pharmaceutical life of the district. It seemed that it only wanted local centres to stir themselves to awake the Society to a perception of what were its duties, and that when they were really brought before them they would attend to them. He thought that, placed as they were just now, they had not the necessary influence upon the Council. —The Chairman said that Mr. Russell had stated the matter very clearly. Of course they knew that perfect organisation was a most desirable thing. He gathered from what Mr. Russell said that he did not consider the North British Branch embodied all the members and associates of the Pharmaceutical Society in Scotland. Now it appeared from the Calendar that a resolution was passed by the Council in London at a meeting in November, 1886, placing on record that the use of the term should be understood to apply to the Board of Examiners in Scotland, to the Executive Committee elected publicly, to persons appointed to hold any honorary office by the Council, and acting in Scotland in its behalf, and to the House and all other property of the Society in Edinburgh. Mr. Russell was quite right when he said that there was a very serious omission, members and associates of the Society were not mentioned. That should be remedied at once, and if that were done they would then have a genuine Scottish branch of the Pharmaceutical Society of Great Britain. He supposed that if any member or associate of the Society resident in Scotland desired to call a meeting of the pharmacists in Scotland the use of the Society's rooms would be given to hold that meeting. At the same time they were shelved by this particular clause, and a good service had been rendered by Mr. Russell in bringing forward that very important point. The time was also coming when there must be a different way of electing councillors. The question of territorial representation had been brought forward there more than once, and that was the correct thing. He did not mean that a man must be in a particular district before he could be elected by the electorate to sit at the Council, but what he did say was that anyone sitting on the Pharmaceutical Council ought to represent the views of a certain section of the country, no matter whether he resided in London or anywhere else. He ought to come down to the particular district, state his views on pharmaceutical topics, and get the views of the members who elected him. He thought the Society could not have gone very much further than it had in upholding those who had got their diplomas, but he hoped that the time was not very far distant when the Council, in its wisdom, would make a bold effort, and he hoped that if the present Pharmacy Bill passed there would be a large increase in the membership of the Society. They would be able to go to Parliament, backed up by the rank and file throughout the land, and say they that wanted certain measures, and Parliament would not turn a deaf ear to them.—On the motion of the Chairman it was remitted to the Council of the Association to consider what steps should be taken to put matters right with regard to the position of members and associates in connection with the North British Branch.

CHEMISTS' ASSISTANTS' ASSOCIATION.

At the meeting held on Thursday, December 9, Mr. T. Morley Taylor, President, in the chair. Three new members were proposed, and Mr. F. A. Hocking read an elaborate paper on "Some Mental Processes employed by the Student of Science." The paper, which was listened to with great attention, appeared designed to impress upon the student of science, in any of its numerous branches, the importance and absolute necessity of cultivating a habit of close and accurate observation, and of a careful systematic training of the senses. By a strange coincidence, the substance of Mr. Hocking's remarks had been more simply presented an hour or two earlier the same evening by Mr. William Martindale, whose address before the School of Pharmacy Students' Association on "The Five Senses in Pharmacy" (see *ante*, p. 526) had been listened to by several of those present at the later meeting. The same train of thought ran through both addresses, and the authors arrived at similar conclusions. Whilst Mr. Martindale, however, dealt with five senses only—touch, sight, taste, smell, and hearing, Mr. Hocking included the sixth or muscular sense, which, he remarked, is often confused with that of touch, although it distinctly differs from that sense.—As was subsequently pointed out by Mr. H. H. Robins, the paper did not readily lend itself to discussion, but when printed in the proceedings of the Association will be a very useful one to refer to from time to time.—Mr. Taylor remarked that he thought they could congratulate themselves on having listened to a subject which not only dealt with the processes employed by the student of science, but also gave them an insight into the process of living. He confessed himself to be absolutely incompetent to discuss the paper, but he wished to ask if Mr. Hocking knew of any system for assisting the memory.—Mr. C. J. Strother and Mr. H. H. Robins agreed with the President as to their inability to discuss anything in the paper, and after a few complimentary, and other remarks not altogether bearing on the subject before the meeting, Mr. Hocking rose to reply to the observations made. Referring to Mr. Taylor's question respecting a system for assisting the memory, he said the old Romans were supposed to have made use of the numerous pillars which stood in the public places; their method being to associate certain points in their addresses with particular pillars, and when speaking, on glancing round the building, the sight of each pillar recalled the point associated with it. He did not know of any other method for assisting memory.—On the motion of Mr. Gamble, seconded by Mr. Robins, a hearty vote of thanks was accorded to Mr. Hocking, who briefly responded.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

The usual meeting of the students took place on Thursday evening, the 9th instant, in the Royal Infirmary, by special permission of the authorities, as the rooms in University College, where the Society generally meets, were not so well adapted for the lecture of the evening on the subject of radiography as the infirmary accommodation proved to be. The only business transacted, on the President, Mr. H. S. Peirson, taking the chair, was the passing of a vote of condolence on the motion of Mr. R. H. Mitchell, seconded by Mr. F. Walker, to the widow of

The Late Mr. Edwin Williams.

In proposing the vote, Mr. Mitchell referred to the late Mr. Williams as one of the oldest and staunchest adherents of the Society, a good pharmacist, and one who only seemed to encounter difficulties to overcome them. Passing his Minor and Major examinations from the Liverpool School of Pharmacy, where he was under the guidance of the late Mr. J. S. Ward, he went into business for himself, and at the time of his death was not only superintending two pharmacies, but was attending medical lectures at the Liverpool Medical School with a view to qualifying as a medical practitioner. The excessive amount of work he attempted undoubtedly weakened his forces to such an extent that he was unable to battle with an attack of typhoid fever he contracted, and to which he ultimately succumbed.—At the finish of this mournful duty, Mr. Prosper H. Marsden, Ph.C., F.C.S., pharmacist to the Royal Infirmary, delivered a lengthy, but instructive, address upon—

Radiography.

The discovery of the X rays and the history of the subsequent application of their peculiar penetrating properties were succinctly put before the mental vision of the audience, who appeared to be very interested in what, in the hands of the lecturer, was anything but a well-worn and threadbare theme. A practical demonstration was given at the close of the lecture, and a good collection of prints, literature, lantern slides, and objects connected with radiography was arranged in the pharmacy of the Infirmary for inspection by the members and numerous lady visitors who had honoured the lecture by their much appreciated presence. The

arrangements were well ordered, and the lecturer was congratulated on providing the Society and its friends with a capital evening's instruction and recreation.

LIVERPOOL CHEMISTS' ASSOCIATION.

Mr. A. C. Abraham, F.I.C., F.C.S., presided at the annual meeting of this Society on Thursday evening, the 9th instant, which, in spite of the inclement weather, was well attended.—The donation of a volume of the 'Year-Book' from the British Pharmaceutical Conference was announced by the Secretary, Mr. Wardleworth, who also read an invitation addressed to the members of the Association by Monsieur Jacques Bazin on behalf of La Société Littéraire Française de Liverpool, requesting the pleasure of their company at a lecture to be delivered shortly in French by the French Professor of Glasgow University on Alphonse Daudet. The invitation was accepted with thanks on the motion of the President, seconded by Mr. Wyatt. Two

Miscellaneous Communications

were then contributed by Mr. Wardleworth, the first being the exhibition of some good specimens of rain or Guango beans from South America, the produce of *Pithecolobium saman* introduced into England as being probably an efficient substitute for the carob or locust fruit in cattle feeding. The legumes contain a sweet pulp, but the legume itself is astringent to the taste, and causes when chewed a peculiar irritation of the fauces. The other object shown was a sample of oak leaves of beautiful autumn tints now being hawked about the Liverpool streets by itinerant vendors. The brightness and evenness of the colouring causing suspicion as to whether it were due to Nature's handiwork or to the craft of the sellers, Mr. Wardleworth, after a few simple tests, discovered that a liberal use of rosaniline was the explanation of the mystery.—The President then reminded the meeting of

The Recently Drafted Pharmacy Bill

they had seen in the *Pharmaceutical Journal*, and expressed a hope that every member present would give the benefit of his advice and opinion of the proposed Bill, and so have it thoroughly discussed, and he called upon Dr. Symes as a member of the Pharmaceutical Society's Council, and one well versed in the politics of pharmacy, to commence the discussion. The report of this discussion will be found at page 546.

MIDLAND PHARMACEUTICAL ASSOCIATION.

On Thursday evening, the 9th inst., a meeting was held at the Grand Hotel, Birmingham, in connection with the Trade Committee of the Midland Pharmaceutical Association, for the purpose of discussing trade matters.

The P.A.T.A. and its Work.

—Mr. W. Jones (President of the P.A.T.A.), who occupied the chair, explained that the meeting was held to hear what the P.A.T.A. was doing up to date, and to discuss certain other trade matters. He pointed out that the Pharmaceutical Society could not be expected to take up such a question as the P.A.T.A. took up, and that was the reason the Birmingham chemists formed themselves into a committee to give the Association a "send off." They had improved their position, and practically ninety-nine per cent. of the whole trade in Birmingham were now supporting the P.A.T.A.—Mr. F. J. Gibson (President of the Midland Pharmaceutical Association) then moved—

> That this meeting of the chemists of Birmingham and district expresses its continued confidence in the P.A.T.A., and its satisfaction at the excellent work already accomplished, and trusts proprietors and retailers who have not yet joined will do so without delay.

He said that if all chemists joined the Association its work would be simplified, and the trade would benefit in a fair and reasonable manner, as he believed that if the price of an article was uniform the public would prefer to get it from the chemist. —Mr. F. J. Barratt, in seconding the proposition, said they had other institutions, which everyone of them liked to see flourish, but it was necessary to recognise that there were many chemists who were compelled to devote themselves more closely than others to the trade side. That was not their own fault, but the fault of the situation in which they had been placed. Union was absolutely necessary amongst chemists, and in the future, when a Parliamentary election was imminent, they must be prepared to put aside political views, and demand from candidates that they should support their righteous claims in the House of Commons. That was why he felt strongly in favour of the P.A.T.A., because it had banded together three thousand men of influence, who were going to do their best for their own cause.—Mr. Glyn-Jones, who next spoke, said that not only had the Association pursued its main object of arranging an established minimum price for proprietary articles with a guaranteed profit, but its operations had led to better local organisation throughout the country, and the P.A.T.A. had been the means of establishing about a dozen local chemists' associations where previously none existed. He was glad to say that as the P.A.T.A. was increasing in membership that the leaders of the pharmaceutical world were gradually seeing that the trade ought to be recognised in their efforts to secure fair pay for what they did. The very men who were most active in connection with their movement were the men upon whom the Pharmaceutical Council depended for support all over the country. He mentioned that matter so that there should be no misunderstanding. There should be no question of antagonism between the P.A.T.A. and the Pharmaceutical Society; the objects of the two were absolutely distinct.—Mr. F. H. Alcock said that he thought it was evident the Association appealed to the wants of the chemists, because it had brought a large number together, whereas he knew as a past secretary of the Midland Pharmaceutical Association that any amount of circularising generally brought together only about four or five. The resolution was then put and unanimously agreed to.

Individual Schemes.

It was next moved by Mr. J. Wakefield and seconded by Mr. A. Southall—

> That in the opinion of this meeting all attempts to protect the prices of individual schemes should be discouraged as they generally fail and give unnecessary trouble and worry to all people concerned.

This was also agreed to unanimously.

Against Unprotected Articles.

Mr. C. Thompson then moved a resolution, urging retailers not to display advertising matter of unprotected articles, and to use every legitimate means to discourage the sale of such unremunerative articles.—Mr. Brandfield seconded the motion, which was agreed to.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The third meeting of the twentieth session was held in the Pharmaceutical Society's Hall, 36, York Place, Edinburgh, on Friday, December 10, 1897, at 9.15 p.m., Mr. George Sinclair, President, in the chair. The minutes of the last meeting were read and approved. It was apprentices' night, all the papers being by apprentice members, and arranged by Mr. David Harley. Mr. James Gauld read an interesting and humorous paper dealing with

The Advantages of an Early Knowledge of Chemistry,

in which he strongly urged the desirability of acquiring a systematic knowledge of chemistry immediately after passing the Preliminary. He illustrated the value of such knowledge in the ordinary operations of the pharmacy, such as, for instance, the use of liquor potassæ to clean a mortar stained with iodine, or the use of sulphurous acid to clean a mortar stained with potassium permanganate. He attributed many of the failures in the Minor examination and the complaints about its stringency to the common practice of leaving over the study of chemistry till a short time before the examination. He strongly advised all apprentices in Edinburgh to take advantage of such classes as those at the Heriot-Watt College.—Mr. D. B. Kidd read a paper on—

Pharmacy Fifty Years Hence,

in which he said this would be promoted, and the pharmacy of that date would be called progress by attention to three points: To act so as to merit and cultivate friendly business relations with the medical profession; to merit the confidence of the public; and to elect good and true men, whose chief desire was the advancement of pharmacy, as members of the Council of the Pharmaceutical Society. He thought they should ignore the "stores" as far as

possible and seek in every possible way to discourage the sale of patent or proprietary medicines. The Society should refuse to recognise store apprenticeships, as was done in Ireland. He thought the pharmacy of fifty years hence would very largely depend on what they, the younger men, were at the present time. He therefore thought it behoved them to make sure that pharmacy fifty years hence would be in an advanced and prosperous condition, by aiming at higher education, the cultivation of a friendly spirit among pharmacists, and a thorough devotion to business to the best of their ability.—Mr. J. W. Plenderleith read an elaborate and exhaustive paper on—

Chemical Nomenclature,

in which he traced the historic evolution of chemical names, and showed how they were related to chemical theories and how the prefixes and suffixes and systematic names were a great aid in throwing light on the constitution and properties of the bodies to which they were applied.—Mr. George Grainger read a paper on—

Want of Uniformity of Some Pharmacopœial Doses,

in which he noted the discrepancies in dosage of opium and other potent drugs in the various official preparations. He suggested that if the dosage was made uniform it would only be necessary to remember the one dose of the active constituent in order to test the accuracy of the dose of the preparations. The reading of the papers was followed by discussion, and on the motion of the Chairman a vote of thanks was awarded to the authors and Mr. Harley.

CHEMISTS' AND DRUGGISTS' SOCIETY OF IRELAND (NORTHERN BRANCH).

The monthly meeting of the Committee of this Society was held on Friday, December 10, in the rooms, Garfield Chambers, Mr. J. Campbell in the chair.—There were also present: Messrs. Wm. Lyttle, J. Watson, W. J. Rankin (Hon. Sec.), S. Gibson (Treasurer), J. H. Shaw, J. Brown, W. Luffern, etc.—On the motion of Mr. Gibson, three new members, viz., Messrs. J. Sandford (Partadown), J. Frackleton (Belfast), and J. Kernahan (Dromon); also an associate, Mr. D. Chapman (Belfast); were added to the roll.—Two letters were read by the Hon. Secretary from a Belfast druggist requesting a copy of the last balance sheet.—The Hon. Treasurer informed the Committee that the individual in question was not a member of the Society, and was not entitled to the information he sought. The Hon. Secretary was instructed to reply to the communication referred to, and to say that if the applicant qualified in the usual way a copy of the balance sheet would be forwarded.—The Hon. Secretary reported that a most successful meeting of pharmaceuticals and chemists and druggists had been held during the month to hear an address from Mr. Glyn-Jones on the P.A.T.A. The meeting was held under the joint auspices of the two societies, and was thoroughly representative in character. A motion was enthusiastically adopted at the close, heartily commending the objects of the Association, and pledging the meeting to bring its claims for support under the notice of the trade. An interesting discussion followed. Ultimately it was agreed, on the motion of Mr. Gibson, to hold a special meeting of druggists on Friday evening week to take into consideration the best means to be adopted for giving effect to the resolution referred to.—Mr. Watson said he understood that the two local secretaries had already been appointed, but he was of opinion a sub-committee should also be formed, for the purpose of advising the secretaries. He had not the slightest doubt that if properly worked the P.A.T.A. would do a great deal of good in Belfast. It had been formed on a proper basis, and its machinery seemed to be workable. He would suggest, therefore, that a representative committee be appointed to work, in conjunction with the secretaries, in using the P.A.T.A. to their own advantage.—Mr. Gibson and others supported this suggestion, but nothing definite was done pending the public meeting referred to. The attention of the Committee was drawn to some remarks of the President of the Pharmaceutical Society of Ireland at a Council meeting recently held in Dublin. According to a report of the meeting, Mr. Downes was alleged to have said that the Council did not recognise the Northern Society of Druggists.—The Chairman, in referring to this, said that the Pharmaceutical Society had been obliged to recognise them in the past, and would probably have to do so again.—The Committee afterwards adjourned.

HALIFAX AND DISTRICT CHEMISTS' ASSOCIATION.

On Thursday evening, December 9, the annual meeting and dinner of this Association were held at the Old Cock Hotel, Halifax, Mr. J. B. Brierley, President, in the chair. After an excellent repast, the election of officers for the ensuing year took place:—President, Mr. G. M. Cobb; Vice-Presidents, Messrs. Swire, Hey, and Councillor Hebden; Committee, Messrs. Comyns, Briggs, Tiffany, C. Fielding, and W. S. Thompson. Honorary Treasurer, Mr. W. Haigh; Honorary Secretary, Mr. H. C. Brierley. Mr. F. D. Crossley, of Messrs. Oldfield, Pattinson, and Mr. J. Smith, of Messrs. Hirst, Brooke & Hirst, were also present, and Messrs. Raimes & Co., York, sent a subscription. The evening was afterwards spent in a very enjoyable fashion; an excellent toast list was gone through, with songs and recitations by Messrs. Tiffany, Crossley, and Clement Fielding. "Success to the P.A.T.A." was proposed by Mr. J. Jessop and responded to by Mr. James Smith on behalf of his firm, Messrs. Hirst, Brooke, and Hirst, Limited, who are strong supporters of the "Anti-Cutting League." The Association is in a very flourishing condition.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

On Wednesday, December 8, a meeting of this Association was held at their headquarters, Newburgh Hall, Cannon Place, at 9 p.m. The President, Mr. C. A. Blamey, was in the chair. A debate was held on various propositions brought forward by the Federation of Local Associations of Pharmacy," and it was resolved—

(1) That there should be an interval of not less than three years between registration and presentation for the Minor examination, and that the term "registration" shall mean the date of acceptance by the Pharmaceutical Society of the student's certificate of having passed the first examination or its equivalent.

(2) That all members of the Pharmaceutical Society should be exempted from jury service.

(3) That, in the opinion of this Association, the action of the Poor Law authorities in recognising dispensing by unqualified men constitutes a danger to the public, and is a moral evasion of the Pharmacy Act.

(4) To write to Sanitas Co. inviting them to place their articles upon the P.A.T.A. list, the selling price to be face value, supplies and retail at present rates.

(5) That a modified examination for assistants is most emphatically not desirable.

(6) That it is the duty of the Pharmaceutical Society to insist on the names of proprietors appearing on the labels of the business.

The draft Pharmacy Act Amendment Bill was afterwards read and approved.—At the conclusion of the debate Mr. W. H. Andrews read a paper on—

Parchment Making,

being the account of a visit to Messrs. P. Breach and Co.'s fellmongery and tannery at Steyning, Sussex, and giving a description of the various processes and operations through which the skin has to go before the finished article is obtained.

PHARMACEUTICAL SOCIETY OF IRELAND.

At Dublin on the 13th instant the usual evening meeting of the present session of the Pharmaceutical Society of Ireland was held at 67, Lower Mount Street for the discussion of scientific subjects.—The President, Mr. R. J. Downes, occupied the chair, and the following were present:—Professor C. R. C. Tichborne, Messrs. A. Conyngham, A. L. Doran, J. Smith, Miss Ada Wyatt, M.P.S.I., H. O'Connor, Dr. J. C. McWalter, and W. V. Johnston. Apologies for non-attendance were received from Messrs. Wells, Boardman, and Joz. The minutes of the last meeting were read and confirmed.—The President, in opening the meeting, referred to some correspondence between himself and Mr. Roberts, of Southport, and expressed his appreciation of that gentleman's views on the making of suppositories. Dr. Walsh, he said, had an acknowledgment to make in reply to his inquiry about powdered ergot, but was absent. A number of curious and interesting prescriptions for pills were either handed in or referred to by the members, and a lengthy discussion on their manufacture followed. Professor Tichborne exhibited a pill excipient composed in part of sugar of milk, and spoke highly of its qualities. He also showed a pill of oxalate of iron made by him thus in July last. Apropos of concentrated drugs, Professor Tichborne remarked that it would be hard to overcome the existing prejudice in favour of compressed tablets. Nowadays one preferred to take a tablet rather than get out the scales and weigh out the material for a pill. He criticised cascara tabloids, and spoke of the use and misuse of glycerin. Pill silvering was discussed by Messrs. Doran, Conyngham and Johnston, and the debate on this question par-

took of the humorous owing to the creation of an ideal compounder whose action was so marked as to break the pestle and mortar and make him a terror for breakages.—Professor Tichborne regretted he would be unable to deliver his promised lecture on the new B.P. in February, as it would not then be published, but he consented to give a lecture on another subject on that occasion, and for this he was thanked. The advisability of starting a museum for the use of the licentiates, and the offering by the Society of a prize every year for the best herbarium exhibited by a licentiate were recommended by the President and supported by his hearers.—Mr. Downes said he would like to see the licentiates getting into some groove of study beneficial to them later on, and he thought that botany would prove a very interesting pursuit. A prize would act as a stimulus. The Society might apply to the Council to give a case in which the specimens could be kept. The matter was noted for attention and the proceedings then terminated.

LETTERS TO THE EDITOR.

Chemists and Coroners' Juries.

Sir,—I think the fact that coroners' juries are not bound by the ordinary rules of summoning might be usefully referred to in the Society's Calendar. In the division of London where my private house is situated, the coroner's officer complies his list of jurors from the Post Office Directory. The consequence is that the pains I have taken to keep my name off the official jury list are wasted, so far as coroners and their officers are concerned. Indeed, last week, when I had occasion to raise the question, the coroner, his officer and the local inspector of police were quite sure that all were fish that came to their net. In the words of Dr. Danford Thomas, I was "exempt from all juries whatsoever, except coroners' juries." Upon my insisting upon my rights, however, he courteously asked me in future to return the jury summons with a note explaining that I was a pharmaceutical chemist. He would then excuse my attendance. Of course, sir, these authorities are quite wrong. The decision of Justices Hawkins and Wills, referred to in the Calendar, has established the right of exemption from all juries and inquests whatsoever. On the other hand, it has not interfered with the summary method of summoning which coroners have exercised for centuries. There is no occasion, however, for pharmaceutical chemists to be in the least disturbed when the strongly worded paper arrives. A courteous note to the coroner will render personal attendance at the inquest unnecessary.

London, December 13, 1897. J. E. Saul.

The Benevolent Fund.

Sir,—I am surprised to see the attitude taken up by Messrs. Knight and Baines at the meeting on the 8th inst. for the election of annuitants. If there has been one thing more than another that has given me the most unalloyed pleasure it has been the election of these six aged and infirm men and women without subjecting them to the untold worry and sickening suspense consequent on a contested election. Mr. Baines must be a curiously constituted individual if he cannot give his half-guinea unless he is privileged to see the ugly rush for the possession of it which in past years has often been pitiable and pathetic in the extreme. As a subscriber for twice ten years I thank the Council from the bottom of my heart, and I for one sincerely trust that this method of election will be regarded as a precedent worthy of being followed. The gentlemen who were responsible for the non-issue of voting papers had no occasion to use the language of apology. They did a right, kind, and truly Christian and charitable action, and may they long live to do many more such!

December 11, 1897. X. (119/16).

Medical Men and Chemists.

Sir,—I was pleased to read "L.R.C.P.'s" letter in your issue of the 11th inst., and to know that there are some amongst the medical profession who entertain kindly feelings towards chemists. But there is another side, and perhaps the trade journal referred to may sometimes have cause for its remarks. As an illustration of what I mean I will give three instances that have recently come under my notice. Yesterday a lady presented me with a small scrap of paper, on which was written, "Citrate of Iron, Quinine, and Strychnine, one ounce, ℥i." I refused to supply a stranger with this poisonous compound without a doctor's authority. She then produced a prescription, saying her doctor told her to give the small piece of paper to the chemist. The prescription was as follows, dated from Kensington: "℞ Ferri et Quininæ Cit. c. Strych., ℥i. Put into a jug; add forty-eight tablespoonfuls of water, and when dissolved pour into two clean wine bottles. Dose: One tablespoonful thrice daily after meals." In the second case a local doctor wrote a prescription on his own stamped paper: "Mrs. ——'s child. ℞. Ung. Hydrarg. Ammon., ℥j. Sig. To be used as directed night and morning." I dispensed this in the usual way, using earthenware-covered pot, etc., and charged 8*d.* About a week after the lady called and told me the doctor said I ought to have charged 2*d.* The third case was that of a physician who prescribed Ac. Carbolic. Liq. pur., ℥iv., and told his patient she would get it cheaper at the grocery stores opposite. The prescription greatly puzzled the grocer's assistants, who eventually gave the lady a very cheap acid, almost black in colour. Being one of my regular customers, she came to me to oblige her by reading the directions on the prescription. After hearing her story I induced her to allow me to dispense it in a proper manner. I trust these are only isolated cases, and that medicine and pharmacy may ever work harmoniously together.

Fulham, December 15, 1897. M.P.S. (120/5).

Mr. Currie and the New Pharmacy Bill.

Sir,—In the Journal of the 4th inst. the President of the Glasgow and West of Scotland Pharmaceutical Association is reported to have made the following statement, "Too long had the Society ignored the claims of those whose support would be a valuable acquisition," and as the word *sic* was inserted after the passage I presume that you were, like myself, in doubt as to its meaning. As no explanation has been offered, I should like to ask Mr. Currie what is to be understood by his statement. His quotation of the opinion expressed by Mr. Sandford in 1868, as to membership of the Society, shows that he is not unacquainted with the disposition of the Council, even at that time to make the Pharmaceutical Society a bond of union for all registered persons, and as a local secretary, it may be assumed that he is aware of the repeated failure of the attempts which have been made by the Council to obtain authority for admitting as members all registered chemists and druggists. If the claims in that respect have been "ignored" it has been by the members of the Society in failing to support the step proposed by their executive, and if that is perhaps the real meaning of Mr. Currie's statement, there appears to be much reason not only for adopting the suggestion of Mr. Tocher, by ascertaining whether registered chemists would avail themselves of the opportunity to become members of the Society, but also for ascertaining whether an amendment of the Act for that purpose would meet with the support of the members and associates now constituting the Society and possessing the power of self-government. I will not venture to offer an opinion on this matter further than by saying that if such a considerable extension of the Society could be secured as to make it more really representative, the desirability of that object should prevent opposition from members holding the higher qualification, however much they may be impressed with sentimental regret that the original project of the Society was ever departed from. The questions now before us are, first, whether members of the trade generally desire the body to which they belong to have such solidarity as will give it effective representation and influence, and whether they will co-operate with the members and associates of the only organisation by which those objects can be secured.

Dec. 14, 1897. An Old Pharmaceutical Chemist (119/45).

Still More Friendly Words.

Sir,—I have many times of late thought of addressing you a few words of congratulation on the general and marked improvement in the Journal. It is patent to any observer who has had a life-long or even shorter period in the world of pharmacy. To myself it has afforded more than an ordinary degree of pleasure, inasmuch that I have received your weekly issue for many years, and gladly noted its gradual improvement and businesslike tone. The object I have in view in writing you is to say how gratified I am to note the splendid alterations you have of recent years made in its pages, and with this result, so far as I am concerned, that it is my intention to have no connection with trade journals weekly addressing pharmacy that never miss an opportunity to find fault, sneer, and condemn—often in bitter and most uncalled-for terms—the Society to which I have

for years past given loyal allegiance. Your Journal, I am thankful to say, to-day perceives what pharmacists as a body require—I mean from a business and professional status. Your editorial articles are a credit to any journal addressing pharmacy, and they are up to date without doubt. How often have I wished, with many others who have spent the greater portion of their lives at pharmaceutical work, that our brethren in pharmacy would try and throw over this fearfully apathetic state, and also this incessant fault-finding state. No doubt the general view of pharmacy is indeed bad enough, but a glance round will in a moment convince you that other businesses and professions are even worse than ours; at least, so I think. I never tire making this remark when I am asked and questioned on the doings of the Pharmaceutical Society, "What have you done to assist that Society?" and I follow on with this addition, that even amid all its shortcomings (so fancied by many pharmacists), that it is the only Society extant for our universal behalf, and more than once has it succoured many a weary brother who has unfortunately fallen by the way, and heartily glad has he been amid the vicissitudes of life to seek refuge from the storm through its portals; and, bear in mind, often that brother has been the one in the day of prosperity to ignore utterly the efforts this Society has made for the general welfare of the craft, and for those in distress especially, and also may I conclude by saying that in my opinion the efforts of the Journal have added in no small degree to crown the success as a whole. I heartily wish you every prosperity in all that you are doing, for pharmacy and pharmacists in particular.

Devonport, December 11, 1897. Philip A. Kelly.

The Study of Chemistry.

Sir,—In your issue for December 4, in the "New Dualism in Chemistry," Mr. Walker says "Let a course of elementary theoretical chemistry therefore begin, not with the comparatively useless study of the elementary and compound gases, acquaintance with which is acquired only to be immediately forgotten, but with the properties of acids, bases, and salts." I would also venture to suggest a different process of study than is at present carried out in text-books. In these, the usual course is to consider each metal and element separately, and say all there is to be said concerning the various salts of such metals under the head of its metal or non-metal; by so doing the student learns what there is to be learned concerning any particular salt of such metal, such, for instance as the sulphate, and if he wants to know anything concerning the sulphate of another metal he has to turn to another section of his text-book. What I would venture to suggest is to make a comparative study of each class of salts in separate sections. Thus group all the nitrates of metals, non-metals, etc., under one head, and say all there is to be said concerning same, together with observations on the different behaviour of the nitrates of one metal compared with the nitrates of another metal; also do the same with the oxides, sulphides, carbonates, etc., etc. I think by some such course of comparative study much more rapid advance in acquiring all the elementary facts concerning the elements would be gleaned than is at present acquired by following the prescribed course of study so universally followed in text-books.

Erdington, December 4, 1897. H. C. Standage.

The New Pharmacy Bill.

Sir,—I also must strongly protest against Clause 3 of the proposed Pharmacy Amendment Act. The title pharmaceutical chemist is regarded by the medical and also the general public as a higher qualification of the chemist and druggist. Persons possessing this title have earned it by passing an examination more advanced in its character than that legally necessary to carry on business, and now it is proposed in all seriousness that the advantages, business and otherwise, gained by hard study should be given to those who have not made any effort to obtain them. I cannot find any satisfactory reason for such a step.

"It is expected it will increase the so-called membership." For the sake of being allowed to exhibit a title hitherto only obtained by hard study and a stiff examination, chemists outside the Society will come in in great numbers and help the Society to present a more solid front in promoting further reforms (?). A poor enough motive.

"It will bring exemption from jury service." But herein lies the difficulty. The present exemption applies to England only. In Scotland pharmaceutical chemists must serve in their turn with others. Would Parliament in these latter days be at all likely to create a class exempt from jury service? And a class so numerous as the proposed alterations would make it? What about the other educated bodies, dentists, and others? They, too, would claim exemption.

Lastly, "Associates in virtue of their new membership will be eligible for the Council." This, I believe, is at the bottom of the agitation. There are a number of gentlemen amongst us who have an honourable ambition to enter the Council but cannot in virtue of their want of the qualification. Well, let them take the necessary steps to obtain the qualification, and they will find the Major is not so despicable after all; nay, more, they will have an appreciation of pharmacy and pharmaceutical education they did not previously possess.

I consider that in promoting Clause 3 the Pharmaceutical Society is committing a gross breach of faith with its members. Certain advantages were given in return for passing a higher examination, and now it is attempted to deprive pharmaceutical chemists of their just privileges. It only requires the stern opposition of half-a-dozen determined opponents to wreck the whole Bill, an eventuality the Society would do well to consider before launching into useless Parliamentary expenses.

Glasgow, December 13, 1897. Arthur McKellar.

*** Our correspondent is mistaken in assuming that Clause 3 of the draft Pharmacy Bill proposes to confer the title of "pharmaceutical chemist" on others than those who have passed the Major examination. As a proposition to that effect has been put forward, however, his adverse expression of opinion may with advantage be put on record. [Ed. *P. J.*]

Sir,—Mr. Hocking's letter in a recent issue was by no means a surprise to me. I had for some time been wondering how long the Major man would remain quiet under the shower of proposals to deprive him of his privileges. The draft of the new Bill published in the same issue is not, I should imagine, calculated to once more lull him to slumber. The apprentice is to get something; the Minor man is to get everything; the despised Major is to give up all and receive nothing in return, not even the sop of a "Fellowship." I not only agree with Mr. Hocking in thinking that the new Bill will do no good, but I believe it is calculated to work serious injury to the standard of pharmaceutical education in this country. Those who are unconnected with the Society do not argue that they remain outside because they would have no power if they did pay their fees. In fact, they never argue at all; they simply abuse. Lord Salisbury's well-known remark during the debate on the Parish Councils Bill that what the villagers wanted far more than a Council was a circus might, I think, be well applied to the anti-Society chemist.

By adopting Mr. Greenish's suggestion of a "Royal College," the Council would have raised the status of the Society in the public estimation, and thus made it a matter of actual pecuniary benefit to every chemist to become associated with it. At the same time the power would in all probability have remained in the hands of experienced men, who would thus have been able to educate the newer members in the real duties of the Council. If the proposed Bill becomes law, the outsiders will probably do just as Mr. Hocking suggests, *i.e.*, remain outside and continue to resort to vulgar abuse or quite possibly there may be a rush of would-be reformers to obtain seats in the Council. The Minor men thus being in a majority, the suggestion made at most provincial meetings of the qualifying examinations conferring the diploma of "Pharmaceutical Chemist" will probably be carried into effect, and the higher examination will become a thing of the past. Such a Council of reformers (?) would also doubtless attempt the impossible, and make the name of the Society a bye-word in the land. In such a case the last state of British pharmacy would certainly be worse than the first.

I cannot but think that the policy of the present Council is a deliberate attempt to wipe out the second examination. The new Bye-law which affects the Major examination is certainly not calculated to raise the standard of that qualification. Under this new rule two subjects only may be taken. The candidate might for example choose botany and physics, the two subjects of least importance from a pharmacist's point of view, and leave out the two vitally important sciences of histology and organic chemisty. For my part, I never have been able to see why so much stress was laid upon botany in our examinations. The only botany a pharmacist requires is that which will enable him to obtain a thorough grasp of materia medica and histology. The Major examination goes much beyond this. Whereas, organic chemistry, which to the pharmacist is a subject of the highest importance, has not been included in the qualifying examination, and under the new Bye-law is actually made an optional subject for the

Major. Could anything be more calculated to lower the already not very brilliant pharmaceutical standard of Great Britain? I sincerely trust that in the interest of the public, as much as of the profession, very effectual opposition will be offered to the proposed Bill.

As to what the Council ought to do, I am not prepared to offer an opinion. I should, however, like to say that it is not conducive to the dignity of the Society for the Council to be so led by the nose by the Medical Defence Associations. The large sums of money spent by the Council during the last few years in prosecuting grocers for selling patent medicines containing infinitesimal quantities of poison has not, I venture to say, put half a sovereign into the pocket of a single chemist in the country, whereas unqualified dispensers to surgeons are sending out daily, without any supervision and with absolute impunity, hundreds of bottles of medicine containing large doses of poison. If a chemist who ventures to prescribe, when his legitimate means of livelihood are in the hands of the surgeon's dispensing stable-boy, is unfortunate enough to gain publicity, he is expelled the Society. The innumerable mistakes of the stable-boys are hidden by death certificates. There is only one way of looking at such a policy, *i.e.*, that behind the Council looms the figure of a medical caucus which pulls the string. Doubtless the Council would strenuously and in all good faith deny such a charge. I do not for a moment think that they wittingly play into other people's hands, but still the fact remains. Money spent by the Society during recent years has benefited the medical quite as much, if not more, than the pharmaceutical profession, and nothing is ever done which might in any wise offend the apothecary. Let the Council attack the big offenders first and leave smaller fry till afterwards.

Mr. Carteighe's proposal of the Society becoming affiliated with a university is decidedly a good one. But why wait for a new university? The Victoria University is gradually extending her sway over the large provincial cities; why should not London also swell the ranks of her colleges, and thus form a great national University of England? Such a combination would form the greatest and most influential institution of the kind the world has ever seen, and would be in every way better for the country than a multiplicity of such bodies. By leading the way, the Pharmaceutical Society would "make history." Even if other London colleges did not follow suit, the Victoria University would serve the purpose of the Society much better than a university confined to the metropolis, as the various sister colleges in Birmingham, Liverpool, Sheffield and Manchester would thus all constitute provincial colleges of pharmacy. A university degree in pharmacy would do more to raise the position of the chemist and druggist than any amount of legislation, and, if it has not already been done, every university in Great Britain, or, at any rate, those of London, Victoria, Durham, Wales, Edinburgh, Glasgow, and Aberdeen ought to be approached on the subject by the Council of the Society.

FYTON (118/43).

"A PROTEST AGAINST MISREPRESENTATION."

Sir,—I feel in the position of one who is quietly walking along the street and a pedestrian suddenly faces up and "lands him one" on the nose. I am sure I do not know what I have done to Mr. Hyslop to deserve the letter you published from him in your issue of December 4. It seems to me that Mr. Hyslop is subject to periodical fits of restlessness, and that when these supervene he feels he must have a bout with somebody to work them off. Perhaps he has been indulging too freely of late—I do not mean in anything excisable, but in the literature of Carlyle, Ruskin, or such-like clubwielders. Or may it not be that he is in want of a few pilulæ hepaticæ (Hyslop)? I will not insult their proprietor by calling them "Hyslop's Liver Pills," for that would savour of quackery.

Having now had time to pick myself up off the road, may I politely inquire what it is all about? The letter is headed, "A Protest Against Misrepresentation." I think it will be found Mr. Hyslop's communication contains misrepresentations in need of correction. Passing over his more or less good-natured banter, I come upon the following: "Those proprietaries with an established and steady demand, *e.g.*, Beecham's, Holloway's, Kaye's, Cockle's, Powell's, and almost all others of any repute at all, are conspicuous by their absence" (from the protected list of the P.A.T.A.). Mr. Hyslop blundered that time; Powell's Balsam is conspicuous by its presence. When a critic assays to review an article or compilation of facts, it is generally considered a *sine quâ non* that he should first of all carefully read the compilation. This your correspondent does not appear to have done, as will further appear presently. The accidental admission *re* Powell's B. is fortunate, for we now know that Mr. Hyslop is of opinion there is at least one article with an established and steady demand on the P.A.T.A. list. (I will not be spiteful enough to say that Mr. H. tells the truth only by accident.) To supplement my own information, I have inquired at one of the largest wholesale P.M. houses as to the relative importance, commercially, of Powell's and Cockle's proprietaries. I was informed that that house sold more Powell's than Cockle's, and that they certainly sold more Collis Browne's chlorodyne, Scott's pills, and several other articles on the list than they did of either Holloway's, Cockle's, or Kaye's goods, though admitting that the latter were very important articles, too. I would remind Mr. H. that the opinion of a wholesaler on a point like that carries more weight than either his or mine, because the wholesaler can speak for the whole country. It may be that Mr. H. is unaware that Beetham's glycerin and cucumber, Homocea, Géraudel's pastilles, Invalid-Bovril, Izal, and a number of others of a rapidly rising character, are on the P.A.T.A. list. If I were to twist Mr. Hyslop's statements as he has twisted mine it would be easy to accuse him of appearing in public in a new character, viz., as an apologist of dirt. I do not intend to do that, because such an insinuation would be false. He informs your readers that I have called chemists who will not join the P.A.T.A. "dirty druggists." He is quite mistaken—as any one who carefully reads the passage complained of will see. I did not say any such thing. I used the word "dirty" simply and solely on its merits, and without reference to either members or non-members of our Association. (*Vide Anti-Cutting Record*, Nov., 1897, p. 7.)

Finally he tells you I am all wrong with my figures and so-called facts. I wrote: "One would probably be near the mark in saying that there are at least 2000 shops in the country where not more than a pound a month is turned over in standard proprietaries." Mr. Hyslop I suppose assumes that I regarded these 2000 as all dirty druggists. Again he has read me wrongly. A considerable proportion of them could be correctly described by that name, but not all. The essence of the statement is that those who sell so very few proprietaries cannot be expected to take much interest in P.A.T.A. politics. I think they are mistaken in being apathetic; still, the assumption holds good, that they can hardly be expected to take the same view of proprietaries as those who sell, or have at one time sold, a considerable quantity of them. It was found to be a waste of valuable time to call on that class of traders, so, although almost always courteously received by them, I desisted. When all corrections have been made and explanations given, I must yet tell Mr. Hyslop there is far more squalid destitution in the trade than he has any idea of. I had not the slightest notion till I had been round our large towns that things were so bad as I found them; therefore I must not altogether blame him for being sceptical. Marylebone is Arcadia itself compared with many places.

December 7, 1897. WILLIAM JOHNSTON.

OBITUARY.

ALLSHORN.—On November 13, Frederick Allshorn, Chemist and Druggist, Edgware Road, London. Aged 77.

MACHON.—On November 29, Henry Machon, Chemist and Druggist, Saffron Walden. Aged 70.

DONALD.—On November 27, at Peterhead, David Donald, Chemist and Druggist, Perth, of the firm of Reid and Donald, of that city. Mr. Donald had been connected with the Society for many years, and served as local secretary for Perth from 1883 until his death.

BOWREY.—On November 19, James John Bowrey, at Kingston, Jamaica. Mr. Bowrey had been for many years in the Government service as its analytical chemist. Last year he returned home on furlough, but went back with impaired health, owing to an affection of the heart.

RALPH.—On December 2, Thomas Murphy Ralph, Chemist and Druggist, Dover. Aged 83.

WILLIAMS.—On December 8, Edwin Williams, Pharmaceutical Chemist, Edgehill, Liverpool. Aged 32. Mr. Williams was a native of South Wales, and had been a member of the Pharmaceutical Society since 1894. He had latterly been studying at the Liverpool University with a view to entering the medical profession. He was greatly respected as a good citizen and business man in Edgehill, where his death is deeply regretted by a large circle of friends.

ANSWERS TO QUERIES.

Special Notice.—*Scientific, technical, legal and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms and the registered number added in each instance should be quoted in any subsequent communication on the same subject.*

Tumenol.—You will find full particulars regarding this in the *Pharmaceutical Journal* for November 28, 1891, page 425. [*Reply to* W. B.—2/12.]

First Book on Botany.—You will find Scott's 'Introduction to Practical Botany' (A. and C. Black, 3*s.* 6*d.*) a good book to begin with. [*Reply to* Student.—2/2.]

Arsenical Soap.—It is necessary to register the sale of this soap in the same manner as any other preparation of arsenic. Please address future queries to the Editor. [*Reply to* G. C.—2/9.]

Detached Journal Wrapper.—Your letter has been handed to the Secretary of the Pharmaceutical Society, to whom all communications from members and associates respecting delivery of the Journal should be addressed. [*Reply to* E. A. G.—119/1.]

Local Secretary.—There is no local secretary at Redditch. The town might be reckoned as falling within the Birmingham district. But it would perhaps be best for you to communicate with headquarters direct. Please address future queries to the Editor. [*Reply to* Mercury.—2/10.]

To Remove Cadaverous Odour from the Hands.—A thorough washing in warm water, after well soaping, with a paste composed of equal parts of finely-ground almond meal and fresh coffee is said to be very efficacious. Rub the hands well with this mixture for ten minutes. [*Reply to* J. A.—1/26.]

Fixing Red Colour in Counterpane.—It is impossible to advise you unless we know what the dye is. The fabric must have been very badly dyed for the colour to run as you describe. Try immersing it in a strong alum bath first, then rinse well, and afterwards wash in the usual way, using only cold water. [*Reply* to H. P. M.—1/27.]

The Factor 0·3185 in the Analysis of Spirit of Nitrous Ether.—The weight of a given volume of NO at a temperature of 15° C. will equal $\frac{x \text{ C.c. NO} \times 273 \times (15 \times 0{\cdot}0000896)}{288}$ and, as the weight of ethyl nitrite equivalent to this is as 30 is to 75, as you will see by the equation :—

$$\underbrace{C_2H_5NO_2}_{75} + KI + H_2SO_4 = \underbrace{NO}_{30} + I + KHSO_4 + C_2H_5HO$$

the weight of ethyl nitrite from a given volume of NO will be x C.c. NO $\times \frac{273 \times (15 \times 0{\cdot}0000896) \times 75}{288 \times 30}$ or x C.c. NO $\times$ 3·3185. [*Reply to* Stanton.—1/31.]

Incandescent Mantles.—We regret that we have not time to spend a few days in separating the rarer earths contained in the mantles you favour us with, requesting an analysis, nor probably would such figures be of much service to you if you had them. The mantle consists of a cotton fabric saturated with salts of the rare earths, yttrium, erbium, glucinum, and perhaps "samarium." On ignition this leaves a skeleton of the respective oxides. If you are interested in the matter of these mantles you will find a deal of information in the *Journal of the Society of Chemical Industry* for the current year. No, carbon certainly would not answer the same purpose, for it would quickly burn away in the air. The carbon filaments of the incandescent electric lamps, of which you are probably thinking, are protected from the atmospheric oxygen by placing them in as high a vacuum as can possibly be produced. [*Reply to* Olga.—1/25.]

Choice of Microscope.—One of Leitz's instruments will serve your purpose as well as any. They are kept in stock by C. Baker, 244, High Holborn, London, W.C., who will send price-lists and particulars on application. A low-priced instrument by F. Darton and Co. was referred to in the Journal for November 27 last (see page 488*b*). [*Reply to* A. H. P.—2/20.]

Capsule Moulds.—Messrs. A. and K. Robertson, Rodney Street, Canonmills, Edinburgh, intimate that they can supply a new improved apparatus for the manufacture of gelatin capsules, and also an improved sealer for expeditiously sealing the same. Messrs. Archibald McMillan and Co., Shrub Place, Leith Walk, Edinburgh, also send particulars of suitable gun-metal moulds and a special pan to hold the melted gelatin. [*Reply to* X. Y. Z.—114/18.]

Petroleum Hair Restorer.—The most satisfactory petroleum hair preparation is simply an odourless and colourless non-viscid petroleum, of sp. gr. between 0·865 and 0·870. This, suitably perfumed with lemon oil or oil of citronella, gives a preparation which is said to be really efficacious. It is stated to act both as a germicide and as a stimulant to the hair. You can procure a suitable petroleum from Messrs. Harker, Stagg and Morgan, Laurence Pountney Lane, E.C. [*Reply to* I. F. P.—115/41.]

Colouring Brass.—We do not know precisely the appearance you wish to produce since "oxidised steel" is rust, which is not likely to be what you require. Possibly a lacquer is what you require, such as the following :—Sandarach, 1 oz. ; orange shellac, 1½ ; sandarach, 1 ; methylated spirit, 16. Dissolve and add enough dragon's blood to give the desired tint. If you want a dull steely-black this may be produced by applying dilute solution of perchloride of antimony, and then varnishing. Try this on a piece of brass first. For some cheaper goods finely powdered plumbago is rubbed over the article, and varnish is then applied to protect the coating. [*Reply to* T. D. V.—1/30.]

Dispensing Query.—In mixing the ingredients of your prescription—℞. Calcii oleat., ℥ii. ; lanolin, ℥iii. ; vaselin. alb., ℥i. ; pulv. acaciæ, gr. 80 ; pulv. acid. boric, gr. 16 ; aq. rosæ, ℥i.—the following method was found to give the best result :—Melt the calcium oleat., lanolin, and vaseline together in an evaporating dish, add ℥ii. of the rose water, in which the boric acid has been previously dissolved, and heat until the rose water boils, then throw out into a very hot mortar containing the powdered gum, and stir vigorously until perfectly cold. Add little by little the remainder of the rose water, cold, to form an emulsion. The result is a white, somewhat sticky, ointment, quite free from lumps. [*Reply to* B. S.—2/3.]

Bleaching Bones for Anatomical Specimens.—The following information is supplied by an expert who has been for many years in charge of one of the finest anatomical museums in London. He says, however, that he would look with suspicion on a very white skeleton. The discoloration of the bones of a skeleton is generally due to the fat not having been thoroughly removed. To effect this is not very easy. Boiling in benzene is suggested, but is, of course, very dangerous, because of the inflammable nature of the solvent. Another method is to macerate the bones in dilute soda solution at body temperature (on no account boiling) for several hours, and then washing well with water. If the grease is thoroughly removed the skeleton will become whiter, not darker, with age. Dilute solution of chlorinated lime is sometimes used, but its employment requires great care, or the bones will be damaged, and then, also, the skeleton will again darken if the thorough removal of the grease has been scamped. Another method which you are advised to try would be washing the bones several times per diem with peroxide of hydrogen after thorough removal of the fat, and subsequently exposing them while moist to bright sunlight. Doubtless this would in time bleach them. You have probably noticed that the bones of animals exposed to the light and air on the short grass of meadows speedily become very white, so do empty mollusc shells. [*Reply to* H. P. M.—1/27.]

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Abraham, Bell, Best, Bustard, Butler, Carter, Casson, Cocks, Cragg, Davies, Davis, Dean, Dobb, Duncan, Elstob, Godsland, Hallaway, Hill, Hocken, Hooper, Jackson, Johnston, Jones, Kelly, Kirkby, Maben, McKellar, Mason, Mathews, Moore, Morkill, Murison, Pearson, Penistar, Pollitt, Rankin, Robb Saul, Thorpe, Walker, Wand, Waterall, Watt, Williams, Wilmer.

A PROPOSED NEW METHOD OF EXAMINING PEPSIN.

BY ALFRED H. ALLEN.

At the present time the subject of pepsin-assaying is in a very unsatisfactory condition, for reasons which it is unnecessary to capitulate. There has commonly been no marked distinction drawn between the mere conversion of albumin into syntonin or other soluble form and the true peptonisation characteristic of the action of pepsin, both these changes being confounded under the term "digestion." Further, the influence of the hydrochloric acid used in effecting solution of the albumin has been generally ignored or considered insignificant, whereas it has been shown by Mr. L. A. Harding (*Pharm. Journ.* [3], xxv., 914) that a material part of the solvent action observed is really due to the acid employed, and hence should be duly allowed for before coming to a conclusion as to the strength of the sample of pepsin under examination. But the acid, under the ordinary conditions of a pepsin assay, only converts the albumin into syntonin, the peptonisation of this product being due to the pepsin. Hence, as admitted by various authorities, the true gauge of the activity of a sample of pepsin is the amount of peptones, or of mixed peptones and albumoses, formed by its action under specified conditions. These facts have been pointed out and insisted on by Mr. J. H. Stebbings (*Analyst*, 1889, pp. 197, 210, 229), who, in an able criticism of the existing methods of assaying pepsin, recommends a process of Kremel, which allows of the actual determination of the amount of digestion-products formed, and presents other advantages over the methods commonly employed.

Kremel's process, however, does not allow of any distinction being drawn between the albumoses formed and the true peptone, which is the peculiar and characteristic product of proteolysis by pepsin. Until recently, the determination of the actual peptone formed in digestion experiments was troublesome and uncertain, but I believe that, by the application of a new process recently devised by me in conjunction with Mr. A. B. Searle (*Analyst*, 1897, p. 259), this difficulty has been in a great measure overcome, and that the rational testing of pepsin has been brought within the range of practical possibilities. The method is based on a reaction which suggested itself to me as an improvement on a plan of precipitating proteids recently proposed by Rideal and Stewart (*Analyst*, 1897, p. 228). Their method consists in passing a current of chlorine gas through the solution to be tested, filtering off and washing the resultant precipitate, and weighing it after drying at a temperature not exceeding 70° C., or preferably *in vacuo* over sulphuric acid. The precipitate is stated to be remarkably stable at ordinary temperatures, but to be readily decomposed on heating, becoming black and rotting the filter-paper.

In order to avoid the inconveniences attaching to the use of chlorine gas, and the drying and weighing of an unstable precipitate, we employ bromine-water as the precipitant, in place of chlorine* (*Ph. J.*, *ante* 118, 377). The precipitate is filtered through asbestos, treated with strong sulphuric acid while still moist, and the contained nitrogen determined by Gunning's modification of Kjeldahl's process. The following are the details of the method as employed by us :—

A quantity of the solution, containing about 1 gramme of the albuminoid matter, is diluted with cold water to a volume of about 100 C.c., and treated in a conical beaker with sufficient hydrochloric acid to render the liquid distinctly acid to litmus. Bromine water is then added in considerable excess, and the liquid stirred vigorously for some time. The yellowish precipitate which separates is at first flocculent, but becomes more viscous on stirring, and finally adheres in great part to the sides of the beaker. When this occurs the liquid is allowed to stand at rest for about half an hour, or until the precipitate has settled. It is then decanted through an asbestos filter.*

The precipitate adhering to the sides of the beaker is washed several times with cold distilled water, the washings being poured through the filter. Occasionally, when the greater part of the free bromine has been washed out of the precipitate, the liquid does not filter clear. It is therefore advisable to keep the washings separate from the filtrate, and, if necessary, to add bromine or sodium sulphate to the wash-water.

The contents of the filter tube (including the asbestos and, if necessary, the glass-wool) are returned to the beaker used for the precipitation, 20 C.c. of strong sulphuric acid added, and the beaker covered with a watch-glass and heated over wire-gauze. The substance chars and bromine vapour is evolved. When frothing has ceased, about 10 grammes of powdered potassium sulphate should be added, and the liquid boiled vigorously until colourless. It is then allowed to cool, diluted with water, an excess of caustic soda added, the ammonia distilled off, and the distillate titrated with standard acid. From the nitrogen found the amount of proteid or gelatinoid body present is deduced by a suitable factor. Where Kjeldahl's method cannot be conveniently employed, the precipitate produced by bromine might be dissolved in hot alcohol of 97 per cent. (about 50 C.c. will suffice), the solution evaporated to dryness at 100° C., and the residue weighed. The weight found, multiplied by 0·87 will give that of the corresponding peptone.

As the results of experiments detailed by us in the original paper (Allen and Searle, *Analyst*, 1897, p. 259), it was found that practically the whole of the nitrogen of gelatin, gelatin-peptone, egg-albumin, syntonin, and the mixed products of the acid-pepsin digestion of egg-albumin was thrown down in the precipitate produced by bromine. In the case of syntonin, equally good results were obtained, whether the acid used for conversion of the egg-albumin was left unneutralised or was exactly saturated by caustic soda; but if the solution was made alkaline and bromine then added, the proteid could not be completely precipitated by subsequent free acidulation of the liquid. The mixed peptones formed by the acid-pepsin digestion of the white of hard-boiled eggs were also completely precipitated by bromine.

On the other hand, bromine produced no precipitate in acidulated solutions of urea, creatine, creatinine, asparagine, or aspartic acid. A meat extract prepared by soaking raw beef in ten parts of cold water, straining, boiling and filtering from the coagulated albumin, gave only a trifling precipitate on addition of bromine-water. In the liquid concentrated to one-tenth a larger precipitate was obtained, the greater part of which dissolved on diluting the liquid with an equal measure of water, and almost the whole on addition of a few drops of hydrochloric acid. On the other hand, the complete precipitation of albumin and gelatin by bromine seemed to be quite unaffected by dilution or the presence of free hydrochloric acid.

In applying the bromine process to the examination of the products of proteolytic digestion, it is conveniently combined with

* I have just become aware, from a preliminary paper, of which the substance was communicated to the Physiological Society on June 10, 1897, that Messrs. F. Gowland Hopkins and F. W. Brook have recently been independently studying the precipitation of proteids by bromine. They find the precipitate from solutions of egg-albumin to contain a very constant proportion of bromine, the mean being 14·89 per cent. Their results present many points of theoretical interest, and form a valuable complement to those described by us in the *Analyst*.

* The filter is made by placing a plug of glass-wool in a cylindrical funnel (constructed of a vertical glass tube drawn out at the lower end), and covering it with a pad of pulped asbestos. If the filter be properly constructed, no water-pump will be required, and a perfectly clear filtrate will be obtained.

the Bömer method of precipitating all proteids but peptones by saturating the solution with zinc sulphate. From the filtrate the true peptones can be precipitated by bromine, while all basic and amido products of the digestion remain in solution. The process has been devised too recently to allow of any extended experience of its working, and some modifications of its details may be found desirable, but the following is the method as the author employs it at present. About 1 gramme of egg albumin in scales is powdered and treated in a 100 C.c. flask with 20 C.c. of warm water. When the albumin has dissolved, the liquid should be heated in a bath of boiling water to coagulate the albumin, and cooled to a temperature not exceeding 40° C.; 0·100 gramme of the sample of pepsin to be tested should next be added, followed by 25 C.c. of decinormal hydrochloric acid. The liquid is then warmed to 40° C. and kept at that temperature for three hours. A volume of decinormal sodium carbonate, exactly equivalent to the acid previously used, is then added, and the liquid heated on the water-bath to 90° C. for ten minutes. It is then cooled, diluted with water to 100 C.c., and passed through a dry filter. The precipitate will consist of syntonin and any unaltered albumin, while the filtrate contains any albumoses and peptones formed. Fifty C.c. measure of the filtered liquid is now saturated in the cold with powdered zinc sulphate (of which about 60 grammes will be required), allowed to stand, with occasional agitation, for half an hour, and then filtered. The filtrate* is acidulated with hydrochloric acid, and treated with an excess of bromine water. The precipitate is treated as already described, and the peptone formed deduced from the nitrogen found by Kjeldahl's process. An allowance must be made for the nitrogen contained in the pepsin employed. The albumoses may be deduced from the nitrogen found in the zinc precipitate, after washing it with a saturated solution of zinc sulphate. They may also be deduced from the nitrogen found by treating the remainder of the filtrate from the coagulated syntonin, etc., by Kjeldahl's process, either with or without previous precipitation with bromine.

The following results were obtained by the above process:—

	With acid alone.		With acid and pepsin.	
	Nitrogen.	×6·3=Proteid.	Nitrogen.	×6·3=Proteid.
Total, by Kjeldahl's process on albumin used ..	·0986	·621	·0986	·621
Total, by Kjeldahl's process on pepsin used	—	—	·0106	·067
	·0986	·621	·1082	·688
A. Unchanged albumin (filtered off)	·0722	·455	Trace	Trace
B. Syntonin (precipitated on neutralising and boiling)	·0264	·166	·0387	·244
C. Soluble proteids (by bromine in portion of filtrate from syntonin)	—	Trace	·0704	·444
D. Peptones (by Br in filtrate from $ZnSO_4$ precipitate)	—	None	·0470	·296
E. Albumoses plus pepsin (by difference)	—	Trace	·0234	·147
F. Albumoses (corrected for pepsin)	—	Trace	·0128	·080
Sum of proteids (exclusive of pepsin), *i.e.*, A, B, D, and F	·0986	·621	·0985	·620

One gramme of commercial egg-albumin in scales was used with 0·100 gramme of pepsin. The digestion was conducted at 40° C., and continued for three hours, though in the experiment in which pepsin was used all the albumin had dissolved in about an hour and a half.

In its analytical characters pepsin closely resembles the albumoses. Thus it is not precipitated by acids, nor by potassium ferrocyanide in presence of acetic acid, but it is completely precipitated by saturating its solution with zinc sulphate.

The following results were obtained when the sample of pepsin used was analysed by the bromine process:—

	Nitrogen per cent.		×6·3= Proteids per cent.	
Total (by Kjeldahl's process on original pepsin)	10·57		66·59	
Precipitated by bromine (on original pepsin)..... ..	10·12	10·56	63·63	66·40
By Kjeldahl, in filtrate from bromine precipitate ..	0·44		2·77	
Precipitated by zinc sulphate (on original pepsin) ..	9·69		61·02	
By bromine, in filtrate from zinc sulphate precipitate	0·70	10·53	4·41	66·31
By Kjeldahl, in filtrate from bromine precipitate ..	0·14		0·88	
Precipitated by acetic acid and potassium ferrocyanide.....	None		None	

The precipitates produced by bromine did not settle or adhere to the sides of the beaker nearly so readily as usual. Hence it was found impossible to obtain perfectly clear filtrates, the residual nitrogen in which was accordingly determined by Kjeldahl's process.

In addition to proteid matters, the sample contained 1·00 per cent. of ash and 5·00 per cent of moisture, the remainder being milk-sugar.

I am uncertain what amounts of pepsin and albumin will be found best to work with in practice, but I think complete solution of the albumin is an essential condition of a trustworthy assay.

It is well known that in pepsic digestion the process of proteolysis stops at the production of peptones, whereas in trypsic digestion only the antipeptone resists further changes, the hemipeptone readily splitting up with formation of tyrosine, leucine, lysine, and other crystallisable non-proteid products.

The following results illustrative of trypsic digestion were obtained in my laboratory by Mr. Searle. Scale egg-albumin was dissolved, coagulated, and digested for three hours with a glycerin extract of pancreas, in presence of sodium bicarbonate:—

	Nitrogen.	×6·3=Proteid.	
By Kjeldahl's process on albumin used	·0986	·621	
By Kjeldahl's process on pancreatic extract used ..	·0100	·063	
	·1086	·684	
Undissolved matters (unchanged albumin and anti-albumin)	·0350	·220	
Precipitated from filtrate by zinc sulphate (deutero-albumose)	·0227	·143	
By bromine from filtrate from zinc sulphate precipitate (peptones)	·0290	·183	
Unprecipitated either by zinc sulphate or bromine (tyrosine leucine, etc.)	·0210	·132	
	·1077		·678

No precipitate was produced by treating the filtered product of the digestion with acetic acid and potassium ferrocyanide, proving the absence of acid and alkali albumin.

THE QUANTITATIVE SEPARATION OF THE HALOGENS.

BY RALPH S. SWINTON.

In the course of an investigation into the quality of commercial halogen salts, I have obtained results which have necessitated a critical examination of the official and other processes for the determination of their purity. Mohr's process, which is official in the British, United States, and German Pharmacopœias, for determining the purity of these salts, is satisfactory when only one of the halogens is present, but in the presence of the second or third is misleading or absolutely valueless.

Some of the samples of so-called pure potassium iodide on the market have been found by this process of testing to give figures corresponding with considerably over 100 per cent., a percentage of 102 to 103 being by no means uncommon. Although this, of course, does not answer the B.P. requirement, yet the absence of

* The precipitate produced by zinc sulphate may be washed with a cold saturated solution of the precipitant, and the whole of the filtrate acidulated and treated with bromine. A preferable plan is to weigh the liquid containing the precipitate formed by zinc sulphate, pass it through a dry filter, and weigh the filtered liquid before adding acid and bromine. The result obtained on the fraction actually employed (usually about four-fifths) is then calculated to the total weight of liquid previously ascertained.

a readily applicable test for the laboratory has hitherto discouraged the determination of the cause of such discrepancies and the relative proportions of halogens present which contribute to such results. After much experimenting in setting free the halogens with various oxidising agents, *i.e.*, potassium permanganate, potassium bichromate, etc., under various conditions, the following process was found to answer best, both as regards ease of application and exactness of results :—

Determination of Iodide in any Mixture of Haloids.

Having an approximate idea of the percentage of iodide present, a quantity of the substance corresponding to about 0·2 gramme of iodine, should be taken (in the absence of such knowledge a rough estimation should be made by the process subsequently detailed) and dissolved in 10 C.c. of water in a separator, about 5 C.c. of pure sulphuric acid slowly added, and the separator kept cool meanwhile by allowing a stream of cold water to flow over it ; then thoroughly agitate first with 5 C.c. liquefied phenol (90 per cent.), next with 20 C.c. saturated bromine water. After agitating with the bromine water there should be no trace of bromine left uncombined ; the excess combining with the phenol to form tribromophenol—

$$C_6H_5OH + 3Br_2 = C_6H_2Br_3OH + 3HBr.$$

At the same time most of the iodine is replaced by the bromine. The iodine is washed out with successive portions of 10 C.c. of chloroform till the chloroform is colourless, two washings usually sufficing. The solution is again agitated with liquefied phenol and bromine water as before, when it will probably be found that more iodine has separated. This is again washed out, the process being continued as long as any trace of iodine is set free, two phenol and bromine treatments usually being sufficient.

The mixed chloroform solutions of the iodine are now covered with a layer of water and titrated with $\frac{N}{10}$ solution of hyposulphite of sodium in the usual manner with starch paste as indicator.

1 C.c. $\frac{N}{10}$ sodium thiosulphate = ·01265 Gm. iodine.
1 ,, ,, ,, = ·01655 Gm. potassium iodide.

It may be thought that a better method for effecting the bromine absorption would be setting free the iodine with excess of bromine, no phenol being present, washing out the iodine and excess of bromine together, then adding phenol to the chloroform solution to absorb the bromine ; but this is impracticable owing to the formation of iodine-bromide.

The process is found to answer well for the assay of syrup of iodide of iron, the syrup being previously diluted with three volumes of water.

The following table shows some of the results obtained by the pharmacopœial test in comparison with this process.

	Percentage by B.P. test.	Percentage by this process.
1. Potassium Iodide (specially purified) ..	99·5	99·1
2. ,, ,,	102·2	89·8
3. ,, ,,	98·6	95·7
4. Sodium Iodide (Anhydrous)	99·8	94·5
5. ,, ,, ($2H_2O$)	83·2	79·8
6. Ammonium Iodide	101·5	97·8

Determination of Bromides in the Presence of Both Iodides and Chlorides.

For the determination of bromides if the reaction for iodine be obtained, the salt is examined by the process given subsequently for the determination of halogens in mixtures containing all three.

From 0·2 to 0·3 gramme of the salt is dissolved in a separator in 10 C.c. water acidified with 2 C.c. of a cooled mixture of equal volumes of sulphuric acid and water. About 20 C.c. of chloroform is introduced ; then excess of saturated aqueous solution of potassium permanganate, and the separator violently agitated.

The chloroform, which dissolves the liberated bromine, is now run into a 20 oz. stoppered bottle containing 20 C.c. alcoholic solution of potassium iodide and the treatment with chloroform repeated until the washings are colourless. The bromine replaces an equivalent amount of iodine from the potassium iodide, and this solution is now largely diluted with water and titrated with $\frac{N}{10}$ thiosulphate.

1 C.c. $\frac{N}{10}$ thiosulphate = ·007976 Gm. bromine.
1 C.c. ,, = ·011879 Gm. potassium bromide.

The precautions absolutely necessary in this process are :—

First, to add the chloroform before the permanganate solution so that the bulk of the bromine set free may be immediately absorbed by the chloroform in order to minimise the risk of loss of bromine vapour.

Second, to make sure that excess of potassium permanganate solution is present, this being easily ascertained by the persistence of the violet colour.

Third, to largely dilute with water before the titration with thiosulphate, in order to obtain the blue colour of the iodide of starch, which does not develop in the strong alcoholic solution.

The following table gives the comparative results obtained in the examination of various bromides by this process as compared with the B.P. :—

	Percentage by B.P. test.	Percentage by this process.
1. Ammonium Bromide	100·6	99·2
2. Potassium Bromide	101·5	95·5
3. ,, ,,	101·1	98·6
4. Lithium Bromide	91·5	89·4
5. Strontium Bromide	72·1	70·3

Determination of Iodides, Bromides, and Chlorides in the Presence of Each Other.

I have employed the following process quite irrespective of the relative proportions of the halogens present :—

About 10 grammes of the mixture of haloid salts is dissolved in 250 C.c. of water, and the iodide in 10 C.c. of this is determined as previously described.

For the bromine determination another 10 C.c. is acidified with 2 C.c. of sulphuric acid (1 in 2) as previously described ; the iodine is removed from this by adding the theoretical volume of $\frac{N}{2}$ potassium permanganate solution (which quantity is easily arrived at by dividing the number of cubic centimetres of $\frac{N}{10}$ thiosulphate used in titrating the iodine from 10 C.c. of the solution by 5) and thoroughly washing out with chloroform. This chloroform is run into an alcoholic solution of potassium iodide as described in the determination of pure bromide.

The bromine in the residue is next set free with excess of saturated solution of potassium permanganate, the same precautions being observed as in the case of pure bromide determination. The bromine is now thoroughly washed out with chloroform, which is run into the alcoholic solution of potassium iodide, into which the chloroform solution of the iodine has already been introduced. As before, the bromine replaces an equivalent quantity of iodine from the potassium iodide.

After dilution with a large volume of water, the total amount of free iodine is now determined by titration with $\frac{N}{10}$ thiosulphate.

To calculate the amount of bromine :—

Let A = number of C.c. of $\frac{N}{10}$ solution of thiosulphate of sodium required for the iodide in 10 C.c. of the solution.

And B = number of C.c. of ditto required by the bromine and iodine in 10 C.c. of the solution.

Then B − A = number of C.c. of thiosulphate required by the bromine, which, multiplied by ·007976, gives the weight of bromine in 10 C.c. of the solution.

The Chlorine Determination.

10 C.c. of the solution is titrated with $\frac{N}{10}$ silver nitrate in the usual manner, using potassium chromate an indicator.

To calculate the chlorine present—

Let X = number of C.c. $\frac{N}{10}$ $AgNO_3$ solution required to precipitate the chlorides, bromides and iodides in 10 C.c. of the solution.

And Y = number of C.c. ditto required by the known quantity of bromides and iodides in 10 C.c. of the solution.

Then X-Y = number of C.c. of $\frac{N}{10}$ $AgNO_3$ solution used by the chlorides, which, multiplied by ·003537, gives the weight of chlorine in 10 C.c. of the solution.

I have experimented with the process on mixtures of the halogens in proportions unknown to me, and the results are, in my opinion, worth recording :—

	Mixture.	Percentage in mixture. Calculated.	Found.
1.	NaCl	98·11	98·10
	AmBr	1·07	1·09
	KI	·82	·81

	Mixture.	Percentage in mixture. Calculated.	Found.
2.	NaCl	41·73	41·34
	KBr	30·07	30·31
	KI	28·19	28·38

My thanks are due to Messrs. Wright, Layman, and Umney, in whose laboratory the above work has been conducted.

BOTANIC GARDENS OF THE WORLD.

VIII.—KEW GARDENS.

(*Concluded from page 524.*)

Sir W. Hooker, about the year 1851, commenced the formation of an American Garden in the woods on the north side of the Sion vista. The shrubs planted there became much too crowded, and in 1882 it became necessary to separate and replant them. The area of the plantations was doubled. Some of the fine magnolias which were smothered among the azaleas were placed on the lawns, and various American deciduous trees were introduced, *e.g.*, tulip trees and liquid-ambers.

During the year 1868 some very important contributions were given to the Museums at Kew by the Commissioners of the Paris Exhibition of 1867, and the large collection of portraits and of botanists, botanical paintings, and drawings which belonged to Sir William Hooker was purchased. His Herbarium, which he had lent to Kew, was also purchased by the nation, together with a part of his botanical library and the whole of his botanical correspondence and MSS. The books include "many illustrated works of the greatest rarity and cost, large paper copies, and privately printed books, and a unique collection of botanical pamphlets, extracts, etc. The arranged and bound correspondence comprises about 40,000 letters, dating from 1810, and is of great interest in relation to the history of botany."

In 1869 the two Museums and the Herbarium were heated with a hot water apparatus. An important Carey collection of the United States was presented to the Herbarium, and also the extensive Demerara collection of rare plants made by Mr. Sandbach Parker. The incorporation of the great East India Herbaria, including those of the defunct East India Company, was completed, the end of a task that had occupied ten years. In 1871 a very complete and valuable collection of Yarkand plants, the first ever made in that region, was presented by Dr. Henderson; the valuable Indian Herbarium of Dr. Wight, late Superintendent of Cotton Plantations in Madras, containing more than 4000 species, and the Chilian and Fuegian collections, made during tho voyage of H.M.S. "Nassau" to the Straits of Magellan, also became the property of Kew.

In 1872, the Royal Horticultural Society presented to the Museums a fine collection of Mexican pine cones, models of Indian fruits, etc., and Dr. Schweinfurth, the celebrated traveller, gave a very fine collection of Central African vegetable products. The Secretary of State for India presented to Kew a complete set of the Trigonometric Survey Revenue and other maps of India of great value in reference to the vast Indian herbarium and the work of Indian botanists preparing floras and Governmental reports there. The Herbarium also received several important novelties, including plants collected by the Rev. C. New on the Alpine zone of Kilimanjaro, the only hitherto visited mountain in Equatorial Africa, a fine collection of Brazilian plants, a beautiful collection of Appalachian mosses, and an interesting collection of Indian plants made at the beginning of the century by missionaries in India. Large Burmese collections were also presented, and 1850 Bornean plants were communicated by Professor Parlatore, of Florence.

During the year 1875 all the products and specimens illustrating the Palmaceæ in Museum No. 2 were entirely re-arranged. The separate collection of specimens illustrating vegetable teratology and pathology, which was commenced in 1874, forming the first public collection to illustrate the diseases and the transformations of the organs of plants, was considerably augmented and revised. Amongst the collections received by the Herbarium in this year was that of John Stuart Mill, comprising specimens collected from the Pyrenees to Bithynia.

In 1876 want of room to show properly specimens illustrating the Cryptogamic groups of plants led the Curator to commence a systematic revision of the whole collection. The Prince of Wales placed at the disposal of the Kew officials the large collection of fruit, seeds, and woods collected during his Indian tour, and the herbarium formed by his botanical collector. During the year 1877 the new building, consisting of a large hall with galleries, was constructed to accommodate the herbarium. In 1878 the revision of the collection in No. 1 Museum and No. 3 Museum was proceeded with. The herbarium collections were moved into the new building, and three very important collections were received, the Indian Herbarium of Mr. Clarke, containing 25,000 plants, a number of very interesting plants collected in tropical northern Africa by Dr. Schweinfurth, and a very fine series of north Asiatic and Japanese plants from the Imperial Garden of St. Petersburg.

In 1879 the very important Mycological collection of the Rev. J. M. Berkeley, the well-known writer on fungi and the potato, vine, hop, and onion diseases, was presented by him to Kew. M. Cosson, of Paris, presented an important collection from southern Algeria, Morocco, and eastern Persia. A very complete collection of cones and pines, containing almost every species in Gordon's Pinetum, was presented by the Director to Kew. In 1880 Professor Beccari presented a complete set of Sumatran plants collected by himself; a herbarium of Canadian flora, one of Fijian plants, a large collection of Mexican and south U.S. plants, and a fine collection of European roses and *Rubi* were also acquired.

A magnificent collection of timber products which had been presented to Kew by the Indian Government in 1878, was arranged there in 1879. The India Office was even more liberal, transferring to Kew the entire economic botanical collections forming part of the India Museum at South Kensington. It undertook to pay all the expenses of removal, to expend not more than £2000 in extending Museum 1, to make a grant of £200 a year to efficiently maintain the Indian collections, and to place at the disposal of the Kew establishment the services of one of the curators of the Museum under the India Office. The India Office also sent to Kew about 36 tons of wood, specimens which had been lying for years at the India Office Stores in Lambeth. The India Office, moreover, transferred to the Royal Gardens the Iron House belonging to the India Museum, and defrayed the expense of its removal, re-erection and warming with hot water. The muscological herbaria at Kew were further enlarged by the addition of the herbarium of Dr. Schimper, whose 'Bryologia Europæa' will always be a standard work of reference in this subject. General Munro's herbarium was also left by will to the Gardens. He did for grasses what Schimper did for European mosses.

In 1880, No. 2 Museum was enlarged by an extension at the west end, and the Herbarium received the interesting European Herbarium of Mr. Joad and a very valuable collection of Chinese plants. In 1882 the collection of European and exotic lichens formed by the Rev. W. R. Leighton was acquired by Kew, and the very interesting collections from Madagascar of the Rev. R. Baron.

The fourth report of the Commission on Scientific Instruction and the Advancement of Science recommended "That opportunities for the pursuit of investigations in physiological botany should

be afforded in the Royal Gardens at Kew." Mr. Jodrell, wishing to give effect to this recommendation by the erection of a laboratory, placed £1500 at the disposal of the Kew authorities. This gift provided for the ercction and fitting of a building, one storey in height, with rooms for chemical, physiological, and microscopic work. Even before its full equipment, Dr. Tyndall was able to use the laboratory for his researches "On the Conditions by means of which Bacteria which determine Putrefactive Changes in Infusions of Organic Substances can be effectually excluded from them." During the year 1877 Professor Burdon Sanderson made researches there "On the Electrical Phenomena of Plants Exhibiting Spontaneous Movements," and Mr. Romanes made some experiments connected with Pangenesis. The principal researchcs conducted in the laboratory in 1878 and 1879 were Mr. F. Darwin's "Observations on the Physiology of Leaves," Professor Marshall Ward's "Investigations on the Development of the Embryo Sac," and Professor Church's "Inquiry into Albinism." The laboratory was also used for experimental demonstrations given in the evening to the young gardeners, and for the examination in physiological botany for the degree of Doctor in Science. During the year 1882 one of the microscope rooms was occupied by Mr. Bower for various researches in vegetable morphology and histology, and the chemical rooms were occupied by Messrs. Cross and Bevan for "Investigations into Cellulose and its Derivatives with regard chiefly to the Phenomena of Lignification."

During the year 1880, the North Gallery was erected opposite the Temperate House from designs prepared by James Fergusson, F.R.S. This building was presented to the nation by Miss Marianne North to contain a large collection of coloured sketches made by her in nearly all the tropical and subtropical regions of the world, with the view of illustrating the characteristic floras of the regions visited by her. The pictures were arranged and hung under her own supervision, and the gallery was opened to the public in July, 1882. The pictures, more than six hundred in number, embraced subjects from Teneriffe, Brazil, Jamaica, the United States, California, India, Ceylon, Singapore, Borneo, Java, Japan, Australia, and New Zealand. Before the Gallery was opened, Miss North caused a descriptive catalogue to be prepared by Mr. Hemsley, A.L.S., and the official publication of subsequent editions of the catalogue was taken over by the Stationery Office. Thc finest part of the collection illustrates the Australian flora. Subsequently Miss North visited South Africa and the Seychelles, and added a new wing to her museum at Kew to receive the paintings made during this visit. Her last journey was to Chili in the autumn of 1884. On her return from South America in 1885, Miss North at once commenced the hanging of the new paintings which, including those from South Africa and the Seychelles, numbered about two hundred. The floral design on the door-frame is painted only in part from Miss North's studies.

During the year 1877, there was considerable agitation for the early opening to the public of the Gardens on bank holidays. The next year they were consequently thrown open to the public from 10 o'clock in the morning. The visitors to Kew were judged by the directors to comprise seven classes :—1, people interested in horticulture; 2, the industrial classes, chiefly artisans and mechanics; 3, cultivators of orchids, ferns, etc., anxious to name their collections; 4, colonists temporarily resident in England; 5, pleasure-seekers; 6, botanists and other scientific workers in the Herbarium; 7, visitors for scientific purposes, including gardeners, nurserymen, and pharmacists. "During the two great exhibition years Kew was the habitual Sunday resort of the foreigners engaged in the Exhibition buildings, and presented altogether the appearance of a foreign population and language." The fullest week-day at Kew is Monday, when artisans go in great numbers, often in bodies of several hundreds, representing charities, unions, and other organisations.

During the autumn of 1872 the Curator of Kew Gardens visited Belgium to inspect the magnificent collection of tropical plants cultivated there. In 1875 it was found necessary to revive the office of Assistant Director, which had been suppressed on the appointment of Dr. Hooker as Director. The great increase in the Kew collections and the expansion of the official correspondence with the Admiralty, India, and Colonial Offices, foreign and Colonial Governments, travellers, and scientists made Parliament see the necessity for the re-establishment of this office. Mr. Thistleton Dyer, formerly Professor in the Agricultural College at Cirencester, the Royal College of Science for Ireland, and the Royal Horticultural Society, was appointed. In 1876 the Director accepted an invitation from the chief of the Topographical and Geological Surveys of the United States to join his surveying party in Colorado and Utah. The most distinctive features of the vegetation of the middle regions of the Continent from the Atlantic to the Pacific were visited, and a large collection of seeds and museum specimens obtained for Kew, together with a herbarium of about a thousand species. Several new correspondents in various parts of the United States were also obtained for Kew. In 1882 the Foreman of the Propagating Department visited numerous horticultural and botanical institutions in England and Scotland, thus gaining many valuable additions to the Kew collections.

Under Dr. Hooker's directorship the supply of plants from Kew to British colonies and dependencies steadily increased. The plants desired by the Colonial Governments were largely economic in their character. In 1869, for example, large collections of tropical and other economic plants were sent to Natal, Cape Town, Calcutta, Brisbane, Mauritius, Singapore, Sierra Leone, and Rio de Janeiro, while seeds of the best Manila and Havana tobacco seed were sent to all our colonies suited to their cultivation.

In 1870 six more gardeners were sent from Kew to take charge of Indian cotton plantations, making a total of more than thirty Kew employés engaged there in various departments of horticulture and arboriculture. A large number of American seeds, especially of Californian and Rocky Mountain trees, were procured and distributed from the Gardens to the Colonies. The next year a very important step was taken in the sending out of a gardener from Kew to re-establish the Botanic Garden in Jamaica. A superintendent was also sent to the Hong Kong Gardens, and a skilful gardener was sent to form a garden at Bermuda. The tobacco culture in Natal, established from seeds sent from Kew, was in this year sufficiently advanced for the demand for cigars at the diamond and gold diggings to be supplied from Natal-grown tobacco. In 1871 were sent from Kew a skilful propagator under instructions from the Colonial Secretary, to superintend the extension of forest plantations in the island of Mauritius, a superintendent of the Agri-Horticultural Society's Garden at Calcutta, and a superintendent of the Botanic Garden at Natal, who took with him a large collection of economic plants. Papers respecting the opium poppy disease in India were transmitted to Kew to be reported on, as were also papers on the ravages of the vine pest, *Phylloxera vestatrix*, from various Continental states, by the Secretary of State for Foreign Affairs.

During the year 1872 large quantities of Liberian and of Cape Coast coffee were sent from the Gardens to the coffee-growing British possessions, and an interesting correspondence was carried on with the Local and Home Governments concerning the disease and insect ravages from which coffee had for some years been suffering in India, Natal, Ceylon, and other colonies. An assistant-director was selected for the Royal Botanic Garden, Ceylon, and a gardener was sent from Kew to superintend the Government Gardens at Lahore.

During the year 1876 seeds of Lattakia, Maryland, Virginia, and Orinoco tobacco were forwarded to Singapore for cultivation in that colony, and a similar collection was sent to the Governor of the Bahamas. The cinchona industry in Jamaica, established from Kew in 1877, had become a settled agricultural industry. The production of silk in the Australian colonies received an impetus in this year from the distribution from Kew of all the most valuable kinds of mulberries used in Kashmir and north-west India for sericulture. They were sent to the Australian Botanic Gardens. A curator for the British Guiana Museum was also sent out from Kew. The results of investigations into the origin and nature of the sugar-cane disease were communicated to the Government of Queensland, where it had done much damage. In 1878 a beetle, *Siderodactylus*, very destructive to grape-vines, imported into Ascension from South Africa, was reported on at Kew, and collection advised as a remedy, as was also a beetle *Oryctes monoceros*, very destructive to the cocoa nut in Zanzibar, the orange fly of Queensland, which attacks oranges, lemons, and peaches, was also reported on. In 1879 Professor Marshall Ward was sent out by the Colonial Office, on the recommendation of the Director, for two years as cryptogamist, to investigate the coffee-leaf disease in Ceylon. Cocoa seed from Trinidad was also sent through the instrumentality of Kew to Ceylon for transmission to Fiji and Singapore. In 1882, 250 packets of seeds of American, Asiatic, and European trees and shrubs were sent from Kew to the High Commissioner for his residence, there being no Government Garden; the grounds attached to his official residence were thus used for experimental cultivation.

REVIEWS AND NOTICES OF BOOKS.

Lectures on Pharmacology for Practitioners and Students. By Dr. C. Binz. Translated from the second German edition by Peter W. Latham, M.A., M.D. Vol. II. Pp. 451. London: For the New Sydenham Society, by H. K. Lewis, 136, Gower Street, W.C. 1897.

The second volume of Dr. Binz's work contains fifteen chapters dealing with a number of the more important drugs. The style adopted throughout is that of the lecturer speaking to a class of students; in such a subject as pharmacology this is probably an advantage, for the subject matter is largely controversial, the action of nearly every drug being susceptible of more than one explanation. Dr. Binz's style is easily followed, and the translator has well succeeded in his task of rendering the original in colloquial English. It might, however, be suggested that for English readers it would be well to provide footnotes or parentheses, giving in all cases the English name equivalent to the substances referred to in Germanised Latin. This is done in some cases, but not uniformly. The discussion of the galenical preparation of the various drugs treated of—cinchona, for example—will be almost useless to the English student, who is often none too well acquainted with the preparations in the British Pharmacopœia, since they refer to preparations in the German Pharmacopœia.

There are no startling deviations from orthodox pharmacological teaching. The author's explanation of the similarity of action of free salicylic acid and its sodium salt is ingenious, and he supports it by a number of experiments showing that carbonic acid of a certain concentration is capable of liberating salicylic acid from its sodium salt. This, however, by the way, could have been predicted from what we already know of the action of mass in chemical reactions. Dr. Binz holds that the experiments mentioned above serve also to explain why sodium salicylate unfortunately "fails to check rheumatic mischief on the left side of the heart. It meets there with very little carbonic acid—only 2·8 per cent." As is usual in German works on this subject much reliance is placed on experiments performed on animals and conclusions deduced by analogy therefrom, and judging from the context the lectures were illustrated pretty freely by experiments on animals actually performed before the class.

Among the omissions from the present volume, which occur readily to one's mind, are an account of the use of pure guaiacol and allied bodies, our recently increased knowledge of the composition of ipecacuanha and the employment of de-emetinised ipecacuanha. With the exception of a few errors, obviously accidental, *e.g.*, the formula for salol, p. 276, and the statement on p. 31, that liquor calcis is a 1 per cent. solution of calcium hydrate, the pharmaceutical details must be strongly commended for their terseness and accuracy. In conclusion it may be stated that Dr. Binz's lectures provide very easy and interesting reading, and present a clear and well-balanced account of our present knowledge of pharmacology.

A List of Retail Prices Recommended by the Council of the Manchester Pharmaceutical Association. Price 1*s.* Manchester: Cartwright and Rattray, Limited. 1897.

Following closely upon the heels of the Liverpool chemists' price list comes the price list issued under the auspices of the Manchester Pharmaceutical Association. Although there is nothing to indicate that this is the fifth edition, it may be presumed that it is, because the latest copy available is headed "Fourth edition" and there does not appear to have been an intermediate issue. Upon comparison with the fourth edition, one is forcibly impressed by the great increase in the number of items, which have risen from about 1200 to between 1600 and 1700. The arrangement of the list of dispensing changes remains unaltered, but it is enlarged by the inclusion of tablets, capsules, cachets, eye-drops, and lotion powders. What appears to be a new feature is the inclusion of a special rate for four ounces of most articles, which is lower than the ounce rate, but slightly higher than the pound rate. The intention is evidently to encourage larger purchases than four ounces. The list of mineral waters has been improved by the addition of a column briefly setting forth their properties. Two ideas have been adopted from the Liverpool list, namely, the transverse ruling of the pages and the page devoted to surgical dressings. It is rather curious to find that the one alkaloid which, above all others, should be sold with the utmost precautions—aconitine—is not marked with the cautionary word "Register." It is questionable whether the prices fixed are such as are likely to be obtained by any large number of pharmacists; the list, however, will no doubt be of use to many as a guide to the retail price of articles which are not in constant demand.

The Middlesex Hospital. Reports of the Medical, Surgical, and Pathological Registrars for the Year 1895. Price 2*s.* 6*d.*, net. London: H. K. Lewis. 1897.

Dr. F. J. Wethered, Mr. John Murray, and Dr. A. F. Voelcker are jointly responsible for this volume, which contains, in an accessible form, the record of a year's work at the hospital. In this form the record is more readily available for reference than if it existed only in the original bulky MS. Though we miss the original articles which form one of the leading features of the annual reports of the largest hospitals, it must be admitted that as a help to anyone who may be collecting statistics for the investigation of any subject, these systematised registers in good print will be an invaluable aid. Every hospital that has a medical school attached to it should publish a volume of this kind, the materials for which are ready to hand.

King's College Hospital Reports. Edited by Nestor Tirard, M.D., F.R.C.P.; W. Watson Cheyne, F.R.C.S., F.R.S.; John Phillips, M.A., M.D., F.R.C.P.; and W. D. Halliburton, M.D., F.R.S. London: Adlard and Son. 1897.

The first place in this volume is given to a memoir of the late Sir George Johnson, consulting physician to the hospital. The writer observes: "His life was one of continuous education." This is the predominant feature of the highest type of the physician. Besides the usual analytical reports of the various departments of the hospital there are a good number of original articles which prove that a healthy vitality exists among the alumni of the medical school. To King's men the volume has an additional personal interest, owing to the addition of a short directory headed: "What Old King's Men are Doing." Altogether the volume shows that the administration of the hospital is kept up to a very high standard.

The Analyst's Laboratory Companion. By Alfred E. Johnson, A.R.C.S.I., F.I.C. Second edition. Price 5*s.* London: J. and A. Churchill. 1897.

Pharmacists engaged in analytical work will find this a useful compendium of information for facilitating calculations. It includes tables dealing with the processes employed in the examination of substances most frequently subjected to chemical analysis, and by reference to these tables the analyst is enabled to translate his results directly into the terms commonly adopted in practice—percentage, grains per gallon, etc.—without the labour and consump-

tion of time involved in a tedious calculation. The tables have been found correct, so far as the figures given have been tested by recalculation. The author has brought his book well up to date, tables based on results published in the present year being in several instances incorporated in the present edition, and some of the tables have been recalculated in accordance with recent researches. In the tables for the conversion of metric into imperial weights and measures the values obtained by comparison with the new metric standards have been adopted. By these the value of the metre is given as 39·370113 inches, the litre as 1·75980 pint, and the gramme as 15·43236 grains. The book is usefully interleaved with blank pages for notes, and similar blank pages are given at the end of the volume. Altogether it is a most useful publication, and a really practical laboratory companion.

Some North American Coniferæ. By Edson S. Bastin and Henry Trimble. (A series of papers, reprinted from the *American Journal of Pharmacy*, January, 1896, to July, 1897. Philadelphia, 1897. 8vo.)

The collection into one form of this series of papers renders it much more useful for reference. It treats very fully of the botany, histology, chemistry, and economic uses of a number of the American conifers, and will prove interesting on several grounds. The comparison of the microscopical structure of the leaves, which is now rendered more convenient, shows at a glance how comparatively easy it is to recognise the leaves of different species from the structure alone, and at the same time how characteristic the form of the leaf, as seen in transverse sections, is for each of the groups *Pinus*, *Picea*, *Abies*.

The assay of the tannin present in the different species shows that the amount may vary considerably at different times during the year, being least in the case of *Tsuga canadensis*, in May and June, and greatest from October to January, thus apparently decreasing during the months when, presumably, the yield of resin is greatest. Of the trees mentioned, those which appear to be the richest in tannin are *Picea alba* with 21·63 per cent. in dry bark, and *Tsuga canadensis* with 24·4 per cent. in dry root bark. The species used for the production of turpentine or "naval stores," as it is called in the United States, are *Pinus palustris*, *P. tæda*, *P. echinata*, and *P. cubensis*. The largest proportion is yielded by the first-named species or long-leaved pine, and is largely collected in North and South Carolina and Georgia. *Pinus echinata*, the short leaf or yellow pine, unlike *P. palustris*, grows in dry and sandy soils, and is also exploited in North Carolina. *Finus tæda*, the Frankincense or Loblolly pine, yields resin less profitably than *P. palustris*, and is found in both wet clay and dry sandy soils. *Pinus cubensis*, or the Cuban pine, is a coast species from South Carolina to Louisiana. The last three species yield the turpentine of the southern States. It is calculated that North America furnishes about nine-tenths of the turpentine of commerce, that of France and Austria being hardly one-tenth of the world's production. The resinous exudation known in the United States as spruce gum is obtained from the black spruce, *Picea nigra*. It is collected in winter from decayed knots or seams in the tree. The largest quantities are obtained in Maine, New Hampshire, Vermont, and Canada. *Tsuga canadensis*, or hemlock spruce, better known to herbalists as *Pinus canadensis*, and to sylviculturists as *Abies canadensis*, yields the hemlock extract so largely used for tanning heavy leathers, the powdered bark employed in herbal remedies as an astringent, and the Canada pitch or hemlock resin used as a substitute for Burgundy pitch in plaisters.

ROYAL PHOTOGRAPHIC SOCIETY.

On Tuesday, December 14, a large number attended the theatre of the Society of Arts to hear a lecture by Professor Gabriel Lippmann on Colour Photography, the Right Honourable Lord Crawford occupying the chair. The ordinary business of the Society was first disposed of, after which Lord Crawford introduced Professor Lippmann to the audience, referring, in a few well-chosen words, to the distinguished position he occupies in the scientific world.—Professor Lippmann thanked the President for the kind reception he had given him, and said there was not much to say about his process of

Colour Photography,

but he would give a brief description of it, and exhibit some of the results obtained. The photographs were taken in the ordinary way, but with two modifications. The first of these is that the sensitive film used must be perfectly transparent and free from cloudiness, and the second is that a mirror is placed behind the film in close contact with it during exposure, a condition best obtained by pouring mercury into the space behind the plate. A camera which he had there was constructed so that when the plate is inserted, a narrow reservoir for the mercury is formed which is filled by lifting a small bag of mercury, the neck of which opens into it. To empty it the bag is lowered, when the mercury flows back again. Having provided these things, one exposes just as in ordinary photography, and develops with pyrogallol or any other developer. The plate obtained, however, is not in itself a photograph in colours; the deposited silver is brown, and when held towards the light appears like an ordinary negative, only the light reflected from it produces the coloured image of the object photographed. By means of a lantern a number of Professor Lippmann's photographs were thrown on a screen. The first was a photographed spectrum, and in this case, where only the simple colours were dealt with, the result was perfect. Every part of the spectrum was reproduced strongly and with all its natural brightness. The explanation of the theory was briefly described. When the light is reflected from the surface of the mercury, each ray returning by its own path, stationary waves are produced. The transmission of a wave and its reflection were illustrated to the audience by means of a rope attached at one end to the wall and held at the other in the hand. When struck sharply at one end, a wave was produced which traversed its length, and being reflected at the other end, travelled back to its starting point, but when one end was made to swing upward and down with regular short intervals, so that the forward waves and backward waves always passed each other at the same points, then the rope divided itself into a number of stationary vibrating loops. Every colour is produced by ethereal vibrations of a particular wave-length, and as the entering and issuing rays interfere, they are virtually no longer propagated, but remain stationary, and the silver is acted upon in such a way that the film may be said to acquire the structure of the incident rays. Thus, when the plate has been developed and is caused to reflect white light, which, as is well known, contains all the elementary colours, the part that has been acted upon by red light can only send back red light, all the other colours being stopped because they belong to vibrations of a different wave-length. Several facts go to prove that this explanation is the correct one, namely, that the phenomenon is the result of mechanical adaptation of the form of the deposit. One of these, the most simple, is that if the gelatin film is made to expand by breathing on it to render it moist, the colours change in the order of the spectrum, from violet to red, and finally disappear, and as the film slowly assumes its normal condition the colours reappear in the reverse order. When the wave-length of the film is increased it only reflects light of a greater wave-length. Thus the red colours vanish at once, while the violet becomes green, blue, and red successively before vanishing. This experiment was carried out before the audience with the photographed spectrum. The question whether the colours formed by the superposition of simple colours could be perfectly reproduced had been answered in the course of experiment in the affirmative, the effect being comparable with the rendering of composite sounds by the phonograph. A large number of colour photographs taken from stained windows, flowers, landscapes, etc., were then exhibited, all of which elicited hearty applause from the spectators.—Questions were invited by the President, in reply to one of which Professor Lippmann said he had not yet succeeded in printing these colours, but he was sure it was possible.—Mr. T. W. Swan, in rising to move a vote of

thanks to the lecturer, expressed the credit due to him for the valuable discovery he had made, and emphasised the fact that this was so much the greater because the success was purely the outcome of carefully applied theory, and was not in any way due to chance.—The vote was seconded by Mr. Spiller, and being put to the meeting by the President, who wished to couple with the name of the Professor that of his assistant, M. Berger, was carried unanimously.—Professor Lippmann, replying, expressed his gratification at the reception he had received, and supported the views of Mr. Swan as to the utility of theory.

CHEMICAL SOCIETY.

At an extra-ordinary meeting of this Society held on Wednesday, December 15, Professor Dewar, President, in the chair,

The Kekulé Memorial Lecture

was delivered by Professor F. R. Japp, F.R.S.—Professor Japp commenced with a few words expressing the fitness of placing on record our sense of Kekulé's worth. Kekulé was born at Darmstadt on September 7, 1829. As a boy he had shown remarkable gifts and developed an extensive knowledge of flora and butterflies. It was first decided that he should become an architect, and some time was spent in the apprenticeship to this profession, but the time thus spent, as he afterwards said, was not wasted. He developed the habit of forming an architectural picture of the things he considered, and he remained an architect—a molecular architect—to the last. He became a student under Liebig at Giessen, and was offered the post of assistant to Liebig, but this he declined, and went from there to Paris, where he formed a friendship with Gerhardt. Returning to Germany, he graduated as Doctor of Philosophy, and soon after came to London and became acquainted with Williamson, with whose philosophical ideas he was soon familiar. Having studied with such men as Liebig, Dumas, Gerhardt, and Williamson, it might be said he was the pupil of no one, and it is fortunate that his training was not one-sided, for, although he was sure to come to the front in the end, chemistry would otherwise have moved more slowly. He used humorously to describe how while returning from Islington to his residence at Clapham on an omnibus late one night he fell into a reverie, and saw the atoms dancing before him, some atoms holding one other atom, some two, and others more. He was awakened at the end of his journey by the conductor, but remained up most of the night committing his ideas to writing. Some time later, while he was attempting to write but did not progress, he again fell to dreaming, and again the atoms gambolled. This time they grouped themselves into various figures; some of them formed twining snakes, and presently one of these seized its own tail. Another night was spent in putting his ideas on record. This was his first conception of the very famous theory of the structure of benzene. From England he went to Heidelberg, and at that time there began a new era in organic chemistry. At the recommendation of Stas he became Professor at Ghent, and as at that time teachers had a greater attraction than universities, he drew many students to his laboratory. Among them were Baeyer and Ladenburg and one English student of the lecturer's acquaintance, Professor Carey Foster. His 'Lehrbuch der Organischen Chemie' was immeasurably superior to previous works, but it was never completed. An amusing story is related in connection with this. His pupils, who were anxious to have the book completed, played a practical joke on one of the festive occasions when professors and students met on even terms. A box made to look like a book was left for him at his place, which he found on opening to contain a set of writing materials. After this he took up the work again and completed the third volume, but got no further. He was professor at Bonn, where he had among his pupils, Bernthsen, Dittmar, and Thorpe. But his health now began to fail, and a deafness that he was suffering from began to increase. Occasionally he received an incentive to take up research work again when he doubted the results of other workers. His mental powers remained clear to the end, and he discussed chemistry with his friends whenever his strength permitted. There is no doubt that he had worked too hard while a young man. It is said that he was told by one of his professors, "If you want to do chemistry you will have to ruin your health." And it was characteristic of him that he only thought he was working unusually hard when he spent two or three nights without sleep. After some illness, when it was thought he was recovering, he was taken with disease of the heart and died on July 13, 1896. He was a fellow of the Royal Society, the Chemical Society, and of most of the learned societies of Europe. He was a good lecturer; his exposition was pure and logical, and although, as far as Professor Japp could remember, he used no notes, his lectures could have been written as spoken. Of a striking personal appearance, there was no listlessness about him. In directing the researches of students, he always tried to encourage their own thoughts, and was always pleased when he could draw suggestions from his students. Professor Japp had now to pass hurriedly over a very long account of Kekulé's work, in which he dealt with certain claims of priority lying between him and Sir Edward Frankland, it appearing that the theory of atomicity was enunciated by Frankland earlier than by Kekulé. Of all his work the most brilliant and valuable was the discovery of the benzene theory. There seems even now no limit to the extension of the value of this theory. The great industries of the coal tar and synthetical substances are founded upon it. A portrait of the great chemist was exposed to view on the President's table. A vote of thanks to Professor Japp was proposed by Dr. Müller, F.R.S., who said that Kekulé had been a very old and intimate friend of his. All the great progress of chemistry he could not help thinking was due to the foundation laid by Kekulé. He had a great enthusiasm for his work, and a charming manner with those with whom he was brought into contact. His pupils of Heidelberg, Ghent, and Bonn had continued his doctrine and carried on the vast work that he had begun.—Dr. Thorpe seconded the vote of thanks, saying it had been his good fortune to have studied under Kekulé. Besides being such a good lecturer (second only in Dr. Thorpe's opinion to Kirschoff) he was a skilful manipulator and most particular in his attention to detail. He was so sensitive about the quality of his work that what he could not carry out without fault he would leave alone.—The President, after making a few remarks on his own experience of Kekulé, put the vote to the meeting, which was carried unanimously.—Dr. Japp replied to the vote of thanks, adding that he thought in giving this lecture the controversial matters connected with Kekulé's career ought not to be shirked, and he had tried to give the facts as they stood, with fairness to all concerned.

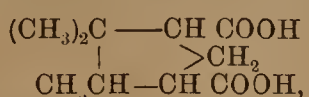
Thursday, December 16, Professor Dewar, F.R.S., President, in the chair.—After the reading of the minutes, the President announced that as there had lately been a deficiency in the number of foreign members of the Society, which, as the oldest chemical society in the world, ought to be cosmopolitan it was proposed to elect several more from among men whose names were connected with valuable experimental work. The ballot was to take place at the next meeting. Among the names of those proposed for election were the following:—Remsen, Ostwald, Moissan, Curtius, Arrhenius, and Van der Wals.—A paper was then read on the

Formation and Hydrolysis of Esters,

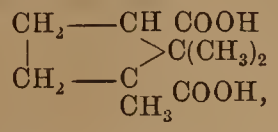
by J. J. Sudborough, Ph.D., D.Sc., and M. E. Feilmann, B.Sc. The work done by the authors had been chiefly confined to the substituted cinnamic acids. At first it had been tried to produce alkyl salts by the action of a 3 per cent. solution of hydrogen chloride in methyl alcohol at zero, but this did not succeed, as the nitrated substitution derivatives which it was wished to esterify were too sparingly soluble. By employing Victor Meyer's method, however, esters were formed, and the amount yielded in a given time was determined by extracting the alkyl salt with ether. The ether solution was washed with sodium carbonate solution, and the ester obtained by evaporating the ether weighed. The amount of ester obtained from each of a large number of substances was given, inferences as to the constitution being drawn, as it was found that stereo-isomers yielded characteristically large or small proportions of alkyl salt, according to their configuration. The amount of ester obtainable formed, according to the authors' conclusions, a ready method of finding the configuration of acids of this series. For example, where the phenyl group is in the trans position to the carboxyl, as in the compound—

$$\begin{array}{l} C_6H_5-C-H \\ \quad\quad\quad\

where these two are in the cis position to each other, only 24 per cent. of ester was formed. Allusion was made to a recent publication by Auschütz, in which results were described agreeing with those of the author. This relation existing between sterical structure and the yield of ester had a bearing on the constitution of camphoric acid. One of the carboxyl groups of this acid is easily esterised, but the other is not. Tiemann's formula—



showed no reason why one of the carboxyl groups should differ from the other, while Bredt's formula—



shows one of the carboxyl groups with a methyl group in the α position, which would retard the formation of ester. A second paper connected with this work was by J. J. Sudborough, Ph.D., and Lorenzo L. Lloyd. It was entitled—

Stereo-Chemistry of Substituted Acrylic Acids.

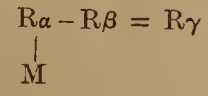
This paper dealt more completely with some of the facts established in the last paper. The authors claim to have proved the nature of sterical influences upon esterification. An influence is also exerted by the weight and volume of the substituting radicle. Fluorine hydroxyl, and methyl groups retard esterification in general less than bromine nitroxyl and carboxyl. Trichloracetic acid forms esters more easily than the mono-chlor or dichlor derivatives, but it was shown that here the effect of the affinity constant of the acid outweighed the retarding influence of the substituting chlorine, the trichlor derivative being the strongest acid of the three. The statement of Victor Meyer that those esters that are most difficult to form are also the most difficult to hydrolyse is not in every case true.—Dr. Japp complimented the authors upon the judgment they had shown in selecting examples to substantiate their theory. With the progress of work of this kind, we shall be in a position to understand more of atoms and molecules than we now do.—Dr. Hewitt, Dr. Shields, and the President also took part in the discussion.—A paper was next read by M. Wildermann, Ph.D., on

A New Method of Determining Freezing-points in Very Dilute Solutions.

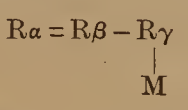
The paper consisted of two parts, the first discussing the theory from a mathematical standpoint, and the second describing the method of avoiding the errors that the theory showed would exist. The first part of the paper only was dealt with owing to want of time. In determining the freezing-point of a solution there are several factors at work, the influence of each of which must be attended to in order to get perfectly accurate numbers. The temperature of the liquid has always to be cooled below the freezing-point before freezing begins, and while the freezing goes on there is a flow of heat from the crystals produced, namely, the latent heat of the liquid. Heat is also given to the liquid by the work done in stirring, besides from the higher temperature of the room, while from the liquid, heat is passing to the cooling apparatus. The true freezing-point—the temperature at which the ice and liquid are in equilibrium—may thus differ considerably from the apparent freezing-point. The freezing is a time reaction, the velocity of which varies with all the conditions named. It also varies with the amount of surface the ice exposes to the liquid. —Dr. Pickering said that, judging from the brief summary of the paper the author had given, he thought he had done no more than state the well-known difficulty. The true point, it was well understood, was that at which only an infinitesimal amount of ice was formed, but in practice a certain considerable quantity must be formed, in which case the dissolved substance becomes concentrated in the liquid.—Dr. Shields expressed his approval of this paper, which, he believed, tended in the right direction. The want of more detail in the reading did not permit of criticism.—Dr. Ludwig Mond regretted also that the author had taken so little time in reading his paper, but the work was very important and must lead to valuable results.—The President asked what would be the amount of the correction expressed in the author's formula, in reply to which it was explained that this would vary with conditions, but it could be reduced with care by the method recommended to a very small amount. Following this came a paper by Arthur Lapworth, D.Sc., entitled—

A Possible Basis of Generalisation of Isomeric Changes in Organic Compounds.

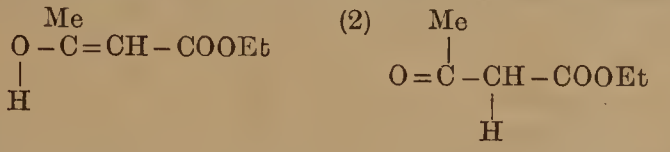
Dr. Lapworth explained that his paper dealt with no new facts, but with a consideration, to which, while it helped to explain many reactions hitherto unaccounted for, he had as yet seen no attention paid. It dealt more particularly with the various known cases of isomerism and tautomeric change. The following is a general formula of tautomeric substances :—



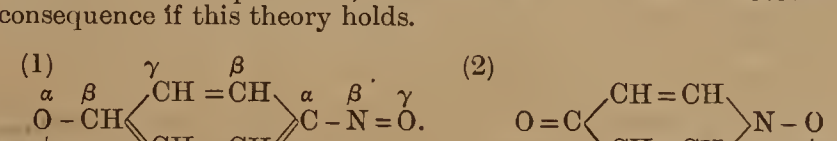
M is a labile atom or group, and any one of the radicles may be either carbon, nitrogen, sulphur, or oxygen. It can be shown, reasoning upon a stereo-chemical basis, that this form is interchangeable with the following :—



One or two cases were given ; more were described in the paper. Ethyl aceto-acetate was capable of existing in the two forms :—



Particular cases of this reaction would be represented by the equations—



When the attempt is made to prepare nitroso-phenol, quinone oxime is instead produced, and this is shown to be a necessary consequence if this theory holds.

The hydrogen atom wanders by three movements between α and γ positions to the extreme part of the molecule, and the nitroso-phenol becomes quinone oxime. A large number of other changes were mentioned which admitted of a simple explanation on this hypothesis.—Dr. Wynne remarked that the author had told them everything they already knew, but had left out the promised stereo-chemical explanation.—Dr. Norman Collie said he had watched the growth of the theory with interest, and had become more and more pleased with it. He regretted that time had not permitted Dr. Lapworth to enter into the detail of the stereo-chemical basis for the theory, but when once the hypothesis is admitted one can explain by logical deductions all the important isomeric changes.—Dr. Kipping agreed with the views of Dr. Collie. By the consistent application of known facts these reactions hitherto unexplained became perfectly clear. The only thing appearing strange to him was that no one had thought of it before. —Dr. Lapworth having replied to one or two questions, the meeting was adjourned to January 20, 1898.

Sodium Sulphite in Bronchitis.—In chronic fetid bronchitis and in pulmonary gangrene Dumas employs sulphite of sodium. Under the influence of this drug the fetid odour disappears and the quantity of expectoration is diminished. It is contra-indicated in cases predisposed to hemoptysis and when large cavities exist. It may be prescribed as follows :—Sodium sulphite, 1·5 gramme ; distilled water, 60 grammes ; simple syrup, 25 grammes.—*Bull. Gén. de Thérap.* (sec. Pharm.), ii., 573, after *Wien Med. Presse.*

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Potassii Tartras.—Note the great difference in the solubility of the normal and acid tartrates of potassium. This is a point of great practical importance in analysis, since the formation of the latter constitutes, under proper conditions, one of the tests for potassium. The conditions for the formation of the acid tartrate should, therefore, be thoroughly understood. (Compare notes on Potasii Acetas in "Students' Page" in the Journal for October 16 last.) Acetic acid precipitates the acid tartrate (see *ante*). For the titration of the alkaline residue left after ignition compare the remarks made under "Potassii Citras."

Potassii Tartras Acida.—This usually contains some calcium tartrate, and hence the hydrochloric solution of its ash will contain a small quantity of calcium chloride, and give a slight turbidity with oxalic acid solution, after the excess of hydrochloric acid has been neutralised with ammonia. One hundred and eighty-eight grammes of pure $KHC_4H_4O_6$ yield, by incineration, 69 grammes K_2CO_3, capable of neutralising 1000 C.c. vol. oxalic acid solution. The B.P. requirements are satisfied if 204 grammes of cream of tartar, corresponding to 92·15 per cent. $KHC_4H_4O_6$, yield this quantity.

Quininæ Sulphas.—In testing quinine sulphate for other cinchona alkaloids a process of recrystallisation is first carried out. This concentrates the other sulphates in the mother liquor, because they are much more soluble in cold water than quinine sulphate, which separates almost entirely on cooling and thus renders the determination of the impurities easier. The separation of cinchonine and cinchonidine from the mother liquor is based upon their insolubility in excess of ammonia-water, or ether, quinine being easily, and quinidine sufficiently, soluble, so that they are not precipitated by ammonia, or if precipitated, are removed by washing with ether. Quinidine is determined in a fresh portion by the formation of its hydriodide, a very insoluble compound, the corresponding salts of the other three alkaloids being much more soluble. Cupreine sulphate, which may be present in quinine sulphate made from cuprea bark resembles quinine sulphate closely in its slight solubility in water, hence it is sought for in the recrystallised salt and not in the mother liquor. The recrystallised product is treated with ammonia to set free the alkaloids, which are dissolved in ether, cupreine, like quinine, being easily soluble in this fluid. The ethereal solution, shaken with caustic soda solution, yields its cupreine to the latter, while the quinine remains in the ether. The hot alkaline solution of cupreine, when *exactly* neutralised with sulphuric acid, deposits the sparingly soluble cupreine sulphate on cooling.

Pyroxylin.—The directions for making pyroxylin as given in the Pharmacopœia are intended to effect the formation of di-nitro-cellulose. This is soluble in a mixture of alcohol and ether, while the mono- and tri-nitro derivatives (produced by shorter and more prolonged treatment respectively with nitric acid) are insoluble. The employment of sulphuric acid in this process is an example of an important use to which this body is applied in chemical reactions, viz., the removal of water (with which it combines) produced during the reaction. The formation of the water would otherwise weaken the nitric acid and check the nitration of the cellulose, which is only accomplished by *strong* nitric acid. Just as water is produced in the formation of metallic nitrates by the action of nitric acid upon hydroxides, *e.g.*,

$$KOH + HO\cdot NO_2 = KO\cdot NO_2 + H_2O$$

so in the formation of esters of nitric acid (organic salts of nitric acid), from the hydroxyl derivatives of hydrocarbons (alcohols) and nitric acid, water is similarly produced. For example, in the case of nitro-glycerin—

$$C_3H_5(OH)_3 + 3HO\cdot NO_2 = C_3H_5(O\cdot NO_2)_3 + 3H_2O$$

and in the case of cellulose, which from its chemical behaviour and near relationship to the sugars (see notes and formulæ under Saccharum Purificatum) is believed to contain several hydroxyl groups, water is also formed when nitric acid esters are produced by the action of nitric acid—

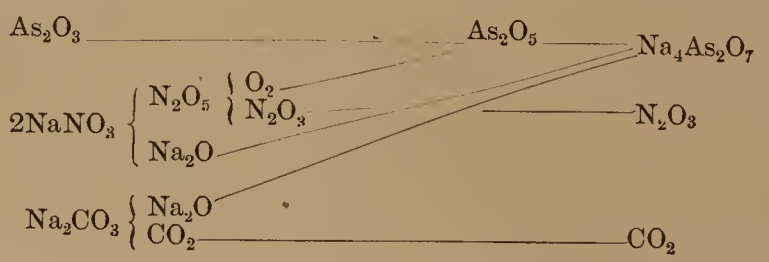
$$C_6H_{10}O_5 + 2HNO_3 = C_6H_8(ONO_2)_2O_3 + 2H_2O.$$

Note that the formula for cellulose is sometimes written $(C_6H_{10}O_5)_n$, for the molecular formula is undoubtedly some multiple of $C_6H_{10}O_5$. The value of n cannot be found by any of the ordinary methods of molecular weight for sufficiently obvious reasons, but attempts have been made to find its value by a study of the products obtainable from cellulose by hydrolysis, etc.

Soda Caustica.—Forty grains of pure sodium hydroxide neutralise 1000 grain measures of volumetric oxalic acid solution, since this quantity of solution contains 63 grains of oxalic acid, $\frac{1}{2}(H_2C_2O_4,2H_2O)$. The B.P. requirements are satisfied therefore by alkalinity equal to 90 per cent. NaOH. A purer product can be obtained by treating the commercial caustic soda with alcohol, filtering, and evaporating the alcoholic filtrate in a silver (not porcelain) dish, most of the impurities being insoluble in alcohol. A very pure form may also be obtained by the action of metallic sodium on water.

Soda Tartarata.—The determination of purity by titration of the alkaline ash is made as described under the citrate and tartrates of potassium. $KNaC_4H_4O_6,4H_2O = 282$ will yield $KNaCO_3$ which will neutralise 126 of oxalic acid. The Pharmacopœia requires the salt to be 99 per cent. pure.

Sodii Arsenias.—The nitrate of sodium oxidises the arsenious to arsenic anhydride, which combines with sodium oxide from the nitrate and carbonate of sodium to produced pyroarseniate of sodium—



The pyroarseniate combines with water to form the di-sodium hydrogen (ortho) arseniate when the fused mass is lixiviated with water—

$$Na_4As_2O_7 + H_2O = 2Na_2HAsO_4,$$

and this salt crystallises with 12 molecules of water, part of which is, however, lost by efflorescence until the composition $Na_2HAsO_4,7H_2O$ is attained. Arseniates present considerable analogy to phosphates, with which they are isomorphous. Both classes of salts form similar crystalline precipitates of magnesium ammonium phosphate and arseniate, and both yield yellow precipitates with nitric acid and ammonium molybdate, although the phosphate precipitate is obtained at temperatures below boiling, while the yellow precipitate does not appear with arseniates until the test mixture has been boiled. In performing the molybdate test for either phosphates or arseniates it is best to add the solution to be tested drop by drop *to* the solution of ammonium molybdate acidified with nitric acid, and *not vice versâ*. For the formation of the yellow precipitate (a complex compound of ammonium phosphate, or arseniate, and molybdate) is hindered by the presence of excess of phosphate, and hence it is desirable to have the ammonium molybdate always in excess. Phosphates and arseniates are, however, most easily distinguished by the colour of their silver salts, Ag_3PO_4 being yellow and Ag_3AsO_4 brick-red. The quantitative test for purity in the B.P. is based upon the production of lead arseniate.

$$\underset{2\times 186}{2Na_2HAsO_4} + \underset{3\times 379}{3[Pb2(C_2H_3O_2),3H_2O]} =$$
$$Pb_32AsO_4 + 4NaC_2H_3O_2 + 2HC_2H_3O_2 + 9H_2O.$$
$$372 : 1137 :: 12{\cdot}4 : 37{\cdot}9$$

The official requirements are therefore not very exacting. Note the formation of free acetic acid shown in the equation. This is due to the fact that the lead salt precipitated is the normal arseniate, not the one corresponding to the sodium salt used, which would have the formula $PbHAsO_4$, Refer to the remarks made under "Ferri Phosphas," where an analogous case occurs. Free acetic acid does not, however, prevent the precipitation of lead arseniate.

PHARMACEUTICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 25, 1897.

MEMBERSHIP OF THE SOCIETY.

Within the last two or three years various indications have been afforded of an important development of opinion in regard to the representative function of the Pharmaceutical Society, and on no point has there been more general agreement than on the principle that qualification under the Pharmacy Act, 1868, should be accompanied by membership of the Society. So thoroughly has that principle been accepted that some advocates of pharmaceutical unity, overlooking the fact that the Society is a voluntary organisation, have even proposed making membership a compulsory consequence of qualification under the Pharmacy Act. In strong contrast to this and other suggestions intended to give the pharmaceutical body greater coherence and corporate influence are the proceedings at a meeting convened in Manchester by Mr. Walter Gibbons, a report of which will be found at p. 575. We shall not attempt to criticise the statements in Mr. Gibbons' address, or the views put forward by other speakers at the meeting, otherwise than by stating that they manifest a total want of knowledge of the circumstances to which reference is made. But as a resolution was passed at the meeting with the object of inaugurating opposition to the Pharmacy Bill drafted by the Council, it may not be superfluous to point out the real facts of the case, and thus to show the absence of any foundation either for Mr. Gibbons' apprehension that the title of pharmaceutical chemist would be prejudiced or at all affected by the proposed admission of chemists and druggists to membership of the Society, or for his assumption that this step requires to be compensated for by changing the title of pharmaceutical chemist to that of Fellow of the Society.

The mistake underlying the views entertained by Mr. Gibbons and his friends is the assumption that there is a necessary connection between membership of the Society and the pharmaceutical chemist qualification. Nothing can be more erroneous, and the only explanation of this mistake seems to be a confusion of the conditions existing at the present time with those prevailing before the passing of the Pharmacy Act, 1868. The original project of the founders of the Society was no doubt that of establishing a qualification for all persons who were or had been actually in business on their own account at the time the Charter was granted, and also for such persons as might in the future be examined as to their fitness for admission as members of the Society. Until the Act of 1852 was passed membership of the Society was the only recognisable guarantee of qualification to practise pharmacy, and it may be matter for regret that this arrangement was not adhered to, as it would have placed pharmacists in the same position relatively as members of the medical profession. But that was not done, and although the idea of a special qualification to distinguish persons in business on their own account was maintained in the Act of 1852, the fact of having obtained that qualification did not necessarily involve membership of the Society: it was merely a condition of eligibility as a member, and many who have passed the examination as pharmaceutical chemists have not become members of the Society. At the present time more than one-third of the pharmaceutical chemists are not members of the Society. It is incorrect, therefore, to regard membership of the Society or the letters M.P.S. as indicating qualification under the Act of 1852, otherwise than as implying possession of the title of pharmaceutical chemist. When the Act of 1868 was passed, the conditions of admission to membership of the Society were extended in conformity with the adoption of the former assistant qualification as authority for carrying on the business of a chemist and druggist. Every person then registered in that capacity was made eligible as a member of the Society, and the connection between membership and the title of pharmaceutical chemist was still further reduced. At the present time about one-fourth of the members of the Society are not pharmaceutical chemists. Still the old idea of connecting membership with the pharmaceutical chemist qualification was not altogether abandoned, and consequently, in the case of persons qualifying as chemists and druggists after 1868, connection with the Society was limited to associateship, and future eligibility as a member was reserved to those taking the qualification of pharmaceutical chemist. But that provision has not had the effect of inducing any large proportion of the persons qualifying as chemists and druggists to become members of the Society by taking the higher qualification of pharmaceutical chemist. On the contrary, the majority have been content with the necessary legal qualification, and when joining the Society have done so as associates. The total number of associates is now nearly three thousand, or nearly double the number of the pharmaceutical chemist members, while there are upwards of six thousand chemists and druggists registered since 1868 who are eligible as associates, but have not joined the Society.

For many years past these consequences of the growing importance of the chemist and druggist qualification have shown the necessity of amending the conditions of eligibility for membership of the Society in order to meet the expectations of the body at large and to provide for its adequate representation. The propriety of making the necessary legal qualification the basis of membership of the Society has long been recognised, and in response to a very general expression of opinion on that point the Council has on two previous occasions introduced into draft Bills clauses which would enable every registered chemist and druggist to become a member of the Society. Such a change would not in the least degree affect the value of the pharmaceutical chemist qualification as compared with that of a chemist and druggist, though, in regard to the conduct of affairs by the Society, it would afford opportunity for more general participation in that work. The only serious objection that has hitherto been raised to the adoption of the plan in question was that brought forward by Mr. R. A. Robinson at the annual meeting in 1894 in reference to the limitation then proposed in the representation of chemist and druggist members on the Council. That limitation has now been abandoned in the draft Bill which the Council has prepared for introduction into Parliament, and the fact that this Bill has met with unanimous approval from all members of the Council may be taken as proof of their conviction that under existing conditions the alteration proposed would be not only an act of justice to those who are now connected with the Society as associates, but also conducive to that compact organisation of the entire trade which has been no less needed than desired for more than sixty years.

ANNOTATIONS.

The Characteristics of European Pharmacists have served Professor Remington as a text on his return from decadent Europe, where iced water is so great a rarity except in centres at which U.S. Americans do congregate. He thinks European pharmacists, as a rule, are more thoroughly educated in regard to what might be termed theoretical subjects than their American brethren, and he has noted that the European pharmacist endeavours to utilise his educational attainments commercially, as well as whatever marks of social distinction he can glean. In European countries, he remarks, one must expect to see pharmacists hedged about by the limitations engendered by tradition, legal enactments of long standing, and social restrictions, all of which have a powerful influence in developing conservatism, with its restraining tendencies, in a marked degree. Thus, antiquity is a potent factor in establishing the position of a pharmacy in Europe, and very old shopfittings are treasures to be carefully hoarded. The American pharmacist, on the other hand, usually regards antiquities of this character as useless, and he aims to get rid of his old fixtures as soon as the blush of freshness has departed; he would like to apologise for everything out of date, and if he can change his soda water fountain every two or three years he is more than happy.

The Pharmaceutical Society was referred to by Professor Remington as having had the greatest influence in elevating pharmacy in Great Britain, but in his opinion the Society would have achieved still greater eminence if more labour had been expended years ago in building up the greatest pharmaceutical school in the world. "This," he insists, "would certainly have been possible in London, the metropolis of the universe, with her immense population to draw from." The Pharmacy Act, whilst accomplishing great results in elevating pharmacy throughout Great Britain, is thought to have reacted unfavourably toward the growth of the School of Pharmacy, and this from natural causes, not because of any mismanagement. The position is briefly stated in these words: "In becoming a great examining centre for students, the Society failed to become the sole educating medium. . . . Examinations to establish legal qualifications should be conducted by bodies outside of those exercising educational duties, and undoubtedly education is a vastly more important function than examination."

Professor Green's Impressions of pharmaceutical education as conducted in the United States are reprinted side by side with Professor Remington's remarks in the *American Druggist*, and the Editor of that paper, while regretting that Professor Green did not have an opportunity for extending his observations to other schools than those he referred to, owns that the deductions drawn by him are fairly correct. But objection is taken to the statement that pharmaceutical education in the United States is on about the same plane as England, as it is pointed out that there is only one school in England, that at Bloomsbury Square, which will in any wise compare with a score of schools in America, either as regards material or intellectual equipment. "Out of some forty institutions teaching pharmacy in the United States, not one is so shamelessly conducted as a 'cram' institution as are the half-score or more of so-called 'colleges' in England, which blatantly advertise sessions of four months each in which to 'prepare for examinations,' and give as credentials of efficiency the names of their students who 'passed' at the last official examination."

American Educators therefore, it is stated, will decline to accept the estimate—"on practically the same plane"—as either a kindly or an accurate one, as applied to the pharmaceutical colleges of the two countries as a whole, England having but one Bloomsbury Square School, while in the United States there are a dozen colleges equally well equipped. But, notwithstanding any difference of opinion on this ground, cheerful acknowledgment is made of the "eminently scientific and fair-minded manner" in which Professor Green has investigated the subject, a manner described as being "in delightful contrast with the screeds against, rather than on American pharmacy," which Mr. Martin and some other Englishmen have seen fit to print after a "superficial" examination of the prevailing conditions. In conclusion, it is observed that when criticism is offered which is based on unprejudiced study and couched in polite terms, as in Professor Green's case, it will be welcomed as a possible means of betterment.

The Edinburgh Evening Meeting Report at page 574 ought to have appeared in last week's Journal, but our reporter was unexpectedly called out of town, owing to the serious illness of a near relative, and so prevented despatching the report by telegraph as arranged. In the discussion on the use of decimal weights and measures in dispensing, a considerable amount of misapprehension appears to have been manifested with regard to the legality of using such weights and measures. The Weights and Measures (Metric System) Act, 1897, distinctly states that "notwithstanding anything in the Weights and Measures Act, 1878, the use of a weight or measure of the metric system in trade shall be lawful . . . . and a person using or having in his possession a weight or measure of the metric system shall not by reason thereof be liable to any fine."

Much Sympathy will be felt for Mr. John Harrison, of Sunderland, member of Council of the Pharmaceutical Society and formerly Vice-President, who has lost his mother and one of his sons by death, within the brief space of three days.

A "Pick-Me-Up" supplied by an Aberdeen chemist and druggist to a customer has got him into trouble with the Excise authorities, but, fortunately for him, the magistrates held that the prosecution had failed to prove the identity of the bottle in which the alleged illicitly-supplied spirit had been sold, and the charge was found "not proven." A correspondent, writing from the same district, states that whisky flavoured with gentian, orange, etc., is sometimes illegally sold in the form of "pick-me-ups," and he asks for an expression of opinion regarding the sale of B.P. tinctures in a similar form. Whilst hoping that the alleged practice is non-existent, we would refer our correspondent to the Act of George II., which enables medicines compounded with spirit to be sold without a licence. It is there provided that the prohibitory clauses "shall not extend to any physicians, apothecaries, surgeons, or chemists, as to any spirits or spirituous liquors, which they may use in the preparation or making up of medicines for sick, lame, or distempered persons only." This exemption will obviously not apply if tinctures and similar preparations are knowingly sold for other than medicinal purposes, and the Excise authorities are doubtless prepared to take any steps that may be required to prevent any chemists in this country sinking to the level of some of their American brethren, who are alleged to openly encourage secret drinking. Of course, the professional spirit of chemists should alone suffice for this purpose, and it is sincerely to be hoped that none of the craft will do anything to imperil the privileges at present enjoyed by chemists in regard to the sale of spirituous preparations.

The Dangers of Erythrol Tetranitrate were illustrated at the Dartford works of Messrs. Burroughs, Wellcome and Co. on Wednesday, the 15th inst., when Mr. Lewis Jones, chemist and druggist, was killed whilst mixing a preparation of that compound, which is now somewhat extensively prescribed by the medical profession in cardiac affections. We are informed by the firm that the process the deceased was conducting consisted in diluting erythrol tetranitrate with finely-powdered lactose by gently stirring the substances in a mortar. No pounding or grinding was required, and the quantity of erythrol tetranitrate in his charge at the time was four ounces. The process for dealing with the substance had only been adopted after a series of careful experiments, has always been performed by competent chemists who knew the dangers of such nitrous compounds, and has been carried out many times during the past eighteen months without the slightest mishap. The erythrol tetranitrate was kept under lock and key in a dark closet, and it has been the rule of the chief of the department to caution those who handled it. The deceased received such a warning, and the cause of the explosion, which was violent but only local in its effects, can only be attributed to some extraordinary accident. Unfortunately, there was no witness to the actual carrying out of the operation on this occasion. Deep regret is expressed by the firm at this sad occurrence, which has resulted in the death of an employé who had gained high esteem in the conduct of his work.

Pharmacy Balls appear to increase in number year by year, and the season at which they become prevalent is now close upon us. The chemists' assistants of Birmingham and district come first on the list with their fixture for Thursday, January 6, their seniors following suit a fortnight later, whilst the chemists of the Plymouth district hold their annual ball on Friday, January 7. In London the Chemists' Ball will be held on Wednesday, January 19, and gentlemen who have not yet announced their intention of becoming stewards should at once intimate the fact to Mr. William Warren, of 24, Russell Street, Covent Garden, W.C. "To become a steward" is a euphemistic way of expressing the fact that one becomes responsible for the price of two tickets, value 30*s*, and the so-called steward has the satisfaction of knowing that some portion of the sum paid will be devoted to the sacred cause of charity, any surplus remaining after the expenses of the Ball have been met being handed over for the benefit of the Pharmaceutical Society's Benevolent Fund. The same holds good in the case of the Junior Pharmacy Ball, which is announced for Wednesday, February 9, and the Hon. Secretary, Mr. W. J. Henson, of Beulah Hill, S.E., will be glad to receive the names of intending stewards, the liability incurred in this instance being 45*s*., the price of six tickets.

Newspaper Nonsense About Chemists is, as has been pointed out on former occasions, hardly worth the trouble to contradict, particularly if it is printed in publications of the scrap order, and a cutting from the extra Christmas number of *Pearson's Weekly*, which a correspondent has been good enough to send, only helps to emphasise the conviction of the hopelessness of attempting to educate ignorant persons posing as journalists. As an example of the stuff printed by the prize-packet journal in question, it is stated that in England, Scotland, and Ireland "chemists may practise either with a university degree . . . . or merely with a qualification which is by no means so difficult to obtain." After perusing a third of a column of similar rubbishy statements, it becomes apparent that medical practitioners are referred to, and not chemists. The rest of the column, after a brief allusion to the acknowledged unfitness of chemists to act as physicians, is devoted to a screed about quacks and other matters concerning which the writer may know much, though he fails to make it clear why the article (save the mark !) is headed "Should Chemists Prescribe?" That question is neither stated nor answered, and in view of his display of ignorance on other points, the writer has probably acted wisely in keeping it out of sight. But, in any case, no one need, and probably but few people do, take such matter seriously. The great point in connection with papers in which it is published is to collect coupons or do something else, equally ridiculous, on the chance of winning prizes that may be possessed of the property of tangibility, though many persons doubt it. Beyond this, those papers exert no influence whatever, nor do they possess an atom of importance in the eyes of sensible people.

The Sale of Quack Medicines by Dublin chemists was the subject of a note in the *Medical Press* last week, in which it was stated that the proprietor of one particular brand of such preparations, recently introduced, was encouraged by firms "who hold their heads high and recommend themselves to the patronage of the profession by their abstention from this sort of trade." Without going so far as to term this "infamous conduct," our contemporary remarked that it was a question whether the medical profession should send prescriptions to any firm encouraging the sale of quack medicines. "Such firms," it was suggested, "should make a selection, and if they do not find it pay to manage their business respectably, must be content without the patronage of physicians and surgeons." It might be urged, on the other hand, that medical practitioners ought never to recommend any particular chemists to their patients, but that is only by the way. The sequel to the note appears in the *Medical Press* this week, six leading pharmaceutical firms in Dublin having sent a joint letter in which they protest that they have never sold the quack medicines referred to, and that it is the earnest desire of the signatories to confine themselves to the practice of pure pharmacy. Success in eliciting this disclaimer appears to have excited a craving for more, and a pharmaceutical "White List" is promised by implication, in an editorial utterance to the effect that it is trusted, in the next issue of this medical Argus, to add to the six names those of certain other Dublin firms "whose absence therefrom is conspicuous." If, subsequently, a similar list of British pharmacists should be compiled and published, it is to be hoped that it may occupy many pages.

The Royal Institution Friday evening meetings before Easter promise to be as interesting as could be desired. Commencing on January 21 with a lecture on "Buds and Stipules," by Sir John Lubbock, some of the subsequent lectures will be on "Instinct and Intelligence in Animals," by Professor C. Lloyd Morgan; "Some New Studies in Cathode and Röntgen Radiations," by A. A. Campbell Swinton; "The Metals Used by the Great Nations of Antiquity," by Dr. J. H. Gladstone; "The Scientific Principles of Modern Colour Photography," by Captain Abney; and "Recent Results of Physico-Chemical Inquiry," by Professor T. E. Thorpe; whilst Professor Dewar will lecture on April 1 on a subject to be announced later.

The Supposed Alcoholic Enzyme in Yeast is shown by Professor J. Reynolds Green, in the *Annals of Botany*, to be non-existent in English yeasts. Dr. E. Buchner, who announced that he had succeeded in extracting from yeast a liquid possessing the power of setting up the alcoholic fermentation in solution of cane sugar, operated on yeast which was dried by pressure, then ground up with fine quartz sand and kieselguhr, next made into a pasty mass with water, and finally subjected to a pressure of 400-500 atmospheres to the square inch. The expressed liquid had a specific

gravity of 1·0416 at 17° C., and was stated to resemble in its properties solutions of enzymes, causing a regular evolution of carbon dioxide when mixed with a 37 per cent. solution of cane sugar at temperatures ranging from 0° C. upwards. The extract only produced this effect with sugars which were attacked by the yeast from which it was prepared. The supposed enzyme could not be detected in so-called "German" yeast, and Buchner admitted that it was not present in all varieties.

In Professor Green's Experiments, though Buchner's method of preparation of the extract was followed as closely as possible, the copious evolution of carbon dioxide which Buchner speaks of did not occur when the extract was mixed with solution of cane sugar. In fact there were indications of an absorption rather than an evolution of gas. During the first three days the course of action resembled that of a weak enzyme, and appeared to confirm Buchner's views. After six days the activity had fallen to one-sixth the original amount, but then it rose again to the original amount, that being "quite contrary to one's experience of the action of enzymes." When the cane sugar used in the experiments was replaced by glucose, the quantity of carbon dioxide evolved did not show a diminution *pari passu* with the diminution of the weight of the sugar solution; it did not amount to more than one-tenth the quantity which would have been produced had the loss of weight of the sugar solution been caused by the splitting of a corresponding amount of sugar into carbon dioxide and alcohol. Other experiments yielded similar results, and the outcome of the work is a confirmation of the researches of Will, Lindner, Delbruck, and other investigators, all of whom have failed to extract the supposed enzyme by the method detailed by Buchner.

Professor Lippmann's Lecture is reported in the Journal this week (see p. 567). His discovery, as the *Standard* points out, is in itself almost more wonderful than if he had actually obtained the result at which photographers have been aiming for some years past, viz., photography in colours, properly so-called. The phrase as ordinarily understood means that, either in a negative or in a print from one, objects would appear to be of the same colour as they are in nature. But Lippmann's negatives, when looked at in the ordinary way, do not exhibit colours. They must be viewed in a particular aspect and under special circumstances. For example, to obtain a colour photograph of a red coat, a transparent photographic film must be placed in contact with a metal mirror during exposure. That ended, the plate is developed and fixed by the usual processes, the result being that, if the picture is viewed by reflected light, the representation of the coat will appear of a red colour. The transparency of the film is a condition of very great importance, and the presence of the mirror during the process is absolutely essential. To obtain a fully transparent film is by no means an easy task, those in general use being minutely granular in composition, and Professor Lippmann spent much time in experimenting before he could obtain one sufficiently perfect for his purpose. The colours produced, which can only be seen by reflected light and when the plate is placed in a certain position with regard to that light, are nothing but "interference" colours, of the same nature as those reflected by a soap-bubble or by mother-of-pearl. When a wave of light of any kind is reflected back from the mercury mirror through the film during exposure, it produces a mechanical effect on the film, setting it throbbing in harmony with its vibrations, and those thrills remain impressed upon the surface. Hence, when light is allowed to fall on the film in the proper direction, and is reflected from it, the "interference" produced is such as to exhibit to the eye the identical colours which produced the original vibration in the film.

THE WORLD OF PHARMACY.

PHARMACEUTICAL SOCIETY (NORTH BRITISH BRANCH).

The second evening meeting of the session was held in the Society's Hall, 36, York Place, on Wednesday, December 15, 1897, at 8.30, Mr. J. Laidlaw Ewing in the chair. The first paper read was by T. F. Dewar, M.D., D.Sc., and James Jack, F.L.S., on—

The Metric System in Prescriptions.

and the text of it will be found in last week's Journal at page 540. —Mr. Lunan, in referring to the difficulties attending the adoption of the metric system, urged the desirability of adopting the recommendation of the Edinburgh Chemists' Trade Association, that the metric system should be taught in all Board schools. He thought much credit was due to the authors for bringing before them and explaining the practical working of the system.—Mr. Macpherson said he thought doctors would probably adhere to drachms and grains in writing prescriptions. There was no doubt that in dispensing metric prescriptions the simplest plan was to use metric weights. In the writing of prescriptions he thought it would be better to use words instead of points—thus 1 gramme instead of 1·, and 1 centigramme instead of ·01—and thus avoid mistake. He had no doubt that when the system came into force, many difficulties and doubts would be cleared away.—Mr. Dott said the authors of the paper had entirely failed to prove any advantage of the metric system in dispensing. He failed to see how it would be of any advantage from the pharmacist's point of view. He thought their own system of different names for each weight had obvious advantages. With regard to pipettes, it was important to bear in mind that they were graduated to what they would deliver and not, as in the case of an ordinary measure, to their holding capacity. To measure exactly with a pipette it was better not to run out the whole. On the whole he was of opinion that the present system was safer than the metric system.—Mr. Henry spoke of the liability to error by misplacing the decimal point. Suppose, for instance, a doctor intended to write ·1 gramme of Dover's powder, and put the point on the wrong side. In such a case 15 grains might be given instead of $1\frac{1}{2}$ grain, and this might lead to a fatal error. He did not agree with the plan of having a table of equivalents. If they were to have the system at all it should be in its entirety.—Mr. Coats said the metric system was already a part of the Preliminary examination, and chemists should therefore be conversant with it. He had many foreign prescriptions to dispense, and his experience was that it was very difficult to make sure whether the point was there or not.—Mr. Rutherford Hill referred to the fact that the decimal system was becoming universally adopted all over the world, hence arose the agitation to have it legalised in this country. That had been done by a short Act last session, which he thought was more extensive than it seemed to be. He thought there was certainly considerable liability to error in dispensing from the omission, or, as Mr. Coats had said, difficulty in correctly deciphering the decimal point. In foreign prescriptions if there was one feature more outstanding than another it was illegibility. That, of course, could be overcome. The practical point was that this difficulty about the decimal point had not apparently impressed itself upon those who regularly used this system. Continental and American dispensers did not complain of difficulty from this source. It was a practical question whether difficulties arose or not, and the evidence of the authors tended to show that difficulties in practice were not so numerous or insuperable as might be supposed. It was very interesting and useful to have this subject treated by a medical practitioner and a pharmacist conjointly. Conjunction in such a way would in many cases greatly assist the advance of both medicine and pharmacy, and on that account the paper was to be heartily welcomed.—The next paper read was by Dr. Gordon Sharp on

True and False Cactus Grandiflorus.

This paper was printed in last week's Journal at page 539.—The Chairman said he had not had much experience of this drug. It was the green tincture that was used in Edinburgh, and, therefore, apparently it was genuine, but it had not gained the confidence of the medical profession.—Mr. Lunan said his experience of this drug was also adverse. In one case he procured a fluid extract for a well-known practitioner, but he only prescribed it once. It was a green fluid extract. He knew several doctors had

tried it and then let it alone.—Mr. Coats said he once had this tincture prescribed. What he had was of a brownish tint, and, therefore, probably had been made from Opuntia. The prescriber discarded it and went back again to foxglove. He agreed with Dr. Sharp that it was worthless.—Mr. Hill said Dr. Sharp had sent for exhibition specimens of the dried stems of *Cereus* (*Cactus*) *grandiflorus*, crushed stems and flowers of *Cereus grandiflorus* in spirit as imported from America, dried flowers of *Opuntia decumana*, a green fluid extract and tincture of *Cactus grandiflorus*, and two brown-tinted tinctures labelled "Tinct. cacti grandiflora," but really made from *Opuntia decumana*. It was astonishing how these drugs now and again got into use and speedily reached an extensive demand, and it was ultimately found that they were of no use at all. It would save pharmacists a considerable amount of harassing, worry, and loss if there was a syndicate to examine these drugs when they were put upon the market.—On the motion of the Chairman, a hearty vote of thanks was awarded to the authors.

Pharmacy Acts Amendment Bill.

The Chairman intimated that at the close of the Evening Meeting on January 19, 1898, a Special General Meeting of registered chemists and pharmaceutical students would be held, at which Mr. C. F. Henry would move—

> "That this meeting of registered chemists and pharmaceutical students, having considered the Pharmacy Acts Amendment Bill drafted by the Council, cordially approves of the same, and especially recognises the prudence and wisdom, at the present time, of limiting the scope of the Bill to urgent and non-contentious matters relating to the internal organisation and consolidation of the Pharmaceutical Society. The Meeting further pledges itself to use every legitimate means to aid the Council in securing its speedy enactment."

General Index to the Journal.

Mr. Rutherford Hill referred to the question of bringing out a general index to the *Pharmaceutical Journal*. They would readily understand that the production of a book like that meant a large expenditure of money, and the expense was a difficulty that stood in the way of the work being done right away. There had been no such index since 1878, and those who frequently referred to the Journal knew what trouble there was in wading through every individual volume from that date. If a general index could be got it would be exceedingly valuable, and would furnish a most useful counter reference book to every dispensing chemist. Even if they did not have a set of the Journal, they would know at once where the desired information could be got, and a reference by post to either the Library in London or Edinburgh could be made with the minimum of trouble. Where members adopted the useful plan of binding their Journals the value of the Index would, of course, be proportionately increased. Any member present who thought of having a copy might kindly fill up one of the order forms which had been placed on the table, and he would forward them to the Editorial Department. They would observe that a special conditional order would be accepted up till December 31.

Additions to the Library.

The Assistant-Secretary then directed attention to several new books and a consignment of volumes from Bloomsbury Square just added to the Library. The latter included the 'Proceedings of the British Pharmaceutical Conference' in Birmingham in 1865, thus completing the set of Conference proceedings in the Edinburgh Library.—The meeting then closed.

MEETING OF MANCHESTER CHEMISTS.

A meeting of pharmaceutical chemists, organised by Mr. Walter Gibbons, was held at the Victoria Hotel, Manchester, on Friday evening for the purpose of considering the position of Major men in connection with the new Pharmacy Bill.—Mr. Gibbons presided, and there were about a dozen other gentlemen present.—The Chairman, in opening the proceedings, announced that he had received eleven letters from various gentlemen, only one of whom was really against the object of their meeting. It was very evident they had got support outside, and very different from that given by supporters of the Bill. In regard to the Bill itself, it seemed to him to be an agitation got up by a few chemists and druggists who were not satisfied with their present position, and he could not help remarking that since it had been introduced a fortnight ago there had been practically no correspondence in support of it from chemists and druggists themselves; whereas, on the other hand, he was correct in saying that all the letters that had appeared in the *Pharmaceutical Journal* were condemnatory, and upheld the principles they were assembled that night to advocate. If membership was to be given to the chemist and druggist, then some compensatory advantage ought to be given to the pharmaceutical chemist. He noticed in one of the letters he had received from a chemist, it was stated that it would not be an inducement in future for pharmaceutical chemists to retain their membership, because there was no advantage from a purely profitable point, if he might use the expression. At present, pharmaceutical chemists were anxious to join the Society, but, when anyone could be a member after passing the qualifying examination they would be satisfied to remain as pharmaceutical chemists, and on that point alone, they should be able to have some distinction. The educational question was a grave one, and he himself was a strong educationalist. He did not know what view they might take, but it was a most important point in the pharmacy of the future, that education should be properly administered. If they were going to remove the incentive to pass that examination, were they not also going to remove an incentive to study, that was, for those who were not of a studious turn of mind? For they must not forget that they were what he had often described as a "cross" between a trade and a profession, and they had to take into consideration what was the best form of advertisement for themselves, and if he could advertise himself as a member of the Pharmaceutical Society and deceive those he was in touch with as to his qualifications, he had practically got every advantage, and practically ceased to trouble about the Major examination. He was bound to admit, while saying this, that there were many who would study for study's sake, but unless a man were of a studious turn of mind he would not spend money on the entrance fee, and money in going to Edinburgh or London for examination; and he believed he was correct in saying that the majority who passed the Pharmaceutical examination did it with that object in view, and, therefore, if they passed Clause 3, if it became law, the incentive to study would be removed from a large percentage of would-be pharmaceutical chemists—at all events in the present day—and that incentive being removed, must be detrimental to pharmacy. They would admit that they had had experience of men who would not trouble themselves about certificates, but got a liking for a higher class of pharmacy, and by becoming specialists in some particular branch benefited pharmacy generally, and this class of men they would probably lose by the course which was to be pursued by that Bill. This was the educational aspect, but the next point was the justice of the matter. What did the Pharmaceutical Council speak of, what did they undertake when they asked them to pass their Major examination? When they paid their fees they undertook they should have a certain advantage by passing it. That constituted a contract in itself. They received a sum, and in consideration they promised them something in return. They became members of the Pharmaceutical Society, and they had certain advantages—he did not say they were promised in so many words—but still many chemists were induced to become pharmacists by these means, and now they proposed to do away with them. The question was Were they going to allow them to break their contract with them, which was bringing the matter down to a purely business standpoint? He should be glad to hear the views of those present on the subject before them.—Mr. Woodruff said that one of the points in the new Bill which struck him forcibly was that which gave to present associates the title of members of the Society. If the Minor men were to be allowed to become members, it was only fair that the members in their turn should receive some distinction, either by the title of "Fellow," as had been suggested by several prominent members of the profession, or in some other manner. If it was to continue simply as member of the Pharmaceutical Society, it would be distinctly misleading. This would be especially the case with the medical profession, who he thought to a great extent recognised that the title pharmaceutical chemist and member of the Pharmaceutical Society had always gone hand in hand. He had no doubt that the membership of the Society would be increased, but he did not think to any great extent. As to the power of an associate to vote, he thought they were all pretty well agreed upon that. He thought the Minor man ought to have the power to vote, but a certain limit ought to be placed on the extent of that vote. He meant to say it ought not to be possible for the Pharmaceutical Council to consist of chemists and druggists only, which would be possible if that Bill became law.—Mr. F. Pilkington Serjeant

said the Chairman had mentioned the two heads on which the Bill was objectionable, but there was a third, and that was the standing which the Pharmaceutical Society had amongst learned societies. If the Bill became law that Minor men, men just passing the ordinary qualifying examination, should become members it would reduce the value of the membership, and that would be a great injustice to the present members, and would affect the status of the Society. As to raising the present members to a fellowship and making the present associates members, he thought the better plan would be to give the associates a certain number of seats on the Council and leave the title of member of the Society to the pharmaceutical chemists alone, for then the M.P.S. would certainly be more vague than the distinction that now exists. He certainly thought that the Pharmaceutical Council was very ungrateful to the pharmaceutical chemists, for it was the pharmaceutical chemists that had defended the Council in the past, and it was to the pharmaceutical chemists that the Council practically owed their existence. This Bill had surprised most pharmaceutical chemists because the aim of the Council appeared to have been up to the present to raise the status of the Society and of individual members. They had raised the qualification and rendered studentship and associateship more valuable, and having done that, why should they try to deteriorate the title of member of the Pharmaceutical Society? The Bill seemed to him to be more or less of a virulent socialistic type, and they ought certainly to oppose it as it stood. He thought it would be far better that associates should be granted a few seats on the Council rather than that they should take the title of member without a corresponding rise of members to Fellows.—Mr. Handford remarked that they must recognise that a number of pharmaceutical chemists, gentlemen who had the welfare of pharmacy at heart, were influenced by the honest belief that it would be best for pharmacy to take this step, that it would be what they called consolidating the Society. He took leave to doubt whether it would do all that; he doubted whether there was a general feeling on the part of chemists and druggists to become members, but as things were, they had to face the fact that this Bill had been accepted by a large number of the leaders in pharmacy, and who hoped to put pharmacy on a better footing. It struck him that the matter had gone so far and been supported by so many that he thought that what they must go for was some recognition, some distinction by present pharmaceutical chemists becoming Fellows if the Minor men became members. He thought there was something in the argument that was used, that if a man had passed the qualifying examination, which was a very real examination, very different to what it was some years ago, he should be a member of the Society. They had an analogy in the medical profession. A member of the Royal College of Surgeons might become a Fellow; so with them. Their Major examination would not be compulsory. There were a certain number of men, as there had been in the past, who would go on for that examination. Let them do so, and become Fellows of the Pharmaceutical Society. One point struck him, and that was that it was not only intended to make all men who passed the Minor examination members of the Pharmaceutical Society but all the men on the Register. At present there were men dating back to many years ago who had passed no examination, and he thought that point was of considerable importance when they considered the status that members of the Society had had in the eyes of medical men.—Mr. C. Turner, F.C.S., thought, with regard to the Bill at present before the Society, that it was in many ways a desirable one. He quite recognised that Minor men, after having passed their qualifying examination, ought to have a voice in the working of the Society, and with that view he had supported a resolution which was proposed at the meeting last Wednesday week. But at that time he had not read over the Bill. He was giving a lecture and had been full with other matters, but he did think that the Bill as at present worded was unjust to Major men. They certainly ought to have a further title conferred upon them if the Minor men were to become members. He was also sorry, as Mr. Gibbons had said already, that Mr. Kirkby was not present. He (Mr. Turner) could not understand the first part of his argument. In the first place, he certainly found fault with the education of the chemist generally of the old times, and said they were not worthy of the position which they held. They were uneducated, and they hardly knew the characteristics of certain drugs which were in everyday use, and almost immediately afterwards proposed that those gentlemen should be members of the Society. He ventured to differ from him with regard to the qualification of the Minor men. He thought they held a very good qualification, and were admirably suited to the position which they held in public opinion; and with regard to the other point, he also thought it was advisable that there should be on the Council a class of men who were enabled, through their own knowledge, to appoint examiners who should conduct examinations upon which the qualification of the chemist depended. With regard to the other point, it was customary to say that every chemist should be in a position to, and should not only be in a position, but actually should, on his own authority, analyse all the drugs which he sold, and he should know on his own authority that they were of good quality. If that was so, it was equally right members of the Society should know that the gentlemen who are examiners should know of their own knowledge that those men were suitable to test the quality of the candidate as much as they were themselves capable of testing the quality of the drugs they sold. That was a strong point in favour of the limitation of the numbers of men on the Council being limited with regard to Minor men. If, however, the Bill was to be opposed, there should be some organisation arranged to oppose it—he meant as the Bill was at present—and with that view there ought to be an expression from the chemists themselves throughout England to oppose it as it at present stood.—Mr. Botham said it had occurred to him several times when reading the statement in the Journal, to the effect that those who passed the present Minor examination had passed an examination quite equal to the Major some years ago, that if for that reason they were to make them members, the same thing would hold good with regard to the medical profession. Those who went in for a Fellowship of the Royal College of Surgeons some years ago would be equal to a membership at the present time. But for that they would not introduce the present members and make them Fellows. That seemed to be about on all fours with the proposal of the new Pharmacy Bill, especially if they went on to make them pharmaceutical chemists, which they had no guarantee that they wanted.—Mr. Handford: They believed that no one would hardly stop at the Minor, but they had been disappointed.—Mr. Botham: My belief is that they will be disappointed, because many will rest content with the Minor who would not otherwise have done so.—Mr. Overend said they had also made the Major examination harder. What were they aiming at that they should do this and give them nothing for it. If they were going to make all chemists and druggists members, why should they pass the harder examination and get nothing for it? —Mr. Botham said that was an argument which would be used by future Minors. They would say we can get all we need by passing the Minor. Many said now that passing the Major was not worth it. —The Chairman instanced a resolution passed at a meeting of a Staffordshire Association, and also the fact that he had heard slighting remarks made—that the pharmaceutical chemist was to be regarded as nothing. Personally, he should be glad to see only one standard for all, and that all should be pharmaceutical chemists.—A conversation ensued, in which it appeared that there was no objection to the Minors having a certain number of seats on the Council, and that it would also be desirable to create higher qualification by affiliation with some university as an encouragement to young men who had had the advantages of a good, early education. The Chairman also disclaimed that they were met with the intention of hampering the Council. They were simply there with the idea of assisting them to make it a just Bill, and he thought he was expressing the feelings of the meeting when he said they were anxious to see a Bill of that class passed, but they were as anxious to receive justice as to concede it.—Mr. Bland, as a chemist and druggist, said he felt strongly on the point, as a probable candidate for the honorary title of pharmaceutical chemist in the future. According to the present Bill they were going to make the inducements to do so less rather than greater.—Mr. Maskew pointed out that the various classes of chemists in France were clearly defined.—Ultimately the following resolutions were unanimously carried:—

> (1) That this meeting having read the drafted Pharmacy Bill is strongly dissatisfied with the terms contained in Clause 3, and whilst admitting that chemists and druggists should be granted increased privileges in connection with the Pharmaceutical Society, to confer upon them the title of M.P.S. will be misleading and calculated to decrease the value of the Major qualification, and that no proposal to make chemists and druggists members can be accepted unless a corresponding advantage be conceded to pharmaceutical chemists.
> (2) It is hereby resolved that unless such condition be inserted in the Bill, that this meeting will use all legitimate means to prevent the same becoming law.

—The meeting closed with a vote of thanks to the Chairman.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on the 10th instant, the usual fortnightly meeting of the Irish Pharmacists' Assistants' Association was held at 67, Lower Mount Street. The President, Mr. W. J. Hardy, L.P.S.I., occupied the chair, and there was a good attendance. The minutes of the last meeting were adopted. Correspondence was read from a number of employers in connection with the new employment registry. Mr. O'Ferrall, 4, Upper Pembroke Street, Dublin, was elected to membership. The annual dance of the Association was fixed to take place in the Rotunda on January 26 next, and Messrs. Bolger, Yoxall, and Taylor were appointed a committee of management, with Messrs. Johnston and Dunwoody as joint secretaries. The following subject was chosen for the next debate:—"Should the membership of the Pharmaceutical Society of Ireland be conferred by the payment of a yearly subscription as at present, or by examination?" Messrs. O'Sullivan and Ashe were chosen to lead off the debate in affirmative and negative respectively, the other speakers to be secured later on. The Proprietary Articles Trade Association having been favourably commented on by several present, and arrangements made to hold the next meeting in the form of a concert, the remainder of the evening was devoted to the reading of prize essays on "An Ideal Pharmacy," the merits of the various papers being decided by Dr. Walsh and Mr. J. Tyrie Turner, M.P.S.I., who consented to act as judges on the occasion. Mr. W. J. Dunwoody, M.P.S.I., 20, Upper Baggot Street, Dublin, carried off the first prize (10*s.* worth of books), and Mr. J. Hogan, 30, Westmoreland Street, the second (5*s.* worth of books). Mr. Dunwoody's paper throughout was devoted to the description of—

A Fin-de-Siècle Pharmacy,

of which few exist wholly, but many in part. The existing models, he said, are very similar in design; a good locality and a central position were essentials for success. The ideal pharmacy should embrace three distinct departments—the shop, the compounding room, and the laboratory. These were arranged by the essayist in a manner which showed him to be thoroughly conversant with his subject. Easy access to each department, ample accommodation for men and things, and a place for everything were his leading points. These finished, he turned to the structural arrangements, and indicated the class of wood—mahogany or walnut—which should be used in pharmaceutical fittings. The exterior of the shop came in for a fair share of attention, and so also did the ventilating and other sanitary apparatus in the several departments. Window dressing he reduced to a fine art, and applied the same principle to the wall and counter cases, and would have them generously filled with the profit-accruing proprietaries. Wall fixtures behind the counter were arranged from base to apex on symmetrical lines, large drawers below and small on top all being nicely finished off with cornices and carved trusses. Special attention was paid to the shop counter, which the writer would have fitted with fancy glass-covered trays. A few green medicinal plants might, he said, be scattered throughout the shop with advantage. Neatness and cleanliness were indispensable in a pharmacy. These brought additional customers. He would have a double bench running the length of the compounding room, a hot and cold water tap, and a fireplace. Poisons should be kept distinct in two lockers, one for dry and the other for liquids. Proper and distinct labelling of bottles was a *sine quâ non*. The structural arrangements of the laboratory should be in keeping with the other departments. The proprietor of such a pharmacy would, said the writer, be indeed in an ideal temple of Galen. Mr. Hogan's paper was more a description of a South of England pharmacy, which he stated he took for his ideal, than an abstract model of a medical hall. He introduced the subject by a flourish of classical trumpets *et medicæ adsunt artes herbarumque potestas*, and gave a very nice word-picture of his dea of what a model pharmacy ought to be. Plants and other oliage would seem to be Mr. Hogan's *ne plus ultra*, for he dwelt lovingly on the effect produced by the happy combination of Nature and art in the shape of palms and patent medicines. The English people, he said, are strongly imbued with the rural feeling, whatever that may be, and that they are quickly sensible to the beauties of Nature. Artificial fountains with a fernery in the front shop, and "rockeries" composed of syphons and bottles of mineral waters seemed to the essayist the correct thing for an ideal pharmacy. He would replace the time-honoured stock bottles by perfumery and proprietaries. Mr. Hogan unfeelingly dubbed the owner of this sylvan retreat a "wary chemist," perhaps as an allusion to the "plants" sometimes grown by the disciples of Galen and "palmed" off accordingly. For flowers of speech, Mr. Hogan's paper was well in keeping with the botanical character of his ideal pharmacy. His general description of the fittings, etc., was somewhat stereotyped, but on the whole the paper was a creditable one, and showed much care in its preparation.

DERBY AND DISTRICT CHEMISTS' ASSOCIATION.

The first meeting of this Association was held at the Royal Hotel, Derby, on the 15th inst., when some twenty-two chemists of the town and neighbourhood were enrolled as members. The Association has been formed principally for the promotion of social intercourse between chemists in the town for trade protection and for the better education of assistants and apprentices. It was felt that there should be some organised body representing the trade, in order that a general expression of opinion might be given on any subject affecting their interests or professional status. The following gentlemen were elected as officers and committee for the ensuing year:—President, Mr. John A. Cope; Vice-President, Mr. C. W. Southern (Belper); Hon. Secretary and Treasurer, Mr. H. G. W. Dawson; Committee, Messrs. W. Heath, F. P. Pembleton, C. Hefford, and J. C. Warrington. The annual general meeting was fixed for the first week in October, and other meetings at such time and place as the Committee may appoint. An endeavour will be made to arrange for courses of lectures to be delivered at the Derby Science School next winter in chemistry, physics, materia medica, and botany.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday, December 16, Mr. T. Morley Taylor, President, took the chair, and briefly stated the business to be decided that evening, viz., as to whether, in Rule 6, the word "Conversazione" should be replaced with "Conversazione and Ball." In the first place, the question was raised last session by Mr. George Roe, who pointed out that the annual function had latterly been more of a ball than a conversazione, and therefore that word was rather misleading to those members of the Association who were non-dancers, and who paid their annual subscription expecting to receive in return a free ticket to a conversazione. He therefore moved that "Ball" be substituted for "Conversazione." This, however, was rejected in favour of an amendment to the effect that the rule should read "Conversazione and Ball," which it was hoped would be satisfactory to dancers and non-dancers. But another difficulty presented itself, viz., How to organise an affair of such a character to warrant the use of both titles, and at the same time to be successful from a monetary point of view? It was clearly shown that whereas a ball could be made to pay, past conversaziones of the Association had been failures in that respect and also had not given such general satisfaction. Finally, it was decided to postpone the question until this session, and at the first meeting Mr. Taylor announced that the Council had decided to try an experiment and to hold a ball without any kind of preliminary entertainment. It was therefore thought advisable to again postpone the matter until after the annual event. That having come and gone, the question came up for final settlement on Thursday evening, and after a lengthy discussion the problem was solved by a very sensible proposition made by the ex-president, Mr. C. Morley, and unanimously accepted by the meeting, to the effect that in place of the word "Conversazione" should be substituted the word "Réunion," thus, as he pointed out, leaving the Council free to organise an entertainment in accordance with the wishes of the members for the time being.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of this Association took place on Tuesday, December 14, at the Great Northern Hotel, for the purpose of having a "confidential conversation" in relation to matters concerning the Association. There was a good attendance, and the subjects brought forward evoked a great deal of interest, nearly every member present taking a part in the debates. It was mentioned from the chair that at some future meeting it was intended to discuss "The advisability of refusing to transact business with those wholesale firms calling on stores and unregistered men," and a resolution taken thereon

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).

A meeting was held on Wednesday, December 15, at the Westbourne Restaurant, W., when the inaugural address was delivered by the President, Mr. J. H. Mathews. There was a very good attendance of members, who listened with interest to the address, in which was given a brief history of the Association from its formation to the present time.—Mr. Mathews regretted that the list of membership is now less than it was a few years ago, and expressed a hope that members would endeavour to make it more generally known that the conditions of membership do not prohibit any pharmacist residing in London, outside the western district, from becoming a member. Speaking of subjects for discussion during the session he mentioned the P.A.T.A. and the new B.P. as being worthy of attention.—Mr. William Martindale thought the address contained many points of interest to pharmacists. He had much pleasure in proposing a hearty vote of thanks to the President for his address.—Mr. G. S. Taylor, in seconding the motion, expressed the opinion that the work of compiling the new B.P. ought to have been entirely carried out by pharmacists.—The vote was carried by acclamation. Attention was then directed to two communications from the Secretary of the Federation of Local Pharmaceutical associations with reference to resolutions from the Plymouth Association.—Mr. Martindale remarked that they would always be glad to receive such communications from the Federation, and he proposed that they be acknowledged and entered upon the minutes for subsequent discussion.—Mr. Andrews seconded the proposal, and also made a few observations regarding the new B.P. and the proposed Pharmacy Bill.—Mr. Taylor supported the motion, and spoke of the inefficiency of the Preliminary examination, and also regretted that many men take apprentices who are utterly incompetent to teach them their duties.—The motion was then carried unanimously.

FORFARSHIRE AND DISTRICT CHEMISTS' ASSOCIATION.

A general meeting of this Association was held in Lamb's Hotel, Dundee, on Wednesday, December 15, Mr. Charles Kerr, the President, in the chair.—Mr. William Park, Broughty Ferry, moved, and Mr. J. W. Russell, Dundee, seconded—

> That this Association cordially supports the draft Bill about to be introduced by the Council of the Pharmaceutical Society, whereby all those who are on the list of chemists and druggists be eligible as members of the Society.

—This was carried unanimously, and a suggestion was also made that the Association should express the hope that at an early date another Bill would be drafted bearing on limited liability company pharmacy. The question of a modified examination for assistants was discussed, and the Chairman moved a proposition to the effect that a modified examination for assistantship is necessary. —Mr. Ferrier seconded this, but Mr. J. Jack moved a direct negative, and on a division his amendment was carried by 14 votes to 4.—It was then agreed—

> That, in the interest of the public, it is desirable that some means be adopted to show who is the legal proprietor in establishments where there is absence of indication.

—Mr. D. H. Ferrier, Dundee, proposed a motion in favour of the P.A.T.A. movement, and Mr. Jack moved as an amendment that the meeting do not approve of the tactics of the P.A.T.A. This amendment was lost, however, by the casting vote of the Chairman. The following motion was then unanimously agreed to :—

> That in the opinion of this Association the action of Poor Law authorities in recognising dispensing by unqualified men constitutes a danger to the public, and is a moral evasion of the Pharmacy Act.

A vote of thanks to the Chairman brought the meeting to a close.

Adonis Vernalis in the Treatment of Epilepsy.—Bechterew recommends the following prescription for epilepsy :—Infus. fol. *Adonis vernal*, 2·0-3·75 grammes ; aquæ coctæ, 180·0 grammes ; potass. brom., 7·5-11·25 grammes ; codein, 12 to 18 centigrammes. Four to eight tablespoonfuls to be taken in water. *Adonis vernalis* has an astringent action on the vessels of the brain, and cannot be replaced by the more dangerous digitalis.—*Pediatrics*, iii., 357, after *Jour. de Med. de Paris*.

LETTERS TO THE EDITOR.

The Benevolent Fund.

Sir,—A severe chill having prevented me being present at the Benevolent Fund election on the 8th inst., I felt a keen sense of disappointment, as I expected to receive, with others, warm expressions of congratulation from those present, when the unique event of electing the six annuititants without having compelled them to pass the usual painful ordeal of a contest took place. When I read the report of the meeting I considered it was just as well that I had warmed my toes at my fireside than to have listened to the unexpected protests that were made and to the apologetic remarks of one or two of the speakers. Is it possible that any human creature acquainted with sorrow could have been made happier or more content with himself by ensuring that the old method of election were used when it was proved to be absolutely unnecessary? I can scarcely think so. I note that one of the candidates had reached the wide span of eighty-three years of age, weary, perhaps, of the touch of time's fingers and waiting in sadness for the rest and relief that an annuity might give him. I cannot believe that any subscriber, either present at the election or absent, would wish to bring this aged man "out into the open" to fight in a possibly losing contest with others painfully anxious to wrest the prize. It is a regrettable fact that great age is not a guarantee of a safe election under the present conditions. The decision of the Council with regard to the recent election may or may not be "a precedent." Their act of mercy cannot, however, be undone or effaced. "Human nature we owe to father and mother, but our humanity we owe to education." I am not therefore without hope that the present unworthy system of charity election, so often condemned, and which is without a real defence, will in time be discarded as a worthless relic of the past, too long tolerated. The Benevolent Fund Committee, after mature investigations, select the candidates. They are well acquainted with all available information recorded in writing of each individual case. My simple proposal is this: That this Committee, augmented by some members of the Society subscribing to the Fund, chosen at the annual meeting, or by any other suitable plan, should finally decide upon the list to be submitted to Council for election, and thus the evils of the present plan would be avoided. If this scheme were acceptable to the subscribers to the Fund, would anything be lost that is worthy of retention? I think not. An adequate fund to relieve all cases of distress would still be obtained, though a few persons might express displeasure. I have faith in the real benevolence and humanity of the subscribers. Some, I know, would increase their subscriptions if the salutary change were made.

Sevenoaks, December 21, 1897. Robert Hampson.

The Protest Against Misrepresentation.

Sir,—In Mr. Johnston's reply to mine, of December 4, there is nothing either explanatory or confirmatory of the objectionable statements complained of. The first paragraph (*P. J.*, p. 559) may well be dismissed by all who wish to see the rights of the matter, who for the most part will have left their schoolboy slang and unrefined personalities a long way behind them. As to my short list of the proprietaries, which, to my best knowledge and belief, have "an established and a steady demand," and yet are not on the protected list, I simply threw them off on a sliding-scale kind of system, beginning with the greatest and ending with the least of them ; nor was I unmindful that this last is actually to be found in their "Protected List." But if by a little ruse one antagonist can give the other a slip and make him fly off at a tangent, a good many serious thrusts may be saved, and less time wasted in the encounter. This said article has had its reputation in the case of medicine—quack medicine, I mean. People like to feel it strong ; they like to be half-poisoned ; it makes them feel they get their value for their money ; but when the law comes in and throws back the potency to the point of *de minimis non curat lex*, a host of remedies like this one begin at once to decline, and some have already ceased to exist. The few that survive may still bear on their face a poison label, but if the numerous ignoramuses of mankind cannot feel the poison, they think they are being imposed upon, and drop the idol for something else ridiculous and wasteful in its turn. Sir, I ask anyone to note the "Protected List" (*Anti-Cutting Record* of this month, pages 36-37) and say if I am not right in my original assertion that nearly all the articles of established repute are "con-

spicuous by their absence," and constitute not more than ·03 of the whole. The most objectionable matter, however, must not be forgotten in the same *Record* for November, page 7; one-fourth of the registered chemists and druggists of Great Britain are held up to contumely and styled "slum chemists," "dirty druggists," and their places of business "slum pharmacies," beneath the notice of the accredited agents of the P.A.T.A. What good has this Association done? Nurtured a big brood of quack articles unknown before; caused those proprietors who could see through the sham at the first to raise their prices and so diminish our former profits by just about one half. And now the actual working pharmacist who repudiates being made a cat's paw for the benefit of big capitalists is held up to the scorn of the grocer contingent all over the kingdom. Here is a sample of what Dickens calls "the disfigurement of the leprosy of unreality."

Marylebone, N.W., December 21, 1897. J. C. Hyslop.

The Metric System in Prescriptions.

Sir,—Having read with interest the paper on this subject by Dr. Dewar and Mr. Jack in your last week's issue, I venture to point out what appear to be several serious errors, which may give rise to some confusion if allowed to pass uncorrected. They all arise from a misconception of the exact capacity of one fluid ounce expressed in cubic centimetres. The British Pharmacopœia (1885, Appendix) gives the figure as 28·397, whereas the authors of the paper referred to state that the "nearest equivalent" is 26·5 C.c. That this is not a printer's error is evident from the context, as it is stated later on that "a 6-oz. bottle will only contain 159 C.c.," and again "an 8-oz. bottle . . . . 212 C.c.," both of which imply 26·5 C.c. as the equivalent of 1 fluid ounce. Again, 4 C.c. are stated to equal about 73 minims, although, curiously enough, towards the end of the paper we find the definite statement "1 C.c. equals 16·9 minims." Apparently this last figure is the only one in the paper which is based on the true value for the fluid ounce, viz., "about" 28·4 C.c. While not wishing to appear unduly critical, I must question the utility of scattering broadcast among local pharmacists such statements as "32·0 C.c. = ℥i.," especially in view of the probability of "metrical" prescriptions other than those of Dr. Dewar finding their way to Arbroath. Surely the ratio of the English to the metric system of weights and measures is sufficiently complicated without introducing fresh sources of error.

Malden Works, N.W., December 21, 1897. Henry Garnett.

Sir,—In view of the fact that the metric system will soon "become official in the realm of British pharmacy," and that, in consequence, any article bearing upon this will doubtless be accorded great attention by the numerous readers of the *Pharmaceutical Journal*, it was positively saddening to me to read the paper entitled "The Metric System in Prescriptions," by Dr. Dewar and Mr. Jack in your last issue. The data therein given are simply egregiously wrong from first to last. Where they get their equivalents from I cannot imagine. To save my time and your space, however, I will make no further comment, but at once proceed to give the correct equivalents of the several weights and measures given in the paper:—The unit of capacity in the metric system is the litre, which is now the volume of a kilogramme of pure water at 4° C. It was originally intended to be a cubic decimetre, but is actually somewhat greater. The unit of weight (or, more correctly, mass) is the kilogramme, one-thousandth part of which is 1 gramme.

1	fluid drachm	=	3·5515 C.c.	= 67·6 minims.
1	,, ounce	=	28·4123 ,,	
∴ 6	,, ounces	=	170·47 ,,	
8	,, ,,	=	227·3 ,,	
	1 C.c.	=	16·891 minims.	
	3·552 ,,	=	℥i.	
	28·4123 ,,	=	℥i.	

Corresponding to our ½ oz., 1 oz., 2 oz., 3 oz., 4 oz., 6 oz., and 8 oz. bottles, we should require bottles to hold approximately 15, 29, 57, 86, 114, 171, and 228 C.c. respectively. To reduce cubic centimetres to fluid drachms multiply by 0·2815. This is far simpler than multiplying by 16·891 and then dividing the product by 60. Of course, 0·2815 is simply the quotient of 16·891 divided by 60. Anyone desiring to verify my figures can easily do so by reference to H. J. Chaney's standard work, 'Our Weights and Measures,' and applying a little arithmetic to the equivalents therein given.

Wolverhampton, December 21, 1897. A. E. Johnson, F.I.C.

The New Pharmacy Bill.

Sir,—I feel, after reading several letters in the *Pharmaceutical Journal* regarding the proposed new Pharmacy Bill, that I cannot refrain from sending you a few lines as to my view of it, especially as there appears so much narrow mindedness shown by many of the writers. In the first place, I can quite sympathise with any Major man who objects to his well-earned title of Pharmaceutical Chemist being given away (but that is quite an erroneous idea for anyone to think of, as the Bill does not suggest anything of the kind), but when the privilege of any Minor man being allowed to become a member of the Society is objected to I must confess I cannot understand where the objection comes in, as I should have thought that everyone would have rejoiced that there was a possibility of the barrier being removed which up to the present has prevented us having the services of many of our best men because, through their not being members, they were not eligible for the Council, and not through any fault of their own, such as apathy or want of desire to pass the Major examination, but simply through force of circumstances either of one kind or another. I therefore trust that this most commendable measure which has as its chief object the consolidation and strengthening of our Society will be loyally supported by all.

West Hampstead, December 18, 1897. H. Hyne, Ph.C.

Sir,—With reference to the suggestions put forward to grant the title "pharmaceutical chemist" to all who have passed the Minor, I wish to add my disapproval, and hope that others will not be slow in expressing their opinion of what I consider a gross injustice. As the affair would appear, a man who had passed the Minor and paid his subscription to the Society would become Ph.C., M.P.S., whereas a man who passed Minor and Major, but did not pay his subscription, would remain simply a Ph.C. Therefore, to the ordinary public a Minor would appear to be better qualified than a Major man. In the name of fairness this cannot be right. To draw chemists to the folds of the Society all sense of justice should not be sacrificed. Hard work and brains should have some reward. Many, shall I say the majority? who have passed the Major must have done so, being led on by a false inducement, viz., that they were going to have some tangible evidence of their superior knowledge recognised. This, I maintain, the title "Fellow" does not fulfil as well as the present distinction. To Mr. Hocking's proposal to ask chemists if they would join the Society if granted certain privileges, I would add that Major members should also be asked if they would continue as such if these events became law. This is a matter which requires careful consideration. A society which broke faith with its members would not deserve support. Moreover, I do not think there would be any great difference in the number of chemists joining the Society, as the great majority not already joined either remain blissfully ignorant and careless of any change in the Society—not even an earthquake of pharmaceutical politics would disturb them—or, as "Fyton" says, "remain outside and abuse." The Society's finances would also be affected in another way, in that very few would feel inclined to spend their time and money in attempting the Major. It would indeed be a labour of love. I agree with "Fyton" in being averse to chemists and druggists being made members, as this is just a deferred step towards the object I have mentioned above. I would most certainly like to see the Society strengthened, but think the only possible method of materially increasing its strength has been decided upon, viz., by making all who pass the Minor after the year 1900 connected with it. However, above all, I do hope Major men will receive fair-play in the matter of a title which has cost them much labour and expense.

December 21, 1897. Palmam Qui Meruit Ferat (120/33).

Sir,—I am glad to see that the class who seem to me to have just cause for complaint against the proposed Pharmacy Amendment Act are at last beginning to wake up to the fact that their betrayal is at hand. The President said in his speech at the launching of the draft of this "simple" Bill: "I am not prepared to admit all those who have passed the Minor as pharmaceutical chemists, and if we were to do so in the Bill, we should raise a large amount of opposition from those who are pharmaceutical chemists at the present time, but I am prepared to raise the Minor to give the title pharmaceutical chemist, and to institute another examination for a higher title." Quite so. But although the Bill does not directly concede the title of pharmaceutical chemist to Minor men, yet according to Clause 3 chemists and

druggists are to be admitted as members. Should this privilege be largely taken advantage of—and that hope seems to be the *raison d'être* of the Bill—these members, of course, become eligible for election to the Council. Seeing that chemists and druggists constitute a much more numerous class than pharmaceutical chemists, the voting power of the former would greatly outweigh that of the latter, and in a short time we might expect to see the Council composed for the most part of Minor men. At the last meeting of the Council one of the members admitted "that a more radical Bill could not be conceived, for it would be possible under it to utterly extinguish the present Council." This would probably mean the ultimate obliteration of the higher examination and the adoption of the title pharmaceutical chemist by the chemists and druggists—an obvious injustice to those who have been at the trouble and expense to give evidence of their higher qualification. As your correspondent "Fyton" pointed out last week, many of the provincial associations have discussed favourably the proposal to bestow the title of pharmaceutical chemist on those passing the qualifying examination. *Verb. sap.* At present the Council consists of twenty-one members, one-third of whom are to retire annually, necessitating the election of seven members. Could a clause not be inserted in the Bill to the effect that these seven members elected every year should consist of four pharmaceutical chemists and three chemists and druggists, or, at any rate, limit the number of chemists and druggists elected to three or four? An arrangement such as this would enable the pharmaceutical chemists to take care of themselves. After all, there is no great hardship in the Minor men being limited to 50 per cent. of the Council. For those ambitious of Council honours a course is open which would both widen their knowledge and the door of entrance, viz, pass the Major. Many of our leaders have repeatedly stated their conviction that the redemption of the trade would only be accomplished by raising the educational standard all round. Is the prospective abolition of the higher qualification a step in this direction? I trow not.

DEMETRIUS (120/34).

*** Whilst willing to afford every facility for the expression of opinion by members and associates of the Society, the Editor thinks it necessary to point out that letters on such an important subject as the new Pharmacy Bill deals with ought to be properly signed by the writers. The foregoing two anonymous letters indicate that the writers are not so conversant with the subject as they ought to be, and their arguments have been fully refuted on many occasions, more particularly by Mr. Carteighe and other speakers at the last meeting of the Council. [ED. *P. J.*]

ANSWERS TO QUERIES.

SPIRIT LICENCE.—Apply to the local Excise authorities for particulars. [*Reply to* ASSISTANT.—2/25.]

PAZO COMPRESSOR.—Write to the inventor, Mr. R. Darton Gibbs, 3, Duchess Road, Edgbaston, Birmingham, for further particulars. [*Reply to* J. D. D. T.—2/30.]

TOOTHACHE STOPPING.—This consists of a wax basis spread on lint, medicated with phenol and a little chloral hydrate, also a trace of clove oil. It contains no cocaine or other alkaloid. [*Reply to* ASSISTANT.—2/24.]

SALE OF POISONS.—The unqualified assistants must not sell scheduled poisons in your absence, though they may hand them over under your direct supervision. Your notice of change of address has been handed to the Registrar. [*Reply to* H. G.—2/21.]

BOOKS ON BACTERIOLOGY.—Crookshank's 'Manual of Bacteriology' and Pearmain and Moore's 'Handbook of Practical Bacteriology' will probably be most useful to you. [*Reply to* ENQUIRER.—2/11.]

GRIPE WATER FOR INFANTS.—Saccharated solution of lime, 4 fluid drachms; oil of pimento, 3 minims; oil of peppermint, 3 minims; oil of aniseed, 3 minims; rectified spirit, 1 drachm; tincture of asafœtida, 40 minims; distilled water, to make 2 fluid ounces. Mix. A teaspoonful for a dose. Label: Shake the bottle. We do not pretend to give the composition of proprietary articles. [*Reply to* W. J. W.—2/17.]

URINE ANALYSIS.—You can obtain a copy of the Journal containing Mr. Saul's paper (April 16, 1887) from the publishers. [*Reply to* S. H.—2/14.]

OIL OF GARLIC.—We are unable at present to trace any record of the internal administration of the volatile oil of garlic. We are making inquiries, and will let you know. [*Reply to* A. P. S —2/7.]

FINLEY POWDER.—If you stated what "Finley" powder was to be used for it might afford a clue. As it is, we cannot tell you what it is. The name may be an eastern county idiom or the corruption of the name of a proprietary article, or anything. Perhaps some reader can say what is meant. [*Reply to* FINLEY.—2/13.]

BEEF AND IRON WINE.—Extract of beef, 1 oz.; citro-phosphate of iron in scales, 256 grains; aromatic elixir B.P.C., 4 fl. ozs.; distilled water, 2 ozs.; Marsala to make 20 fl. ozs. Dissolve the extract of meat in 10 ozs. of the wine, and the citrophosphate in the water with a gentle heat. Mix, add the elixir, and enough wine to produce 20 fl. ozs. Let stand seven days, then filter, and wash the filter with more wine to make up to 20 fl. ozs. [*Reply to* C. L. T.—2/8.]

RUBBER PLASTER BASIS.—Dammar resin, 3; prepared suet, 5; lanolin, 3; caoutchouc, 1; glycerin, 1; benzol, 5. Digest the caoutchouc, previously cut up small, in the benzol for four or five days. Melt the resin and the suet, strain, and while still warm add the lanolin, glycerin, and the rubber solution, taking care that no naked flame is near at hand. Then carefully evaporate off the benzol by steam heat, away from any naked fire, until the plaster sets to the desired consistence. [*Reply to* RUBBER PLASTER.—2/15.]

BLOOD MIXTURE.—Possibly the following will answer your purpose. Solution of potash, 30 minims; potassium iodide, 64 grains; concentrated compound decoction of sarsaparilla, 2 fl. ozs.; spirit of chloroform, 4 fluid drachms; water to make 8 fluid ounces. Dose, one to two tablespoonfuls. We cannot give you any information on the composition of secret or proprietary preparations. Often the ingredients of these articles are not to be determined quantitatively by any chemical process. Published so-called analyses are nothing more or less than shrewd guesses at the composition. [*Reply to* QUIS.—2/6.]

OBITUARY.

SADLER.—On November 29, Edward Sadler, Chemist and Druggist, Bedale, Yorks. Aged 69.

WILLIAMSON.—On December 5, Bamford Williamson, Chemist and Druggist, South Shields. Aged 72.

DOBSON.—On December 8, Fred. Ainsworth Dobson, Chemist and Druggist, Bridlington Quay. Aged 42.

EATOUGH.—On December 9, Nicholas William Eatough, Chemist and Druggist, Blackburn. Aged 30.

WALKER.—On December 14, Joseph Walker, Chemist and Druggist, Pudsey, near Leeds. Aged 69.

HARRISON.—On December 15, Frances, widow of the late J. Harrison, and mother of John Harrison (Member of Council of the Pharmaceutical Society), The Poplars, Sunderland.

WILLMOTT.—On December 16, William Willmott, Pharmaceutical Chemist, dispenser at King's College Hospital, London, W.C. Aged 67. Mr. Willmott was one of the oldest pharmaceutical chemists on the Register, the number of his certificate being 359.

SATCHELL.—On December 17, Frederick Satchell, Chemist and Druggist, late of Crowthorne, Berks. Aged 65.

BLACKBURN.—On December 18, Bailey Blackburn, Chemist and Druggist, late of Bradford. Aged 85.

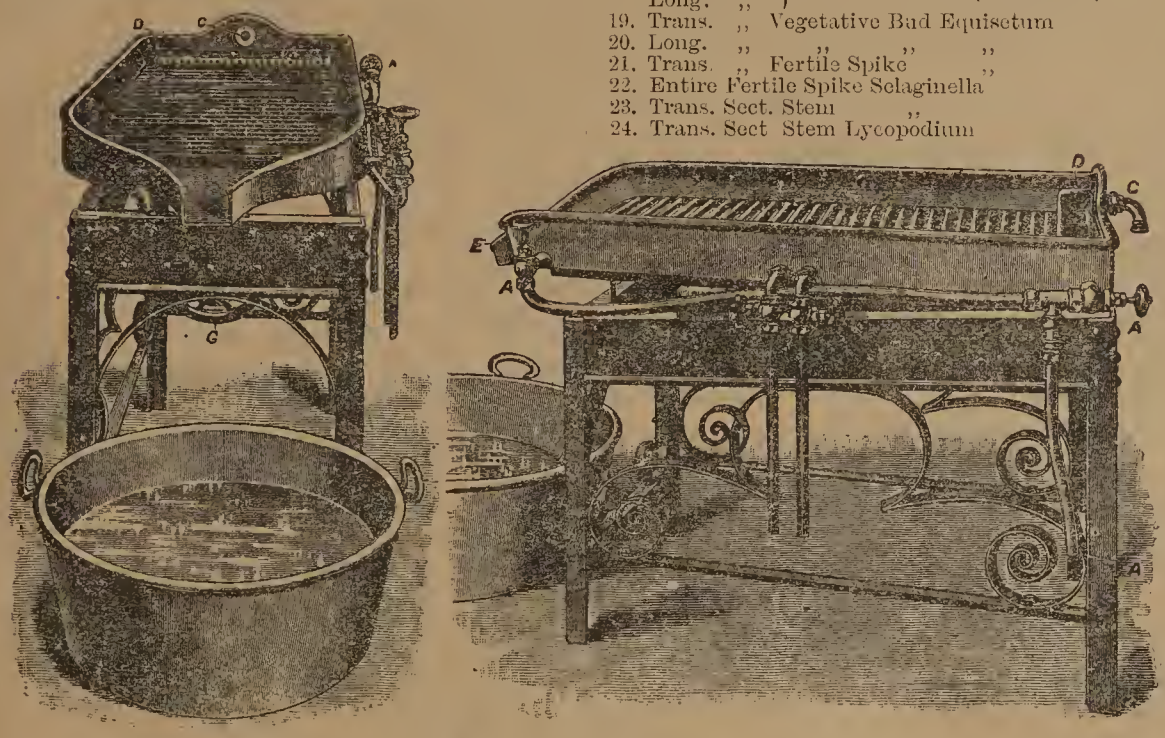
HARRISON.—On December 18, Francis Herbert Harrison, third son of John Harrison (Member of Council of the Pharmaceutical Society), The Poplars, Sunderland. Aged 18.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Andrew, Ball, Barclay, Brierley, Burroughs, Cocks, Cruickshank, Davies, Dawson, Decd, Doweany, Ellis, Farr, Gadd, Garnett, Grier, Groves, Hampson, Hartness, Hyne, Hyslop, Idris, Kerr, Martin, Miller, Morrell, Oldberg, Phillips, Pickard, Preston, Remington, Russell, Sargeant, Scott, Sinclair, Smith, Southall, Squire, Taylor, Thomas, Waine, Walker, Wellcome, Worfolk, Young.

New Ideas and Trade Notes

SUMNER'S EVAPORATING TRAY.

THIS useful apparatus, made by R. SUMNER & Co., of Lord Street, Liverpool, consists of a tray composed of a series of copper pipes brazed together, and the ends so connected that steam circulates through them. It stands on a rigid iron frame to which is fixed the elevating screw G, by means of which the tray can be placed at any desired angle. The angle at which it is used depends upon the density it is desired to bring the fluid to. The fluid intended to be evaporated is carried by means of a pipe from the macerator through the connection C into the receptacle D. The receptacle D is perforated so that the fluid falls upon the whole width of the tray, and travels slowly to the delivery point E. The steam enters at AA and exits at BB. The



SUMNER'S EVAPORATING TRAY.

evaporating capacity of the tray is twenty gallons per hour. Its advantages are :—

1. Its inability to boil over.
2. The shortness of time the fluid is in contact with the heat.
3. Increased rate of evaporation.
4. Superiority of product.
5. It works automatically, feeding itself and requiring no stirring, as the fluid is in motion.

HIGH-CLASS MICROSCOPICAL SECTIONS.

THERE is no more skilful preparer of microscopical preparations at the present day than Mr. ABRAHAM FLATTERS, of 16, Church Road, Longsight, Manchester, but even granting that, the beauty and accuracy of some of his preparations come as a great surprise at times, so superior are the slides to many that are on the market. He is now offering a special PHARMACEUTICAL SERIES of Microscopical Studies in Elementary and Advanced Botany, comprising the following forty-eight separate preparations :—

1. Root of Barley (Absorption hairs)
2. Trans Sect. Hypocotyledon of Bean
3. ,, ,, Stem Aristolochia sipho
4. Trans. Sect / Radial ,, / Tangtl. ,, } Stem Tilia Europea
5. Trans. Sect. Stem Sunflower
6. Long. ,, Lateral Branch Sunflower
7. Trans. ,, Stem Zea Maize
8. Long. ,, ,, ,, ,,
9. Trans. Sect. / Long. ,, } Root Zea Maize
10. Trans. Sect. Stem. Dracæna
11. ,, ,, Pinus (Old Wood)
12. Radial Long. Sect. Pinus (Old Wood)
13. Tangential Sect. Pinus (Old Wood)
14. Trans. Sect. Root Pinus
15. Long. ,, Male Cone Pinus
16. Trans. ,, Polycotyledonous Embryo Pinus
17. Long. Median Sect. Stem Sycamore (leaf-fall)
18. Trans. Sect. / Long. ,, } Stem Cucumber (sieve tubes)
19. Trans. ,, Vegetative Bud Equisetum
20. Long. ,, ,, ,, ,,
21. Trans. ,, Fertile Spike ,,
22. Entire Fertile Spike Selaginella
23. Trans. Sect. Stem ,,
24. Trans. Sect Stem Lycopodium
25. Trans. Sect. Rachis, Pteris
26. Long. ,, Rhizome ,,
27. Prothallium of Gymnogramma, showing Antheridia and Archegonia
28. Vert. Sect. Sorus, Male Fern
29. Cuticle of Allium (Nucleus)
30. Leaf—Circœa. Raphides
31. Sect. Pseudo-bulb, Phajus grandifolius (Leucoplastids)
32. Trans. Sect. Seed Ricinus communis (cell contents)
33. Starch, Wheat
34. ,, Potato
35. Trans. Sect. Cremocarp, Smyrnium.
36. Capsule, Shepherd's Purse
37. Long. Med. Sect. Seed of Wheat.
38. T.S. Conceptacle, Fucus Vesiculosus
39. Vert. Sect. Peziza convexula
40. ,, Æcidium (Fruit)
41. T.S. Leaf, Pinus sylvestris (stoma)
42. ,, ,, Ficus elastica (Cystoliths)
43. Cuticle, Araucaria (Stoma)
44. T.S. Leaf-bud, Ash Tree (Fraxinus)
45. ,, ,, Sycamore (Acer)
46. ,, Flower-bud, Lilium Croceum
47. ,, ,, Wallflower
48. ,, ,, Dandelion

This series is published to meet the requirements of pharmaceutical teachers and students, and sent out packed in a rack-box, price 21s., post free. How they are supplied at the price is a marvel, for they are all characteristic specimens, most accurately cut and beautifully double-stained in the majority of cases. Certainly nothing finer or cheaper has ever been offered, and those who require anything in this line should write to Mr. Flatters for a copy of his price list.

ATTRACTIVE TOILET ARTICLES.

IT is difficult to say anything fresh in praise of Messrs. BLONDEAU & Co.'s novelties, so thoroughly have they studied the

art of rendering their goods attractive from the outset of their business career, but a few of their latest productions are deserving of more than a passing word. Commencing with their specialty—soap, there is the exquisite Savon Violettes de Parme, the tablets of which are veritable works of art. But little, if at all, behind in point of attractiveness is the Bouquet Soap, which is equally tastefully

coloured and perfumed. Vinolia Cosmetic is a delicately perfumed white stick enclosed in a silver metal tube, and Lait Vinolia is one of the most pleasant preparations on the market to use for the complexion. The Blondeau Perfumes are too well known to need description, but attention may profitably be directed to the firm's excellent White Rose Triple Extract.

ARSENICAL FLY-PAPERS.

READERS will remember that it was decided some time ago that arsenical fly-papers can only be legally sold by registered chemists, and as a result all sales must be recorded in the poison register in accordance with the Arsenic Act and the Pharmacy Act, 1868. Messrs. W. MATHER, LTD., of Dyer Street,

Hulme, Manchester, have therefore produced a special poison book for their chemical fly-papers with the object of reducing the trouble of registering sales to a minimum, and have forwarded gratis copies to all chemists in business whose addresses they have been able to ascertain. Any reader who has not received a copy is requested to notify the firm, who will be happy to supply copies free of charge to all who require them. These fly-papers will in future always be sent out in the United Kingdom in packets of six papers to retail at threepence, unless otherwise ordered. The envelopes bear the word "Poison," and an intimation that the fly-papers can only be sold by registered chemists, whilst there is a space for the name and address of the seller.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

July 1, 1897.

Business has, as might have been anticipated, not been very active during past week. A fair number of transactions have, however, taken place, and trade is gradually resuming its normal condition for the season of the year. Quinine is quiet and unchanged, same can be said of Codeia, Cocaine, Sulphonal and Phenacetin, Opium firm, Morphia dull, Cod-liver Oil and Glycerin weak, Buchu Leaves strong, Iodine and Iodides unchanged, latter being in active demand, Citric and Tartaric firm, Menthol and Vanilline dearer, Gentian still scarce. Following are prices ruling for articles of principal interest:—

Acid Boracic—Steady at the late reduction, 25s. per cwt. for *crystals* and 2s. per cwt. for *powder*.

Acid Carbolic—Is rather weaker at 7d. for the 35°-36° *ice crystal* in bulk, packing price of the 39°-40° ice crystal being 7⅝d. to 7¾d., and of the 39°-40° *detached crystals* 8¾d. to 9d. per lb. *Crude*: 60°, 1s. 11d.; 75°, 2s. 3d. *Liquid*: Pale colour 1s. 2d. to 1s. 3d. per gallon for quantity and in bulk.

Acid Chrysophanic.—Some of the makers of this article appear to be anxious sellers at prices which would scarcely seem to be justified by actual value of the raw material. The best makers still quote 12s. 6d. to 13s. per lb., according to quantity.

Acid Citric.—Price of the *crystal* remains at 1s. 1½d. to 1s. 2d. per lb., with a few sellers in quantity at slightly below the former price.

Acid Oxalic—Continues firm at 3½d. to 3¾d. per lb. free delivered London.

Acid Tartaric—Is strong at 1s. 1½d. per lb. for *English* and 1s. 1¼d. per lb. for *foreign*.

Ammonia Compounds.—*Sulphate* quiet; grey prompt, 24 per cent., London, £7 10s.; Hull prompt. *Chloride*: Small crystals, 28s. per cwt. *Sal ammoniac*: 33s. and 31s. per cwt. for first and second lump respectively. *Bromide*: 2s. per lb.

Bismuth.—No change to report in this article, price of the *metal* remaining at 5s., and of the *subnitrate* 4s. 10d. per lb. in 5-cwt. lots.

Borax.—Quiet at the late reduction; *crystals* 16s. per cwt., *powder* 17s. per cwt.

Buchu Leaves—Appear to be in a strong position, and good green round leaves are held by some at 5d. per lb., fair green can, however, be obtained at 4d. to 4½d. per lb. It is stated that stocks in Cape Town are exhausted.

Cinchona.—The auctions on Tuesday comprised 2528 packages against 1977 packages at the previous sales. East Indian shipments comprised the bulk offered, and a good demand prevailed, the whole of the catalogues being practically cleared at and after the sales, the prices obtained at the previous auctions being well maintained, the average unit remaining at full ¾d. per lb. *Ceylon*: 337 bales offered and 253 bales sold, according to analysis: Succirubra, stem chips and branch at 1d., renewed chips and shavings good at 2¼d.; Officinalis, chips and shavings, fair to good at 2d. to 2⅜d., renewed ditto at 3⅜d. to 3⅝d., good natural Ledger chips at 3¼d. *East Indian*: 1818 bales and 36 cases offered, 1523 bales and 6 cases sold: red stem chips and shavings, fair to good at 1¾d. to 2¼d., fine bold silvery druggists' quill at 7½d., ordinary quillings at 1¾d. to 2d.; renewed chips and shavings, fair to good rich, at 1⅞d. to 3¼d.; Officinalis chips and shavings, good to fine, at 2¼d. to 3¼d., renewed ditto, 2⅝d. to 4d.; Ledger natural stem chips, fair to good rich, at 2¼d. to 4½d., good hybrid, 3½d., fair to good Ledger branch at 2⅝d. to 3¼d., good Ledger root at 3⅞d., broken Ledger quill at 4¼d.; renewed Ledger chips, good, at 3⅜d. to 4d.; Hybrid, etc, at 3d. to 3¼d. *Java*: 33 bales and 43 cases offered and sold, good Ledger chips at 3⅞d. to 4½d. *South American*: 121 bales and 14 cases Bolivian-cultivated Calisaya quill offered and bought in at 4¼d. to 7d., also 8 bales Cuprea, of old import. *African*: 118 bales offered and sold, fair quill and quillings at 3d. to 3⅞d. per lb.

Cloves.—Privately *Zanzibar* have been rather better, and are now steady, though quiet. Sales of Oct.-Dec. delivery have been made at 2 11/32d. to 2⅜d., and there are further buyers at the former price. In auction *Zanzibar* bought in at 2⅛d. to 2¼d. *Penang* also bought in; unpicked, 6½d.; good picked, 8½d.; fine bold bright picked, 11d.

Coal Tar Distillation Products.—*Toluol*: 2s. 1d. *Benzole*: 50 per cent., 2s. 4d.; 90 per cent., 2s. 1d. *Crude naphtha*: 1s. 7d. *Solvent naphtha*: 95 per cent. at 160° C., 1s. 9d. per gallon.

Cocaine.—The market is somewhat unsettled, one of the makers offering moderate quantities at 9s. 3d. per oz., while makers of best brands are still unable to book further orders. Looking at the position of the *Crude* it is difficult to understand how makers could afford to accept contracts even at 9s. 6d. per oz. for the *Hydrochlorate*.

Codeia—Is firm, and still somewhat scarce for immediate delivery, price remaining unchanged at 12s. to 12s. 6d. per oz. for quantity.

Cod-Liver Oil—Remains very dull, 70s. per barrel being price quoted for best new non-freezing *Norwegian*, while for *Newfoundland* oil the nominal quotation is 2s. 6d. to 2s. 9d. per gallon.

Cream of Tartar—Is a dull market. First French *crystals* 77s. to 78s. per cwt. on the spot, *powder* 80s. to 81s. per cwt.

Dragon's Blood.—13 cases *Reed* have just arrived, and will be in next week's auctions.

Galls.—Persian *blues* are in demand with fair sales at steady prices, sorts have realised 47s. 6d., *greens* are also in request, but are held at full prices.

Gentian Root—Remains very scarce, 32s. 6d. to 35s. being readily paid for good root on the spot.

Ginger.—*Cochin* continues dull, and 1594 bags offered in auction were mostly bought in, washed rough at 28s. to 30s.; 50 cases sold at easy rates, medium chiefly cut, 56s., bold cut, 70s., extra bold selected, 85s. *Japan* bought in at 14s. to 15s. 6d., and *African* at 19s. For fine *Jamaica* the price keeps steady, but common and medium qualities are rather lower; about 100 barrels sold, common, 75s., middling 80s. to 88s., fine bright and bold, 92s. to 100s., choice selected, 118s.

Glycerin.—Demand remains poor, and prices for the refined article are weak at 55s. to 62s. 6d. per cwt., according to quantity and brand; for the *chemically pure double distilled*, 1·260, quality in tins and cases.

Gum Acacia.—Picked *Trieste* is in moderate supply, but demand is slack and quotations are nominal at £6 10s. to £13. *Turkey* sorts selling slowly at 57s. 6d. to 62s. 6d. per cwt. according to quantity for good hard, whilst good soft are firmly held at 85s. per cwt.

Henbane.—The fresh herb is considerably dearer than at the opening of the season, sales having been made at 28s. per cwt.

Iodine.—Price is unchanged at 7½d. per oz. *Iodides* are also unaltered at 13s. 4d. for *Iodoform* and 9s. 9d. for *Pot. Iodide* in quantity, the demand being very good.

Menthol—Is firmer, the spot price for good dry crystals being now 6s. per lb., whilst for arrival the price asked is 6s. 6d. per lb. *c.i.f.* terms.

Mercurials—Are unchanged at 2s. 2d. for *Corrosive sublimate*, and 2s. 6d. for *Calomel* in 5 cwt. lots.

Morphia—Is very quiet at 4s. 9d. per oz. for the *Hydrochlorate powder*; it would, however, probably be possible to buy in quantity from the makers at somewhat below this figure.

Nitrate of Silver—Is easier at 1s. 6⅜d. to 1s 6½d. per oz. for *crystals*.

Oils (Essential).—*Peppermint*: *H.G.H.* quiet at 6s. 6d. to 6s. 9d. per lb. *Japanese* rather firmer, with but little offering. *Dementholised* quoted 2s. 6d. to 2s. 8d. per lb., *English* lower at 25s. per lb.; a good crop is anticipated. *Star Aniseed* quiet at 6s. 9d.

per lb. on the spot, and 6s. 3d. *c.i.f.* for arrival. *Cassia* quiet; prices quite nominal. *Citronelle* steady at 1s. 2d. to 1s. 2½d., but very little doing. *Lemon-grass* unchanged at 2¾d. *Lavender*: English is rather easier at 90s. per lb.

Oils (Fixed) and Spirits.—*Linseed*: The market has been quiet, and rather in buyers' favour. Pipes on the spot, £14 7s. 6d.; barrels, £14 15s. *Rape*: Firm at £26 15s. for refined on the spot. *Cotton*: Dearer at £14 5s. to £15 5s. for refined on the spot according to make and package. *Turpentine*: Quiet and rather easier; *American* on the spot, 20s. 7½d. cwt.; *Petroleum oil* quiet and unchanged at 4⅜d. to 4⅞d. per gallon for *Russian* on the spot, and 4⅝d. to 4⅞d. for *American*.

Opium.—There has been a considerable enquiry for America, No business of importance, however, appears to have resulted, partly owing to absence of stock and partly to firmness of holders. It is reported that the estimates of the new crop have been reduced about 40 per cent. as a result of unfavourable weather during the ingathering. In spite of this a crop of 7000-8000 cases is, however, still spoken of as possible, if not probable, in face of which it is difficult to see how present prices can be maintained, especially in view of the fact that America will probably have already covered its future requirements for many months ahead as a precaution against the almost certain imposition of a high duty on the article imported into the United States.

Orris Root—Is rather easier, 51s. per cwt. being quoted for *Florentine* in *sorts*, 53s. per cwt. for *small white*, and 56s. per cwt. for *selected*, all *c.i.f.* terms Small white *Verona*, 40s. per cwt., *c.i.f.* The new crop is reported to be larger than last year.

Phenacetin—Without change at 4s. to 4s. 3d. per lb. according to quantity, demand being somewhat limited.

Potash Compounds.—*Chlorate* continues dull at 4d. per lb. on the spot. *Prussiate*: 5¼d. to 5½d. per lb. for *yellow*, according to make. *Bichromate*: 4⅝d. per lb. *Iodide*: Steady and in good demand at 9s. 9d. to 10s. 3d. *Bromide*: Steady at 1s. 8d. per lb. *Permanganate*: Scarce still for prompt delivery; demand, however, at the moment is not very active, makers' prices remain unchanged at 72s. 6d. per cwt. for small crystals, and 5s. per cwt. more for large crystals.

Quicksilver—Is lower at £7 5s. from importers, and £7 4s. from second hands.

Quinine—Has been in but small demand during the past week. The makers of the principal brands still decline to book orders, while from second hand moderate quantities are obtainable at 9d. to 9½d. per oz. It is still confidently anticipated that we shall ere long see an important improvement in the value of this article, while it is stated that the hindrances in the way are gradually, if slowly, being overcome.

Saltpetre.—German refined has been reduced 10s. per ton, quotations for the granular or powdered ranging from £19 5s. to £20 per ton, according to package, ordinary crystals 5s. per ton and needle crystals 20s. per ton extra.

Santonin.—Owing to outside competition combined with slackness of demand generally, the agents for the chief maker have reduced price 5d. per lb., say to 5s. 4d.; larger quantities being cheaper in proportion.

Scammony.—*Virgin*: Small sales have been made of inferior *seconds* at 18s. per lb., *firsts* being firmly held at 30s. per lb. *Resin*: Firm at 7s. to 7s. 9d. per lb. as to quantity. *Roots*: Firm at 32s. 6d. per cwt.

Shellac.—The market for this article does not improve in value, although demand is fairly steady for spot. For arrival the market is quiet, and no business is reported; prices are, however, nominally without alteration, closing sellers *TN* Oct. to Dec. steamer at 57s. 6d. per cwt., *c.i.f.* At the fortnightly auctions on Tuesday good and fine *Second orange* were firmly held, and for the portion sold steady prices were paid, but *TN* qualities sold at an average decline of 1s. per cwt. on last sales' rates, making standard *TN* value 61s. per cwt. A total of 1234 cases offered and 617 cases sold. Good and fine *second orange*: Of 473 cases 117 sold, fine pale *SG* in diamond cakey to blocky at 77s., good pale *RITC* at 65s. to 66s., fair bright *ditto* 61s. to 62s.; the remainder bought in, including *SRR* fine pale lemony little matted, at 80s., *SSO* in diamond fine pale flat free at 78s., *G* in double-triangle fine pale, part hard block, at 75s., and *NM* in diamond dull palish flat free at 65s. *TN* qualities: Of 535 cases 388 sold, fair bright at 60s. to 61s., fair reddish at 58s. to 59s., fine bright curly, without reserve, at 58s. to 59s., good bright flat broken at 59s. weak flat reddish at 58s., bronze flat free at 56s. to 57s., livery at 55s., fair bright cakey at 60s., common blocky liver at 54s., *Calcutta* worked red at 54s. to 55s. *Garnet*: Of 88 cases 68 sold without reserve, common *OCC* at 50s. to 51s., blocky "Snake" bought in at 70s. *Button*: 138 cases offered and 44 cases sold in small lots, fine coloury blocky (1 case) at 72s., fair blocky firsts at 68s., circle 2's at 58s., fourths at 44s. to 47s.

Soda Compounds.—*Crystals*: Steady at 52s. 6d. per ton ex-ship. *Nitrate*: Ordinary on the spot, £7 10s. per ton; refined, £7 15s. per ton. *Caustic*: 70 per cent. white, firm, £7 10s. per ton; 60 per cent., £1 per ton less. *Bicarbonate*: £7 10s per ton for the commercial, and 18s. 6d. per cwt. for the free from mono-carbonate. *Hyposulphite*: Firm and in good demand at £5 15s. per ton.

Spices (Various).—*Chillies*: Flat; 36 bales Zanzibar bought in at 34s., and 8 bales fine red Japan at 55s. *Capsicums*: 5 bales low, old import, sold without reserve at 5s. *Cassia lignea*: In more demand at firmer prices, a few hundred boxes being sold at 41s. *Cinnamon chips*: 136 bags coarse Ceylon sold at 2¾d. *Nutmegs*: Dull at about previous rates. *Mace*: 21 cases Penang bought in at 1s. 6d. to 2s. 3d; 10 packages West India sold at 1s. 2d. to 1s. 6d. *Black pepper*: About 700 bags East India, mostly bought in at 3d. to 3⅛d., but 77 bags fair sold at 2⅝d, and 36 bags fine bold bright at 3¼d. *White pepper*: Of 54 packages Singapore 9 bags good sold at 5d., and 4 cases extra bold at 7½d. *Pimento*: 50 bags fair sold at 2½d.

Sugar of Milk.—Good white *Italian* powder is offered at 60s. 6d. per cwt., and *American* on the spot at 59s. per cwt.; to arrive at 57s. 6d., *c.i.f.*

Sulphonal.—Makers still decline to book contracts, while from second hand the article is obtainable at 9s. to 9s. 6d. per lb., according to quantity.

Sulphate of Copper.—Dull and unchanged at £15 10s. to £16 10s. per ton according to brand.

Sulphur.—*Roll* is quoted £5 10s. and *Flowers* £6 per ton.

Turmeric—Is in only moderate demand. Good bright Madras finger sold at 16s. per cwt., fair Cochin finger 12s. 6d. per cwt., and fair split bulbs at 7s. 6d. per cwt.

Vanillin.—It is stated that there has been a considerable demand from America, while for prompt delivery the article appears to be exceedingly scarce. One maker has advanced his price to 4s. 6d. per oz., price of other makers remaining nominally still 3s. 5d., but they cannot deliver and are declining to accept further orders at this, or in fact, for the moment at any price.

Wax Japan.—Good white squares are quiet at 45s. per cwt. on the spot, and 38s. *c.i.f.* terms for arrival.

NEWCASTLE CHEMICAL REPORT.

June 30, 1897.

The warm weather is affecting the crystallisation of Soda Crystals, causing stocks against fair orders to run down a little. Baltic shipments of other chemicals, being fairly large stocks all round, are somewhat smaller. Prices, however, are unchanged and quoted as follow: *Bleaching powder*: £6 10s. to £7 10s. *Soda crystals*: 37s. 6d. to 55s. *Caustic soda*: 70 per cent., £7 to £7 10s. *Soda ash*: 52 per cent., £4 5s. *Alkali*: 52 per cent., £5. *Sulphur*: £4 15s. per ton.

LIVERPOOL REPORT.

June 30, 1897.

A steady tone has characterised the week's transactions, prices having been practically unchanged, with the exception of a slightly easier tendency in spirits of turpentine and linseed oil and a slight drop in canaryseed, which has been somewhat neglected of late. Some heavy sales are reported of ginger and olive oil at satisfactory rates, whilst the position of linseed, so long neglected, shows a decided inclination towards higher prices.

Ammonium Salts—Generally are unchanged from last week.

Bleaching Powder—Is quiet at £6 12s. 6d. per ton for hard.

Borax—Is slow of sale at 16s. per cwt.

Canaryseed—Is very inactive, and is cheaper by 1s. per 464 lbs., 100 bags of Turkish sold at 24s. 6d. to 25s. per 464 lbs.

Copperas—Is scarce at 36s. per ton for Welsh, and 38s. for Lancashire.

Copper, Sulphate of—Is quietly selling at £16 to £16 2s. 6d. per ton.

Ginger—Has been selling well, 420 bags of Monrovian were sold at 15s. 6d. per cwt. in transit, and 16s. 3d. ex store; 100 bags of good Cochin brought 27s. 6d. per cwt.

Kola Nuts.—43 bags of dried sold at 2½d. to 3d. per lb. according to quality.

Linseed—Is improved as regards demand, but is firmly held; 100 tons of River Plate sold at 29s. 3d. per 416 lbs.

Oils.—*Castor oil* is improving in tone, and prices are steady at 3⅛d. to 3⅛d. per lb. for Calcutta, 3⅛d. Madras, and 3d. French, first pressure. *Olive oils* are in

limited demand just at present, but prices are firmly maintained, and some large transactions have taken place in Malaga oil at £30 to £31 per tun, and Seville at £29 10s. *Linseed oil* is easier, and Liverpool makes now sell at 15s. 3d. to 16s. per cwt. *Cotton-seed oil*: Liverpool refined is held for 15s. to 15s. 9d. per cwt. *Spirits of turpentine* is quiet at 21s. 3d. per cwt.

POTASHES AND PEARLASH—Are unchanged from last week and slow of sale.

SODA CRYSTALS.—£2 17s. 6d.

SODA CAUSTIC.—70 per cent., £7 5s. per ton; 60 per cent., £6 5s.

TARTAR, CREAM OF—Steady, and quietly selling at 78s. to 79s. per cwt.

MANCHESTER CHEMICAL REPORT.

JUNE 30, 1897.

The Royal Show has again disturbed the usual course of business, but with the departure of the Duke of York to-day we may look forward to another spell of activity. Meantime, heavy chemicals are unchanged, and as there is a better feeling reported in this district in the dyeing and bleaching industries, we may expect a continued maintenance in prices. Brown Acetate of Lime remains at £4 17s. 6d. per ton for Welsh, and the same is asked for best American, *c.i.f.* Manchester. Yellow Prussiate, notwithstanding the low price of the Beckton-made article, is firmly held at 6d. by local makers, whose quality is assured. Saltcake is firmer. Sulphate of Copper has again receded in value, and best makes are now quoted £16 10s. per ton, delivered Manchester, with re-sale lots at 10s. to 15s. per ton under. Green Copperas firm at 33s. per ton *f.a.s.* Manchester, and 38s. to 40s. *f.o.b.* Liverpool for best Lancashire. Alum very quiet. Ironfounder's Plumbago lower, £12 15s to £13 5s. per ton, delivered Manchester. Aniline Oil and Salt advaneing.

MARRIAGES.

SHAKESPEAR—FITZHERBERT.—On June 14, at St. John's Church, Weymouth, by the Rev. F. H. Sangster, William, eldest son of John Shakespear, of Queniborough, Leicester, to Agnes Jessie, younger daughter of Mark Basil Fitzherbert, of Staffordshire.

WATSON—SPURR.—On May 19, at Skelbrooke church, Sassafras, Tasmania, Robert Watson, Chemist, Mathinna, youngest son of the late Robert Watson, Annan, N.B., to Elizabeth Kate, youngest daughter of James Spurr, of Forrabury, Sassafras.

NEWS IN BRIEF.

ALDERMAN JONATHAN PHILLIPS AND ALDERMAN RICHARD E. KELLETT have been placed on the Commission of the Peace for the county borough of Wigan.

MR. HENRY JONES, retired chemist, late of the Apothecaries' Hall, Mossley, and now of Westleigh, Mossley, has been appointed by the Chancellor of the Duchy of Lancaster one of the Jubilee magistrates for the borough of Mossley.

MESSRS. HODGKINSONS, TREACHER & CLARKE, of 101, Whitecross Street, E.C., intimate that Mr. William Bolland Treacher, who has been a member of the firm for thirty years, has retired. The business will be continued by the remaining partners (Mr. Charles Hodgkinson, Mr. Frank Clarke, and Mr. John Slinger Ward) under the style of Hodgkinsons, Clarke, & Ward.

A MASONIC FUNCTION.—At a meeting of the Ferdinand de Rothschild Lodge, No. 2420, held at the Masonic Hall, Aylesbury, on June 10, Bro. Walter Surfleet was installed W.M. for the ensuing year. There was a large attendance of members and visitors, including Grand Officers and many provincial Grand Officers, and after closing the Lodge the brethren adjourned to the lower hall for the banquet, to which nearly sixty members and visitors sat down, when the usual loyal and masonic toasts were duly honoured. An excellent programme of music was provided by Bro. Geo. May, of St. Paul's Cathedral, assisted by Bros. Harper Kearton and W. H. Brereton.

MR. A. H. WADDINGTON, chemist and druggist, Darby Street, took a prominent part in the Jubilee festivities at Bradford, being the secretary of the May Day Procession Committee which also had charge of the Jubilee Procession, the marshalling of which was largely under the control of Mr. Waddington.

THE LATE A. J. G. TYRER.—The current number of the *Apotheker Zeitung* contains the results of the late Mr. A. J. G. Tyrer's work on chelidonine, so far as Professor Schmidt could collect them for publication in the unfinished condition in which they were left by the death of that industrious and promising young chemist. A summary of the results will be given in next week's Journal. The investigation is to be completed by Herr Apothcker M. Wintgen.

MR. F. M. RIMMINGTON, whose death was recorded last week, was a Member of the Council of the Pharmaceutical Society in 1874 and 1875, and published several papers on pharmaceutical and chemical subjects during his professional career.

DR. PAUL SCHÜTZENBERGER, whose work was chiefly in physiological chemistry, has died at Paris. He was born in Strasburg in 1827, and became Professor in the College of France in 1876.

THE LIST OF JUBILEE HONOURS published last week must be supplemented by the names of Dr. Felix Semon, who receives a knighthood, and Sir James Reid, K.C.B., M.D., upon whom is conferred the dignity of a baronetcy of the United Kingdom.

MR. S. N. PICKARD, chemist and druggist, of Manningham Lane, also played an important if less conspicuous part in the celebrations, rendering first aid in the case of a woman who, while standing on a roof had slipped her foot through a skylight, the glass cutting her leg very severely on the calf, Mr. Pickard applied a torniquet, and bandaged the wounds prior to removal to the infirmary.

EDINBURGH PHARMACY ATHLETIC CLUB.—The final tie of the five-a-side football competition for the Anderson Trophy was played at Tynecastle, on Monday, June 21. Messrs. J. MacKay & Co.'s team beat Messrs. Duncan, Flockhart & Co.'s (wholesale) team by 3 goals to 0. The latter held the trophy last year. The winners hold the trophy for one year and receive gold badges, and the runners up receive silver badges.

PUBLICATIONS RECEIVED.

THE POCKET THERAPIST, a concise manual of modern treatment for students and junior practitioners (arranged alphabetically for ready reference), by THOS. STRETCH DOWSE, M.D. Pp. 192. Price 5*s.* net. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. 1897. From the Publishers.

RECENT MATERIA MEDICA AND DRUGS OCCASIONALLY PRESCRIBED. Notes on their Origin and Therapeutics. By F. HARWOOD LESCHER F.C.S. Fifth edition. Pp. 12+219+12. London: J. & A. Churchill. 1897.

EXCHANGE—OFFERS AND WANTS.

OFFERED.

Miscellaneous.

Window-enclosure, very handsome, mahogany, 3-figured plate doors (2 sliding, 1 hinged); also 2 long mirrors, black frames.—127, Gipsey Lane, Forest Gate. Offers wanted.

West Indian and South American Druggists and Exporters, about 1000 pints, assorted B.P. tinctures and liniments in 4-pint Winchesters, by Fletcher, cheap, list. Apply—Chemist, 144, Victoria Street, S.W.

Overstocked.—2 by 12½ lb. coppers 1897 superfine oil of lemon; copper, 2s. 6d.; Winchester, 2s. 9d., pound sample, 3s. 1b, packages free. Cash with order.—Moss, Chemist, Little Lever, Bolton.

Chemist about to Refit wishes to dispose of well-made counter, mahogany shelves, carboys, etc. —Novus, 4, Serle Street, Lincoln's Inn, W.C.

Books.

Maisch's 'Materia Medica,' 8s. 4d.; Oliver's 'Systematic Botany,' 3s.; Vine's 'Botany,' 9s. Good as new and latest editions. Post free at price named. Also some apparatus cheap.—"W.E.M.," 78, Graechurch Street, E.C.

'British Medical Journal' posted on Monday after publication in exchange for 'Lancet' to be sent same date.—J. T. L., 43, Longbeach Road, Lavender Hill, S.W.

WANTED.

Cooley's 'Cyclopædia,' last edition; state lowest price.—F. G. H., 'Pharm. Journal' Office, 5, Serle Street, W.C.

Mohr and Redwood's 'Practical Pharmacy'; Lee's 'Microtomist's Vade-Mecum'; Gray's 'Supplement to the Pharmacopœia.' State editions and lowest price to—"Books," *Pharmaceutical Journal* Office, 5, Serle Street, W.C.

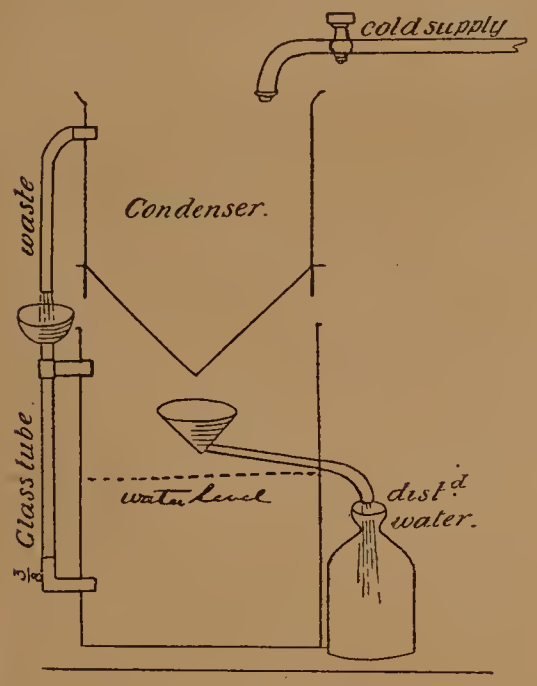
NEW IDEAS AND TRADE NOTES.

PESSARIES WITHOUT A MOULD.

IF a country chemist should receive a prescription for pessaries and have no mould for making them, he may overcome the difficulty, writes "GILGEN," by taking a seidlitz box, plaster of Paris, the cover of a menthol cone, and some heavy tin-foil. Make a thin paste of plaster, pour it into the box, grease the cone, and make six holes before the plaster sets (if you can). Then cover cone with foil and shape into each hole. Fill up as if you had a 12*s.* 6*d.* mould. This plan has succeeded well.

A SIMPLE STILL FOR WATER.

THIS still can be cheaply made any size, a useful one being 8 inches in diameter by 15 inches deep. The condenser fits into the boiler nearly air-tight, and the condensed water drips off the point of the inverted



cone into the funnel and so into the bottle. The waste pipe can be turned away from the gauge pipe into a sink if desired. By placing ice in the condenser the action of the still is rendered very rapid. This idea is not original, observes Mr. E. BUTLER, who sends the above description and sketch.

SAVED FROM FIRE.

MESSRS. WILLOWS, FRANCIS & BUTLER, wholesale druggists, High Holborn, state that in consequence of the prompt action of the fire brigade on the occasion of a serious fire in the adjoining premises, their business will not be interfered with, but will be carried on as usual. The fire was observed early on Tuesday morning, July 6, in the premises occupied by the Holborn Cycling Club, and before the fire brigade arrived the fire had attacked the premises of Messrs. Willows, Francis & Butler, but happily it was speedily checked, though the club premises were entirely destroyed.

NEW IDRIS SHARES.

MESSRS. IDRIS & CO., LIMITED, are issuing 50,000 "A" preference shares of £1 each at a premium of 4*s.* a share, payable 5*s.* on application, 4*s.* on allotment (being premium), 5*s.* on October 1, 1897, 5*s.* on January 1, 1898, and the balance of 5*s.* on March 1, 1898, or the whole may, if preferred, be paid on allotment, and interest at 3 per cent. per annum allowed to above dates. The total share capital is £150,000. The "A" shares are entitled to a preferential dividend at the rate of 6 per cent., and a share of surplus profits after paying dividends at fixed rates on other classes of shares. The subscription list opened on Friday, July 9, and will close on or before Monday, July 12, for town, and Tuesday, July 13, for country. An abridged prospectus is published in our advertisement columns this week.

LARD IN TINS.

MESSRS. JAMES EWEN & SONS, 5, Hatfield Street, Blackfriars, S.E., are now supplying plain and benzoated lard in tins of various sizes, to hold one, two, four, seven, or fourteen pounds each. The advantages of having lard in tins are diminution of weight and bulk, reduction of cost for carriage, no risk of breakages, and no empties to return.

A RADIOGRAPHIC LARORATORY.

MR. F. H. GLEW, chemist and druggist, 156, Clapham Road, S.W., has established a radiographic laboratory in connection with his business, fitted with the latest and most powerful apparatus. He is prepared to make a diagnosis with X rays in all kinds of surgical cases. Röntgen tubes are also re-pumped and complete outfits supplied.

THE "LILY SPRING" AERATED WATERS.

MR. ROBERT YOUNG, pharmaceutical chemist, has obtained a partnership in the chemist's business successfully conducted for the past fifteen years by Mr. James A. Reid, Helensburgh. Mr. Reid, who is also a large mineral water manufacturer, will thus be able to devote more of his time to the further development of the "Lily Springs" aërated waters.

A PRICE-LIST OF COATED PILLS.

MESSRS. ARTHUR H. COX & CO., pill manufacturers, Brighton, send their revised price-list of coated pills for July, which cancels all previous ones. Many of the new remedies have been added to the catalogue, besides additional formulæ.

A PHOTOGRAPHIC EXHIBITION.

THE SANDELL PHOTOGRAPHIC EXHIBITION will open on July 12, at 175, Bond Street, W., where a most interesting and unique collection of over four hundred subjects of unusual interest will be shown, the majority of which have never before been photographed. The exhibition will be open daily from 10 to 6 and 7 to 10. There will be lantern illustrations at 8 p.m., and demonstrations at 9 p.m., every Wednesday and Saturday.

MR. P. SIDNEY CAMPKIN, youngest son of Mr. A. Sidney Campkin, J.P., of Cambridge, has obtained the £10 prize offered at Guy's Hospital for first year's dental work. Mr. Campkin was a student of Dr. Geo. Cunningham, of Harley Street, W., and Cambridge.

NEWS IN BRIEF.

MESSRS. EVANS, GADD & CO.'S EMPLOYÉS' OUTING.—On Saturday, July 3, the staff of the firm left Exeter for a visit to Plymouth and district, travelling through Dartmoor to Beeralston, and on to Calstock, where the party, numbering about seventy, embarked on board a steamer bound for Plymouth. After another steamer trip to Cawsand Bay and around the breakwater, they returned to Plymouth in good time for dinner at Matthews' Restaurant, in Bedford Street. During the toast list a communication was read from the Plymouth, Devonport, Stonehouse and District Chemists' Association, extending a cordial welcome to the party, and inviting them to visit their rooms, also expressing a hope that the party would have an enjoyable day, which hope was quite realised, most of the places of interest in and around Plymouth being visited.

EDINBURGH PHARMACY ATHLETIC CLUB.—The first of the series of summer handicaps in connection with the swimming section took place in the Dalry Baths on Monday evening, July 5. After a well-contested race the result was as follows:—1st, G. H. C. Rowland, scratch; 2nd, W. J. Walker, 13 seconds.

THE LEICESTER CHEMISTS' SOCIAL UNION will hold an excursion to Mountsorrel Granite Quarries and New Reservoir, Swithland, on Thursday, July 15, 1897. The managing director of the Mountsorrel Quarry has given permission for the party to visit the quarries during work, and the chairman of the waterworks committee has given permission to visit the New Reservoir and works at Swithland. Ladies and friends of members are cordially invited. Tickets (including conveyance and tea, 3*s.* 6*d.*, or tea only 2*s.*) must be purchased not later than Friday, July 9, from Mr. Hearnshaw, chemist, Welford Road, Mr. W. Thirlby, chemist, 4, Southgate Street, or Mr. F. W. Goodess (Hon. Sec.), Hotel Street. The brakes will start from Municipal Square at 2.30 p.m.

SEQUEL TO THE PORTEOUS VEGETABLE OINTMENT CASE.—William Mathison, spirit merchant, William Waterston, coal merchant, and John Nisbet, hotel keeper, all of Edinburgh, have raised an action before Lord Low against Alexander Porteous, leather merchant, Edinburgh, for reduction of an agreement under which the pursuers and others formed a syndicate to manufacture and sell ointment known as "Porteous Vegetable Ointment." This action is a sequel to the case reported in the *Pharmaceutical Journal* for January 16, 1897, page 56, when the present pursuers and defender sought to interdict Archibald Porteous from manufacturing "Porteous' Vegetable Ointment," on the ground that the recipe, prior to being sold to the syndicate, was the sole property of Alex. Porteous. They failed to prove their case, however, and the members of the syndicate now claim that the defender made false representations to them when forming the company. The defender denies the allegations.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

JULY 8, 1897.

Business has been rather quiet during past few days, even taking into consideration that the holiday season is commencing. Quinine in fair demand, but makers will not sell freely. Opium nominally rather dearer, morphia dull and weaker. Codeia steady, and still somewhat scarce for immediate delivery. Cod-liver Oil weak. Glycerin slightly firmer. Citric and Tartaric steady. Cocaine rather easier. Carbolic weaker. Permanganate of Potash still in short supply. Menthol rather easier. Bismuth, Iodine, Iodides, Quicksilver, and Mercurials unchanged. Camphor lower. Rape Oil dearer, closing very firm at the higher price. Cottonseed Oil also dearer. Pilocarpine lower. Orris Root weak. Following are the prices actually ruling for articles of chief interest.

ACETANILID.—Whilst present prices are generally declared to be unsatisfactory by the makers, keen competition continues, and quotations range from 1s. 2½d. to 1s. 4½d. per lb. according to quantity.

ACID BORACIC.—Steady at 25s. per cwt. for *crystals*, and 27s. per cwt. for *powder*.

ACID CARBOLIC—Is quiet and somewhat weak at 7d. for best make of 35-36° *ice crystals* in bulk, other qualities and packing in proportion. *Liquid* pale colour, 1s. 2d. per gallon in 40-gallon casks for quantity.

ACID CHRYSOPHANIC.—Makers do not appear quite so anxious to press sales, present price of best makes being 12s. to 12s. 6d. per lb.

ACID CITRIC.—Steady at 1s. 1½d. to 1s. 2d. per lb. for *English* on the spot.

ACID TARTARIC—Steady at 1s. 1½d. per lb. for *English*, and 1s. 1¼d. per lb. for *foreign*.

AMMONIA COMPOUNDS.—*Sulphate*: Firm at last week's price of £7 10s. for grey prompt 24 per cent. *Chloride*: 25s. 6d. per cwt. for 98 per cent. free from metals, and 32s. for the chemically-pure. *Sulphocyanide*: 11d. per lb., being lower. *Oxalate*: Cheaper at 6¼d. to 6½d. per lb. *Sal ammoniac*: 33s. per cwt. for first lump and 31s. for seconds, with 2s. per cwt. more for crushed.

ARRAROBA.—A parcel testing 74 per cent. is offering at 4s., while 50 to 60 per cent. is firmly held at 3s. per lb.

ATROPINE.—Makers quote 12s. 4d. for the P. B. quality in 75-oz. lots, smaller quantities dearer in proportion, stock in second-hand having now been reduced to a minimum.

BISMUTH—Unchanged at 5s. for the *metal*, and 4s. 10d. for the *subnitrate* in 5-cwt. lots.

BLEACHING POWDER.—Firm at £7 10s. per ton on the spot.

BORAX — Rather easier from outside holders; 15s. 6d. for *crystals*, and 16s. 6d. per cwt. for *powder*.

CAMPHOR.—The market for crude continues extremely quiet, and quotations from China come rather lower. Refiners have reduced their prices 1½d. per lb., making *Bells* and *Flowers*, 1s. 4½d. per lb. Tablets, 4, 8, and 16 oz., 1s. 5½d. per lb.; 1 and 2 oz., 1s. 7d. per lb.; ½ oz. 1s. 7½d. per lb.; ⅓ and ¼ oz., 1s. 8d. per lb. Half-ton lots ½d. per lb., and ton lots 1d. per lb. less.

CINCHONIDINE SULPHATE.—The demand appears to be rather less active, and in some quarters lower prices are quoted. 5¼d. to 6d. per oz. is the general price.

CLOVES.—Only 80 bales *Zanzibar* were offered in auction and bought in at 2⅞d. 5 cases fine picked *Penang* also bought in at 9d. Privately, *Zanzibar* have been quiet; October-December delivery quoted 2 1/32d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: 2s. 1d. *Benzole*: 2s. 4d. *Crude Naphtha*: 1s. 8d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 11d. per gallon.

COCAINE.—One maker appears to be an anxious seller at 9s. 3d. for the *Hydrochlorate*, the demand is, however, very quiet.

COCOA BUTTER.—In the monthly auctions on Tuesday 50 tons were offered. 35 tons Cadbury's sold at lower rates, the average being 11⅛d. per lb., against fully 11⅜d. per lb. in the June sales. 15 tons Dutch make bought in.

CODEIA—Unchanged and still scarce for immediate delivery, price being 12s. to 12s. 6d. per oz.

COD-LIVER OIL—Continues very quiet. New non-freezing *Norwegian*, 67s. 6d. to 70s. per barrel; last season's oil, 65s. per barrel; whilst *Newfoundland* oil is quoted at 2s. 3d. per gallon.

CREAM OF TARTAR—Is lower. First white French *crystals*, 77s. per cwt.; *powder*, 79s. per cwt.

DAMIANA LEAVES—Are very scarce in the United States, and stocks here are to some extent being returned thither.

EXTRACTS.—English extracts are quoted as follow:—*Aconite*, 4s. per lb.; *Belladonna*, 3s. per lb.; *Conii*, 1s. 3d. per lb; *Digitalis*, 4s. per lb.; *Hyoscyam. Bine*, 6s. per lb., this latter being considerably dearer owing to the almost total failure of the Henbane crop.

GINGER.—Of 1237 bags rough *Cochin* offered, only 40 bags fine bright sold at 32s., the remainder being bought in at 27s. to 33s. A few cases of cut sold at 36s. to 41s. 400 bags limed *Japan* bought in at 14s. to 14s. 6d.; for *Jamaica* the demand was small, 21 barrels middling sold at 73s. 6d. to 82s.

GLYCERIN.—The market is slightly firmer, and it would be difficult to buy the *chemically pure white double* distilled 1·26 quality in tins and cases below 57s. 6d. to 60s. per cwt., according to quantity and brand.

IODINE—Remains unchanged at 7½d., *Iodides* being in good demand at 9s. 9d. for *Pot. Iodide* in 2-cwt. lots and 13s. 4d. for *Iodoform*, in quantity and in bulk.

JUICES—From English herbs are quoted: *Belladonna*, 1s. 2d. per lb.; *Conii*, 1s. 1d. per lb.; *Digitalis*, 1s. 1d. per lb.; *Hyoscyam.*, 1s. 6d. per lb.; *Scoparii*, 1s. 2d. per lb.

LEAVES.—English are quoted, *Belladonna*, 1s. 6d. per lb.; *Conii*, 10d. per lb.; *Digitalis*, 1s. per lb.; *Henbane*, 1st year, 3s., 2nd year, 6s. 6d. per lb.

LITHIA.—Price of the *Carbonate* is 9s. 4d. per lb. for quantity.

MENTHOL.—The market is again somewhat weaker, and it would be possible to buy on the spot below 6s. per lb. for quantity. In view of this very low price, as also of the fact that each day brings the time of the year in which the article is in chief demand a little nearer, it would appear that prudent buyers would do well to secure a good stock.

MERCURIALS—Unchanged at 2s. 2d. per lb. for *corrosive sublimate*, and 2s. 6d. for *calomel* in 5-cwt. lots.

MORPHIA.—Market is very quiet, and, if anything, slightly easier at 4s. 7d. to 4s. 9d. for the *Hydrochlorate powder*, according to quantity.

OILS (FIXED AND SPIRITS).—*Linseed:* This market is lower: on the spot pipes are quoted £14 5s., barrels £14 12s. 6d. *Rape:* dearer and closing very strong at £27 15s. for refined on the spot. *Cotton:* firm and dearer at £14 17s. 6d. to £15 10s., according to make and package. *Palm:* Lagos, on the spot, £21. *Turpentine:* lower at 20s. 3d. to 20s. 4½d. per cwt. for American on the spot. *Petroleum:* quiet and unchanged.

OPIUM—Is rather dearer in Smyrna, good *tale quale* being quoted 8s. to 8s. 3d. per lb.; stocks here are very small, and holders are firm, there is, however, very little doing in the article. Persian is the turn easier.

ORRIS ROOT—Still tending downwards, there being cheap offers down to 50s. per cwt. *c.i.f.* for good new *Florentine* for August-September shipment.

PHENACETIN.—Demand is very quiet, price being unchanged at 4s. to 4s. 3d. per lb., according to quantity.

PILOCARPINE—Is rather easier at 32s. 6d. per oz. both for the *nitrate* and *hydrochlorate*.

POTASH COMPOUNDS.—*Chlorate*: Quiet at 4d. per lb. on the spot. *Prussiate*: Yellow 5½d. per lb.; red 1s. 2d. per lb. *Cyanide*: Makers are very busy and demand is strong. 98-100 per cent., 10¼d. to 10½d. per lb. *Permanganate*: Demand is very brisk, in view of which which market is very firm, especially for spot stuff. *Bromide*: Firm at 1s. 8d. per lb. *Iodide*: Is in very active demand, and all the makers find difficulty in keeping pace with orders. Price firm at 9s. 9d. to 10s. 3d. per lb. according to quantity.

QUICKSILVER — Quiet. Importers are still quoting £7 5s. per bottle, with sellers from second hands at 1s. to 1s. 6d. less.

QUININE—Is in good inquiry for German brands at 9d. per oz. in large bulk, but sellers hold off. It is said that above price was offered for 50,000 ozs. in one line, but the order could not be placed. Makers are willing to supply their regular customers with moderate quantities to meet their actual requirements, but beyond that they decline to sell.

Rose Leaves.—*English* are quoted 4s. 6d. per lb. ; *French* and *Dutch*, 1s. 1d. per lb.

Saffron—Remains very firm at 42s. 6d to 44s. for best *Valencia*, while the possibility of even higher prices prevailing is spoken of.

Shellac.—The market remains quiet but, whilst business done has been unimportant, prices of second orange for arrival are firmer, 56s. per cwt. *c.i.f.* having been refused by importers for *TN* October-December steamer, 57s. bein asked. The Calcutta market is firm.

Soda Compounds.—*Crystals* are rather firmer on the spot, 57s. 6d. to 60s. per ton ex wharf. *Bicarbonate*, commercial quality, £7 10s. per ton, for the free from *monocarbonate*, 18s. 6d. per cwt. continues the nominal quotation. *Hyposulphite* very firm at £5 15s. to £6 per ton.

Spices.—*Cassia lignea* : 701 boxes bought in at 40s. to 42s., and 500 bales broken at 23s. *Cassia vera* : 6 packages bought in at 30s. *Capsicums* : 17 bales Japan sold, without reserve, at 12s. 6d. to 14s. ; 4 bales Natal sold at 26s. *Chillies* ; 64 bales Zanzibar bought in at 30s. ; 4 cases fine bright Japan sold at 47s. *Cinnamon* : 21 bags Ceylon chips bought in at 2⅞d. ; 32 bags broken quill and quillings sold at 7¾d. to 9¼d. *Mace* : 11 cases Penang sold at 1s. 2½d. to 1s. 11d., and 36 packages West India at 1s. 1d. to 1s. 8d. *Nutmegs* : In fair demand and steady. *Black Pepper* : Only small lots sold, Penang 2½d., Lampong 2 13/16d., Wynaad 2 15/16d. ; Singapore bought in at 3⅛d. to 3¼d., and Aleppy at 3d. *White Pepper* : 36 bags fine bright Singapore sold at 5½d. ; Penang and Palembang bought in at 4¼d. *Pimento* : 130 bags sold at 2½d. to 2⅝d.

Sulphonal.—Makers have so far not advanced their price, but decline to book further orders, while from second-hand moderate quantities are still obtainable at 9s. 6d. per lb.

Sulphur—Is scarce on the spot, and *roll* in this position is strong at £6 per ton.

Sulphate of Copper.—Quiet at £15 10s. to £16 10s. on the spot, according to brand and package.

In to-day's drug auctions a fair number of sales were effected, taking into consideration the season of the year, the following being some of the particulars of same, as also of the prices required for some of the goods which were not sold :—

Aloes. — 525 gourds *Curaçoa* quality, rather dark, sold at 32s. to 35s. per cwt., and 14s. to 21s. for glassy. 55 packages *Socrotine* were held for 77s. 6d. for kegs and 80s. in cases. 40 cases *Cape* part sold at 21s. 6d. to 22s. 6d. for fair hard, fairly bright.

Annatto Seeds.—25 bags held for 3½d. per lb.

Argol.—5 bags *Spanish* bought in at 30s.

Asafœtida.—As will be seen from the drug statistics for the past month, stocks have been greatly reduced, and further deliveries to the extent of fully 100 cases have, it is said, taken place during the past few days. At the sales 52 cases were offered, being the whole of the stock remaining in first hands. Only 3 cases, however, sold in the auction at 75s. per cwt. for fair softish pinky block, and 50s. for low dark.

Balsam Copaiba.—2 casks bought in at 1s. 10d. per lb.

Balsam Peru.—3 cases bought in at 8s.

Balsam Tolu.—5 cases soft part sold at 2s. 9d., rest being taken out at 3s. 3d.

Buchu Leaves.—The strong position of this article has encouraged buyers to buy for their requirements for the next six months, and several lots have been dealt in during the past week. At the sales 36 bales of round leaves were offered ; fair green selling at 2¾d. to 3d. per lb., a reduction on prices paid previous to the sale.

Cardamoms.—About 240 cases offered, the finest lots selling at very full prices up to the time of our report leaving. For good bold pale Mysores, 3s. 7d. per lb. was paid, whilst decorticated sold well at 2s. 11d to 3s. per lb.

Cascara Sagrada.—275 packages fair quality were held for 14s. per cwt.

Castor Oil.—80 cases fair firsts E.I. were held for 4d. per lb.

Cassia Fistula.—14 baskets thin wormy held for 8s. per cwt.

Cod-Liver Oil.—10 barrels old *Norwegian* were held for 60s. 12 cases *Japan* were taken out, there being no bid.

Colocynth.—For 14 boxes *Spanish pulp* there were no buyers ; 3s. per lb. or less would have probably been accepted. Fourteen cases broken *Spanish* apple held for 6d. Of 8 cases fair *Turkey* apple, 2 cases sold prior to auction at 1s. 6d. per lb., for which figure balance were held.

Colombo Root.—25 bags ordinary *sorts* were taken out at 30s. ; good washed sold at 55s. per cwt.

Coriander Seeds.—For 20 bags there was no bid.

Cumin Seed.—67 bags were held for 18s. to 22s. according to quality, good *Malta* for 30s. per cwt.

Cuttle Fish.—83 mats, fair small held for 3½d. per lb.

Dragon's Blood.—Of 25 cases, only 2 cases very seedy dull quality sold at £5 10s., balance being held for £7, while bright seedy was taken out at £10 10s. ; 1 case fair bright reboiled realised £13 per cwt.

Ergot of Rye.—17 cases *Spanish* were held for 4½d. for weevily, 8½d. for fair bold sound, and 6d. for small *ditto* ; fair *Russian* held for 5½d. per lb.

Fennel Seed.—41 bags fair *Bombay* held for 12s.

Galls.—577 bags *Bagdad* were held for 52s. 6d., of 299 bags *Turkey*, part sold without reserve at 21s. to 36s., rest being held for 45s. per cwt.

Gamboge.—Of 17 cases good bright but partly false packed, part sold at £7 15s. to £8 ; Pickings at £6 ; good bright but softish *Saigon* taken out at £8 5s.

Guaza.—Of 95 packages 10 bales siftings sold without reserve at 1d., while good green, on stalk, were held for 3½d. ; ditto, part broken, for 3d. per lb.

Gum Ammoniacum.—3 cases good free drop were taken out at 65s.

Gum Arabic.—Reddish picked *Aden* held for 50s. to 60s., while yellowish grain sold for £8, and good white picked for £13 10s. per cwt.

Gum Benjamin.—Low *Sumatra* sold without reserve at 42s. to 77s. ; fair to good seconds at £5 15s. to £8 17s. 6d. ; low dark blocky *Siam* part sold at 40s. to 46s. ; rest of better quality held for 60s. to 100s. ; small to bold rather dusty ditto part sold at £14 15s. ; fair *Palembang* sold at 30s ; fair *Penang* held for 65s. per cwt.

Gum Elemi.—4 cases taken out at 25s. per cwt.

Gum Galbanum.—20 packages held for 6d. to 1s. 6d. per lb. for dark blocky to good fair.

Gum Mastic.—7 cases pale to yellow held for 1s. 2d. to 1s. 8d. per lb.

Gum Sandarac.—6 casks were taken out at 65s.

Honey.—5 cases fair *Australian* held for 25s. ; 37 cases white *Italian* for 34s. ; 73 packages fair to good *Jamaica* sold at 24s. 6d. to 27s. 6d. per cwt.

Ignatius Beans.—37 bags were offered ; no bids, however, were made, and the whole was bought in at 6d. per lb. We think a bid of 4¼d. per lb. for the lot would be accepted.

Ipecacuanha.—Privately this has been inquired for. At the sales 40 bales of *Rio* and 18 bags *Carthagena* were offered. Both varieties were very firmly held, *Rio* at 6s. 6d. to 6s. 9d. per lb., and *Carthagena* at 5s. to 5s. 3d. per lb., the sea-damaged portion of the latter selling cheaply for underwriters' account at 4s. 2d. to 4s. 5d. per lb.

Kola Nuts.—5 bags fair sold cheaply at 3½d. per lb. 31 bags dull at 3¼d. per lb.

Menthol.—7 cases good dry white crystal taken out at 6s.

Musk.—4 caddies small to bold fair shape, fairly trimmed and dry *Tonquin* held for 60s. ; thin ordinary blue, small to bold *ditto* for 45s. per oz.

Nutmeg Paste.—4 cases fair quality held for 2½d. per oz.

Nux Vomica.—54 bags dull Madras sold at 5s. per cwt.

Oils Essential.—*Star Aniseed* : Only limited sales on the spot at 6s. 9d. per lb. *Peppermint* : Latest advices from America again speak of great damage to the crop, and higher prices seem bound to rule. *Eucalyptus* : 60 cases fair commercial held for 10d. per lb. *Wintergreen* held for 5s. 6d. per lb. *Cassia* : 70-75 per cent., 5s. 10d. per lb. ; 80-85 per cent., 6s. 3d. per lb.

Orange Peel.—8 cases fair, bright, thin cut, held for 7½d. per lb.

Orris Root.—11 bags good white picked *Florentine* were bought in at 65s. per cwt., less than this figure would, however, no doubt be accepted.

Papaw Juice.—1 case sold at 4s. per lb., subject to importers' approval.

Rhubarb.—Of 30 chests part sold, good bold round orange-coated *Shensi*, three-quarters pinky, quarter dark fracture, at 2s. 2d. ; ditto, second size, rather rough, at 1s. 10d. ; while dull coated rough ditto, poor colour, was held for 1s. 6d., ditto grey fracture light coat sold at 1s. 1d. Very bold ditto half good half grey and dark fracture held for 3s., while good flat ditto was held for 1s. 6d., very rough for 1s. 3d., small *high dried* good colour for 1s. 1½d., ditto dull for 1s. per lb.

Sarsaparilla.—*Jamaica* has been arriving very freely, and in the sales lower prices were accepted, 2s. 1d. for sound and 1s. 11d. to 2s. for damaged.

Scammony.—11 cases bought in at 8s. to 30s. per lb.

Senna.—The offerings at the auctions consisted of 162 bales *Alexandrian* and 218 bales *Tinnevelly*. The former variety is in over-supply, and consequently difficult of

sale, not a single bale finding buyers. Of the latter variety only a few bales sold at rather easier prices at from 1d. per lb. for small discoloured, to 3½d. for medium size and colour.

TAMARINDS.—131 barrels *W.I.* held for 8s. 6d. per cwt.

TURMERIC.—14 bags fair finger, Madras held for 18s.

VANILLOES.—350 tins were offered at the auctions, and sold at a reduction of 2s. to 3s. per lb.; the finer qualities showing the greatest fall.

WAX.—Fair *Madagascar* realised £5 to £6, 1 case *Antigua* £8, and 2 bags *Mozambique* £6 7s. 6d., 1 cask inferior *Mogador* being bought in at 80s. Fair to good *Jamaica* sold at £7 15s. to £8 7s. 6d. 5 cases white *East Indian* were held for £7, while 2 cases *ditto* sold without reserve at £5 2s. 6d.

MANCHESTER CHEMICAL REPORT.

JULY 6, 1897.

The market here is very steady, and there are no very important changes to note on last week. Sulphate of Ammonia is unchanged, but there is a decidedly better feeling, especially for Lancashire made stuff. Brown Acetate of Lime is at £5 to £5 2s. 6d. per ton for Welsh at station, Manchester, and £5 is asked for best American, *c.i.f.* Green Copperas is 2s. per ton higher for local makes, and is now quoted 35s., *f.a.s.*, Manchester, and 40s. to 42s., *f.o.b.*, Liverpool. Yellow Prussiate is firm at 6d. for best Lancashire, with a hardening tendency. Glauber and Epsom Salts unchanged. Alum quiet.

NEWCASTLE CHEMICAL REPORT.

JULY 6, 1897.

Somewhat more business is passing in the way of oversea shipments of chemicals. Soda is sufficiently plentiful to meet current orders, but the warmer weather is interfering with the make and hence less increase. Prices keep as follow:—Bleaching Powder, £6 10s. to £7 10s. Soda Crystals, 37s. 6d. to 55s. Caustic Soda: 70 per cent., £7 to £7 10s. Alkali: 52 per cent., £5. Soda Ash: 52 per cent., £4. Sulphur, £4 15s. per ton.

LIVERPOOL REPORT.

JULY 7, 1897.

Things have been quiet here for some time, but nevertheless good prices have been obtained, and a steady tone prevails generally. Holders of Quillaya Bark are still asking high prices, whilst Beeswax, Castor Oil, and Kola Nuts continue to sell steadily at good figures. A decline has been experienced in Canaryseed and Spirits of Turpentine.

AMMONIUM SALTS.—*Carbonate* is quiet at 3d. per lb. *Sal ammoniac*: Still brings 31s. to 33s. per cwt. *Sulphate*: Quiet at £7 13s. 9d. per ton.

BEESWAX—Of all kinds is very steady. 10 sacks of Chilian sold at £6 15s. per cwt., and 8 packages of Sierra Leone at £6 7s. 6d. per cwt.

BLEACHING POWDER—Is somewhat dull at £6 10s. to £6 12s. 6d. per ton.

BORAX—Is still quoted at 16s. per cwt.

CANARYSEED—Is very dead. Turkish only brings 24s. to 25s. per 464 lbs.

CASTOR SEED.—420 bags of Maranham were sold privately.

COCHINEAL.—Small sales of Teneriffe black grain have been effected at recent quotations. Lower prices have been offered for quantity, but were too low to suit holders.

HONEY.—20 barrels of low quality Peruvian sold ex store for 19s. per cwt.

KOLA NUTS—Are selling well, though supplies are rather short. 11 packages dried made 2¼d. per lb.

OILS (FIXED) AND SPIRITS.—*Castor oils* have been selling well, and are in such demand that prices have moved upwards. Calcutta "good seconds" sold to the amount of 350 cases at 3⅛d., and now 3⅜d. per lb. is asked. French, first pressure, 3⅝d. per lb.; Madras, 3¼d. *Olive oils* sell well at recent full rates. *Linseed oil* is held for 15s. 3d. to 16s. per cwt. for Liverpool makes. *Cottonseed oil* continues to sell quietly at 15s. to 15s. 9d. per cwt. *Spirits of turpentine* is doing a retail business at 21s. per cwt.

POTASH SALTS.—*Potashes* are quiet at 19s. to 19s. 3d. per cwt. *Pearlashes* are nominal at 30s. per cwt. *Yellow prussiate* brings 5¾d. to 6d. per lb. *Bichromate*: 4⅝d. per lb. *Chlorate* in good demand at 4d. per lb. *Cream of tartar* is dull at 78s. to 79s. per cwt.

QUILLAYA BARK—At auction was withdrawn on a bid of £16 15s. per ton, holders wanting £18.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Hodgkinsons, Treacher & Clarke, Wholesale and Export Chemists and Druggists, 101, Whitecross Street, London, E.C.

Matthews & Lindley, Veterinary Surgeons and Farriers, 18, Gayton Road, Hampstead, and 9, Alexandra Mews, Abbey Road, London.

Bartlett & Cæsar, Medical Practitioners, 9, Lewisham Park and 214, Algernon Road, Ladywell.

Fenton & Davies, Physicians and Surgeons, Ealing and Hanwell.

BANKRUPTCIES.

(From the London Gazette.)

Thomas N. Brooke, Chemist and Druggist, 28, High Street, Doncaster.

George Henry Price, Dentist, 99, Strand, W.C., and 42, Richmond Park Road, Richmond.

Ellis Law & Son, Mineral Water Manufacturers, 88, Marshgate, Doncaster.

MARRIAGE.

ADCOCK—MERRELL.—On June 29, at St. Peter's, Inkberrow, by the Rev. J. Burton, Vicar, Herbert Dickson, eldest son of the late I. D. Adcock, Alcester, to Mary Jane, only daughter of the late Thomas Merrell, Inkberrow, and Mrs. Merrell, Knighton Lodge, Alcester.

LATE ADVERTISEMENT.

LONDON Hospital, Whitechapel Road, E.—Wanted at the London Hospital a qualified Dispenser. Applications should be sent to the HEAD DISPENSER, with three recent testimonials. Salary £90 per Annum.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Southall's Materia Medica Collection, containing every specimen required for Minor; also apparatus, including burette, Bunsen burner, mortar, etc. All in good condition. What offers?—Carrington, 24, Britannia Road, South Southsea.

What offers for 1½ lb. gum kino; 4 glass slides for window-fitting, 7 ft. by 2 ft. 6 in.; plate-glass shelf, as Maw's No. 3, and other shapes; pillar dispensing-scale, as Maw's fig. 7; Wenham gas-lamp, also 6-light star and other gas fittings. Send stamped envelope for list of patents.—Key, Chemist, Pontypridd.

Overstocked.—2 by 12½ lb. coppers 1897 superfine oil of lemon; copper, 2s. 6d.; Winchester, 2s. 9d. pound sample, 3s. 1b., packages free. Cash with order.—Moss, Chemist, Little Lever, Bolton.

West Indian and South American Druggists and Exporters, about 1000 pints, assorted B.P. tinctures and liniments in 4-pint Winchesters, by Fletcher, cheap, list. Apply—Chemist, 144, Victoria Street, S.W.

Soda-water trolley; a boy of eight can easily convey 3 doz. syphons and cases any distance; 35s., carriage paid.—Arthur and Co., Cambridge.

Books.

Surplus Books.—Must be sold. B.P. (1885); Luff's 'Chemistry' (1892); Wills' 'Flowers and Fruits' (1890); Pilley's 'Qualitative,' Mills' and North's 'Quantitative Analysis,' Semple's 'Pharmacy Aids' (1888); B.P. (1885) Volumetric (Fred Davis); Wills' 'Prescripta'; McNab's 'Morphological and Physiological Botany.' Wanted, about Two Dozen Drawers, unlabelled preferred; size, say 12×6.—Hogg, York Street, Belfast.

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d.—Tully, Chemist, Hastings.

WANTED.

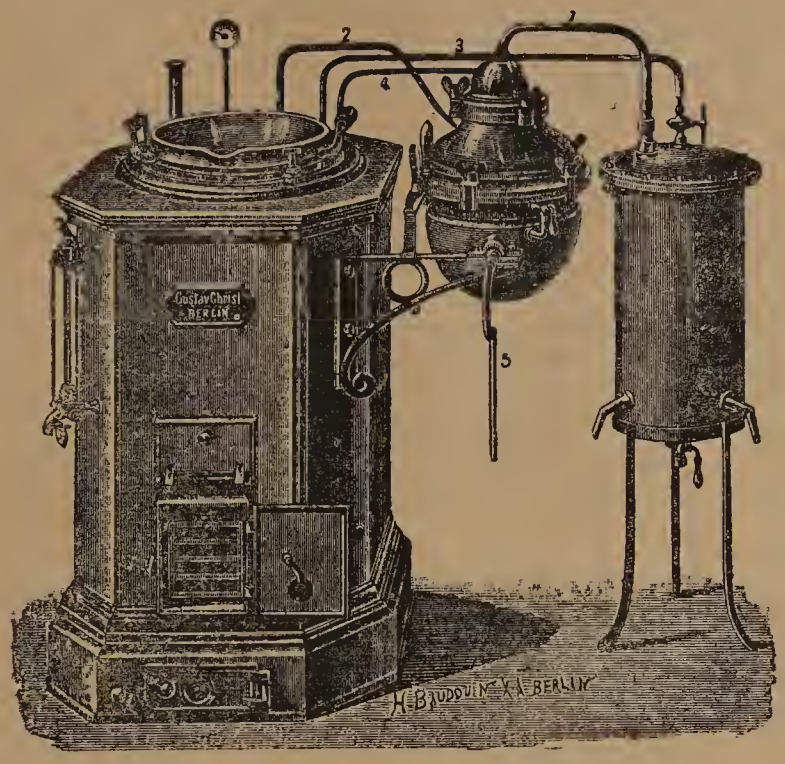
Address Wanted.

Wanted, the Address of Dr. Foott, late of Stanhope Road, West Hartlepool, and previously Lightcliffe, near Halifax. Please send to—W. Haigh, Chemist, Halifax.

NEW IDEAS AND TRADE NOTES.

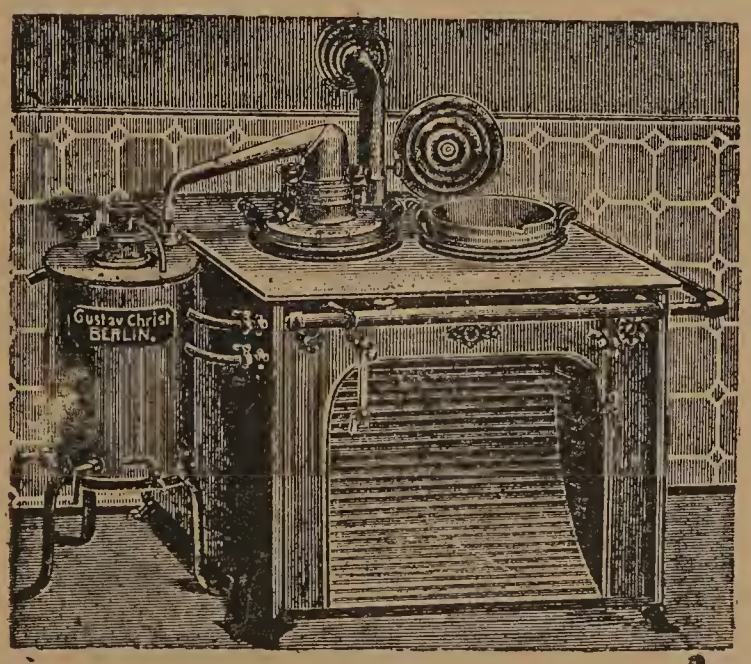
STEAM APPARATUS FOR LABORATORY.

The firm of Gustav Christ (Berlin) has introduced a form of steam apparatus which has many advantages to recommend it to the notice of retail pharmacists desirous of adding a small and compact steam apparatus to their laboratory. The furnace is constructed on the slow combustion principle, and will burn coke, coal, or other material, the fire being regulated by regulating the draught. The boiler is fitted with a gauge and with a steam valve blowing off at a pressure of half an atmosphere; it contains about eight gallons of water, the steam from which boils water in a copper pan, the rim only of which is seen in the illustration. On to this copper pan a porcelain evaporating dish fits by a ground edge and a bayonet-catch, the upper part of the dish and the handles by which it is lifted being shown in the illustration. The still consists of a steam-pan holding nearly two gallons, heated by steam from the boiler under a pressure of half an atmosphere. It can be tilted so as to deliver the contents without trouble. On to this pan a head can be fitted and secured by hinged screws, a cardboard circle serving to make the join steam-tight; the pan is thus converted into a small still. The upper part of the head, which is also secured by hinged screws, can be removed and a block-tin cylinder inserted which, by an attachment to the steam pipe, allows of steam being passed through any substance, such as a drug or marc, packed in the cylinder. The condenser stands upon a tripod and is constructed to stand pressure, so that when supplied with water under pressure, as for instance from the main, the hot water can be run to waste, or, if required, utilised for feeding the boiler whilst working. It will readily be seen that the apparatus requires no mounting beyond the flue-pipe necessary for all stoves. It occupies a space of about three feet by five feet only, and appears well adapted for all the requirements of a retail pharmacist. Branch pipes can naturally be attached to the steam pipe and carried to a drying cupboard, or used for any purpose for which a pressure of half an atmosphere would suffice.



GAS HEATING APPARATUS.

Another apparatus made by Gustav Christ, of Berlin, is heated by gas and constructed on a novel principle. The boiler is divided into two separate parts, each of which is supplied with a comparatively small quantity of water, the level of which is maintained by supply from the condenser, a gauge indicating the height of water in the boiler. The heating of an unnecessarily large quantity of water is avoided, economy in gas effected, and by the reflector shown in the illustration the laboratory may at the same time be warmed. The still is constructed for using steam under pressure; it is separate from the steam bath, so that either may be used independently. The apparatus seems specially suitable for pharmacists.



APENTA WATER.

The publishers of the *Pharmaceutical Journal* desire to call attention to a serious error in the advertisement of the Apollinaris Co., Ltd., that appeared on the fourth page of the cover of last week's issue. For some time past the Company has allowed 5 per cent. discount upon orders for ten cases of Apenta Water, but by a printer's error the advertisement last week stated that 25 per cent. would be allowed on such orders. The publishers greatly regret the trouble that has been caused to the Apollinaris Co., Ltd., by this error, for which the Company was in no way responsible.

NEWS IN BRIEF.

Mr. James Townsend's (Exeter) employés had their annual outing on Saturday, July 10, proceeding by special train from St. Davids to Totnes, and thence by the steamer "Dartmouth Castle" to Dartmouth, where dinner was provided by Mr. J. C. Dawe, at the Assembly Rooms. The chair was occupied by the principal, Mr. James Townsend. In reply to the toast of "Our Worthy Employer and Family, and Prosperity to the Firm," Mr. James Townsend said he highly appreciated the feeling displayed, and again wished to thank them for the present made to his son on the occasion of his marriage. He also took the opportunity to make the announcement to them publicly that arrangements had lately been made and were at present in operation which would necessitate an alteration in the name of the firm, Mr. W. Townsend having been taken into partnership, and the style of the firm would in future be Townsend & Son. The party then separated, some visiting various places of interest in Dartmouth, others availing themselves of the privilege offered by the Great Western Railway of breaking the return journey at Paignton or Torquay. The party returned to Exeter by the 8.12 from Torquay, having spent a most enjoyable day.

Pharmaceutical Society of Ireland (Preliminary examination) the following have passed:—J. Copithorne, A. C. Loton, J. Bolster, J. S. Strange, B. C. Moran, T. J. Cole, W. Smyth, T. Finegan, J. D. Hamilton, J. H. Cooke. Nine candidates were rejected. Pharmaceutical Assistants' examination:—W. Gray and J. S. Scott passed. Registered Druggist examination:—G. A. Webb passed. One candidate was rejected. At a Registered Druggists' Examination held at Queen's College, Belfast, on Tuesday, the 13th instant, the following passed:—J. Crooks, T. Mitchell, W. Niblock, J. B. Sweeney, R. S. Thompson. Two candidates were rejected.

Royal Institution.—A general monthly meeting of the members of the Royal Institution was held on July 5, Sir James Crichton-Browne, M.D., F.R.S., Treasurer and Vice-President, presiding. The following were elected members:—Mr. H. H. Baird, Mr. Ivon Braby, Mr. J. M. Davidson, M.B., C.M., Mr. A. C. Hill, B.A., Mr. J. Y. Johnson, Mr. L. Kamm, Mr. M. E. Stephens, the Rev. Henry Wace, D.D., Mr. Julius Wernher, and Mr. Henry Wilde, F.R.S. The special thanks of the members

were returned to Sir Andrew Noble for his donation of £100 to the Fund for the Promotion of Experimental Research at Low Temperatures.

THE GLASGOW SCHOOL OF PHARMACY will in future be conducted by Mr. J. Lothian, pharmaceutical chemist, who is now the sole principal, the co-partnery "Hoseason & Lothian" being dissolved.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION.—On Wednesday, July 7, the members of this Association and lady friends drove to Muchalls for their annual outing. The weather was fine and the drive out was much enjoyed. On arriving at Muchalls the party went for a ramble among the rocks, and were photographed there. Returning to the Marine Hotel tea was served, after which games were engaged in for some time, and a walk was taken along the coast to view the magnificent rock scenery for which Muchalls is famous. In the evening dancing was enjoyed in the hall. The homeward journey was pleasantly passed with songs, the party arriving in Aberdeen at 10.30, after having spent a most enjoyable afternoon.

MR. E. M. HOLMES, Curator of the Pharmaceutical Society's Museum, has been elected a member of the Council of the Museums Association.

A BIG PHOTOGRAPHIC EXHIBITION.—A monster photographic exhibition will most probably be held next spring at the Crystal Palace, under the auspices of the Royal Photographic Society. Annually this Society holds an exhibition at the gallery of the Society of Water Colours at Pall Mall, but this is practically an Art show, and the exhibition next spring is to be primarily a trade and technical show. A committee of the trade has been formed, and if all the promises are fulfilled it looks as though this show will be the biggest yet held in England in connection with photography.

DECIMAL WEIGHTS AND MEASURES IN PARLIAMENT.—The following gentlemen will constitute the Trade Committee of the Commons for the purpose of considering the Weights and Measures (Metric System) Bill:—Rt. Hon. Dyke Acland (Rotherham), H. O. Arnold-Foster (W. Belfast), Gibson Bowles (Lynn), J. W. Crombie (Kincardineshire), Hon. Alban Gibbs (London), A. F. Godson (Kidderminster), W. Hazell (Leicester), Sir H. Howorth (S. Salford), A. C. Humphreys-Owen (Montgomery), E. F. Knox (Londonderry), Batty Langley (Attercliffe), Jasper More (Ludlow), Parker Smith (Lanark, Partick), G. Whitley (Stockport), and J. H. Yoxall (W. Nottingham).

MARRIAGE.

KNOTT—SMITH.—On July 7 at Farnworth Parish Church, by the Rev. J. W. Cundey, vicar of Emmanuel's, Bolton, assisted by the Rev. H. S. Butler, vicar, and Rev. R. H. Lyall, curate of St. John's, Farnworth, Percy Knott, chemist and druggist, Bolton, to Miss Florence Smith, of Farnworth, only daughter of the late Mr. James Smith, yarn agent, Bolton.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

JULY 15, 1897.

Business has been somewhat quiet during the past week, a fair number of transactions have, however, nevertheless taken place. Shellac is harder. Opium nominally dearer. Morphia and Codeia unchanged. Glycerin quiet. Cod-liver Oil dull. Permanganate of Potash firm and still scarce for spot delivery. Quinine steady. Iodine and Iodides unchanged, the latter being in very good demand. Menthol quiet, but slightly firmer. Citric higher. Tartaric firm. Saffron firm, and tending higher. Quicksilver and Mercurials unchanged. Cocaine rather easier. Star Anisced Oil rather dearer. Ergot of Rye quiet. Cream of Tartar steady. Camphor quiet. Bismuth unchanged. The following are actual prices ruling for articles of chief interest:—

ACETANILID—Without change at 1s. 3d. to 1s. 4½d. per lb., according to quantity.

ACID BORACIC—Unchanged at 25s. per cwt. for *crystals*, and 27s. per cwt. for *powder*.

ACID CARBOLIC—Is dull, 7d. per lb. is still asked for best make, 35-36° C. *Ice crystal* in quantity and in bulk 39-40° C., 8d., and *ditto detached* crystals, 9d. *Crude* 60°, 2s.; 75°, 2s. 3d. per gallon. *Liquid* pale colour in 40-gallon casks, 1s. 2d. per gallon for quantity.

ACID CHRYSOPHANIC.—One of the makers appears still to be an anxious seller, almost *à tout prix*. The best makers, however, still require 12s. per lb. for fair quantity.

ACID CITRIC—Is dearer at 1s. 2d. to 1s. 2½d. per lb. on the spot for *English*. Demand is active.

ACID TARTARIC—Firm at 1s. 2d. per lb. for *English* on the spot; *foreign*, 1s. 1¼d. to 1s. 1½d. per lb.

AMMONIA COMPOUNDS.—*Sulphate*: Firm, but unchanged at £7 10s. per ton. *Sal ammoniac*: Sublimed *firsts*, 33s. per cwt.; *seconds*: 31s. per cwt.; crushed (for batteries): 33s. to 35s. per cwt.; *powdered*: 34s. to 36s. per cwt. *Muriate*: free from metals, 98 to 99 per cent., 25s. to 28s.; chemically pure: 32s. per cwt. *Carbonate*: 3d. to 3½d. per lb. as to quantity and package.

ASAFŒTIDA.—A small business has been done since the auctions for the Continent at full rates, and inquiries are now coming in from the United States. Good pinky block is held firmly at 75s. per cwt. There is a strong demand for low grades at 45s. per cwt., but this quality does not exist in quantity.

BALSAM TOLU—Continues scarce. A few cases good soft obtainable at 2s. 10d. per lb., whilst old dry is held for 3s. 2d. to 3d. 6d. per lb.

BORAX.—Again lower from second-hands at 15s. for *crystals* and 16s. for *powder*.

BISMUTH—Unchanged at 5s. for the metal, and 4s. 10d. for the *Subnitrate* in large quantity.

CAMPHOR.—The market for *crude* remains very quiet and but little business has been done this weak. Quotations are as follows: *China*: 92s. 6d., *Japan*: 97s. 6d. per cwt. for arrival *c.i.f.* terms. The refined article is unchanged since the drop announced last week.

CASCARA SAGRADA.—No news has been received yet of the new crop, which indeed will only be gathered failing labourers finding more profitable employment. On the spot 14s. to 14s. 6d. per cwt. is quoted, and for arrival per sailing vessel 12s. to 12s. 6d. per cwt., *c.i.f.*, is quoted. The article seems well worth stocking at these low figures.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, 2s. 3d.; *Benzole*, 50 per cent., 2s. 2d.; 90 per cent., 2s. 2d.; *Crude naphtha*, 1s.; *Solvent naphtha*, 95 per cent. at 160° C., 1s. 11d. per gallon.

COCA LEAVES.—Good green *Truxillo* can be had at 7d. per lb. for quantity.

COCAINE.—Market is steady; one maker is still pressing for orders at 9s. 3d., which price has been paid for one of the brands most in favour from second hand, makers themselves still not being sellers.

CODEIA.—Steady at 12s. to 12s. 6d. For immediate delivery the article is still scarce.

COD-LIVER OIL.—This market remains very quiet, quotations for *Norwegian* being nominal at 60s. to 70s. per barrel for ordinary old to fine non-freezing new oil, and 2s. 3d. to 2s. 6d. per gallon for *Newfoundland* quality. It is stated that the Finmarken fishery is now finished, and the total catch of fish in that district is given as about twelve and a half millions as against about sixteen millions last year, the output of cod-liver oil being about three thousand four hundred barrels against about ten thousand barrels last season.

CHAMOMILE FLOWERS.—New crop *Belgian* are offered as follows: First pickings for delivery end of this month at 52s. 6d. per cwt., No. 1 for delivery about middle August, 44s. per cwt.

CLOVES.—Privately, *Zanzibar* have been in more demand and rates are firmer. Sales have been made at 2¼d. on spot and 2⅜d. for October to December delivery. At auction 317 bales of *Zanzibar* were all bought in or withdrawn. 23 bags *Amboyna* were bought in at 4d. 15 cases fair picked *Penang* sold at 6¼d. to 6½d.

CREAM OF TARTAR—Is steady at last week's prices—*crsytals* 77s., *powder* 79s. cwt

CUMARIN—Seems to be tending lower. 2s. per oz. is the general quotation, but for good quantities rather lower prices would be accepted.

ERGOT—Continues quiet. Good sound *Russian* is held for 6d. per lb.; sound *Spanish*, 9d. per lb.; whilst weevily can be had at 5¼d. per lb.

GINGER.—Rates for *Cochin* rule easier, with slow demand; 320 bags rough kinds sold in auction, cuttings 11s. to 12s.; small and lean, 19s. to 21s.; ordinary washed, 23s. to 24s.; 25 cases cut kinds sold, ordinary limed small, 26s. 6d.; medium Native, partly cut, 46s.; good bold *A*, cut, 78s.; fine selected, 85s. *Japan* also lower, 250 bags being sold at 13s. Of *Jamaica* 90 barrels sold at steady rates; common, 71s. to 72s.; small scraped, 74s. to 76s.; middling, 78s. to 85s.; dull bold, 86s.

GLYCERIN.—The demand, considering the time of the year, is very good, but prices do not improve and quotations are nominally 56s. to 57s. 6d. per cwt.

GUARANA—Continues dull of sale. Holders would accept 1s. 9d. per lb.

HELIOTROPINE—Is said to be likely to be dearer in consequence of scarcity of the raw material. It is still possible to buy at 1s. 7d. per oz. for quantity.

HENBANE LEAVES.—Foreign, of new crop, are offered at 37s. 6d. per cwt.

ICELAND MOSS—New is offered at 17s. 6d. per cwt.

INSECT POWDER.—Genuine *Dalmatian* from closed flowers is offered at 130s., from half-closed flowers 115s., and from open flowers 100s. per cwt. *c.i.f.* London. Ordinary mixed qualities 50s. to 75s. per cwt., same terms.

IODINE—Is still quoted 7½d. per lb., *Iodides* also remaining unchanged, demand for same continuing very brisk.

JALAP—Is reported to be dearer in the United States, and the article seems to be in a good position for an eventual rise. On the spot 5½d. per lb. is the nearest quotation.

KAVA KAVA ROOT.—In fair demand, price on the spot being 8d. per lb.

LIQUORICE ROOTS—Are scarce, and there is no stock of ordinary rough in first hands. From second hands 12s. 6d. to 15s. per cwt. is asked, whilst for *decorticated* of very ordinary quality 32s. 6d. to 37s. 6d. per cwt. is wanted.

MANDRAKE ROOT—Has declined to about one-half of its late value, and is now quoted to arrive at 21s. to 24s. per cwt., *c.i.f.* terms.

MENTHOL.—Market is quiet at about 6s. per lb. for case lots on spot.

MERCURIALS—Are unaltered at 2s. 2d. for *Corrosive sublimate*, and 2s. 6d. per lb. for *Calomel* in 5-cwt. lots.

MORPHIA.—Quiet and unchanged at 4s. 7d. for the *powdered salts* in quantity.

OILS (ESSENTIAL).—*Star Aniseed* is dearer at 7s per lb. *Peppermint*: Notwithstanding the reported damage to the growing crops, prices of American brands remain as low as ever, *H.G.H.* being offered on the spot at 6s. 6d. per lb., *Wayne County* at 5s. 9d. per lb., and *Todd's crystal white* at 6s. 9d. per lb. *Sassafras*: Genuine is lower, and is now quoted at 1s. 8d. per lb. in cases of 2×45-lb. tins. *Cassia*: Quiet at 5s. 9d. per lb. for 70 to 75 per cent. *Lavender*: Foreign is offered at 4s. 6d. to 6s. 6d. per lb., according to quality. *Thyme*: 4s. 3d. to 5s. 6d. for *white* and 4s. to 4s. 9d. per lb. for *red*. *Neroli*: 7s. to 8s. 6d. per lb., as to quality. *Ylang Ylang*: 13s. 6d. per oz. for finest.

OILS (FIXED) AND SPIRITS.—*Castor*: French medicinal oil is very scarce, and 36s. per cwt. is asked on the spot. *Linseed* is quiet, with a rather lower tendency, £14 5s. in pipes, and £14 12s. 6d. for barrels. *Rape*: Firm at dearer rates, £28 for refined on the spot. *Cotton*: Dearer, and closes very firm at £15 5s. to £15 15s. for refined on the spot, according to make and package. *Cocoa-nut*: *Ceylon* on the spot, £21 10s. in pipes; *Cochin*, £26 10s. *Palm*, Lagos on spot, £21. *Turpentine*: Slightly lower at 20s. 1½d. per cwt. for American on the spot. *Petroleum*, *Russian*: 4⅜d. to 4⅞d.; *American*: 4¾d. to 4⅞d. per lb.; water white: 6½d. per gallon.

OPIUM—Is nominally somewhat firmer; there is, however, practically no business doing in the article. Stocks here are quite small, while as regards the new crop reports vary considerably. It would appear, however, certain that same will be at least moderately large, which, as far as probabilities go, should certainly lead to lower prices.

ORRIS ROOT—Is very quiet at about 55s. to 56s. for good *Florentine* on spot, while for shipment, August to September, the article is offering at lower rates. It is, however, a question whether quality of that which is being offered at the cheapest figure could be relied upon.

OTTO OF ROSE.—Advices from Bulgaria state that the distillation is over, and whilst the quality is very fine, the quantity, owing to the heavy rainfalls which prevailed daily during the whole season and flooded a large portion of the country, will not be so large as was at one time expected. Owing, however, to the large stock of Otto from last season left still in the hands of producers, exporters in Kizanlik, and dealers abroad, the market is expected to remain much the same as it has been lately. The returns are not yet complete from the various rose districts.

PHENACETIN—Remains at 4s. to 4s. 3d. per lb., according to quantity. It is stated that this figure does not remunerate the makers, and that there is a prospect of higher price. Against this must, however, be borne in mind that the consumption appears to be falling off.

POPPY HEADS.—Extra large of new crop, for delivery next month, are quoted 10s. 6d., and large 9s., at which latter price last year's are obtainable on the spot.

POTASH COMPOUNDS.—*Chlorate* unchanged at 4d. per lb. on the spot. *Prussiate*: *yellow*, 5½d. to 5¾d. per lb.; *red*, 1s. 3d. per lb. *Cyanide*: 100 per cent. quiet at 10d. per lb. *Bicarbonate* steady at 30s. per cwt. *Bromide* unchanged at 1s. 8d. per lb. *Permanganate*: The hot weather causes demand to continue brisk, and prices on the spot are very firm at 72s. 6d. to 77s. 6d. per cwt. for small and large crystals respectively. *Iodide* is in good demand, and makers are very busy with the article; price unchanged at 9s. 9d. to 10s. 3d. per lb., according to quantity.

QUICKSILVER—Unchanged from importers at £7 5s. per bottle, whilst from second hands the tendency is towards lower values.

QUININE.—There has been more inquiry during the last few days for *German* brands, but second-hand holders are firm and makers

MONTHLY STATEMENT OF DRUGS, ETC., WAREHOUSED IN LONDON.

JULY 1, 1897.

		June.		Stocks, June 30.	
		Arrivals.	Deliveries.	1897.	1896.
Aloes (all kinds)	packages	238	80	4,648	6,184
Balsams ,,	,,	24	62	470	994
Bark, Cinchona	,,	1,530	285	22,030	24,758
Quinine Sulphate	ounces	77,584	20,192	1,415,840	1,750,736
Beeswax	packages	1,027	571	2,345	2,390
Camphor	,,	1,199	734	11,335	14,314
Cardamoms	,,	337	263	1,119	693
Cochineal	,,	165	114	2,157	1,701
Colombo Root	,,	61	6	72	341
Cubebs	,,	—	5	322	358
Dragon's Blood	,,	24	9	79	151
Galls (all kinds)	,,	700	977	3,344	7,779
Gum, Ammoniacum	,,	—	—	46	50
Arabic, all kinds	,,	2,404	1,994	12,530	16,989
Asafœtida	,,	—	211	299	692
Benjamin	,,	478	230	3,228	2,600
Galbanum	,,	—	—	1	2
Gamboge	,,	83	6	308	241
Guaiacum	,,	—	2	74	56
Kino	,,	—	1	33	20
Mastic	,,	—	3	11	28
Myrrh	,,	39	34	528	681
Olibanum	,,	181	285	2,294	3,979
Tragacanth	,,	90	602	2,701	5,021
Ipecacuanha	,,	52	71	246	444
Jalap	,,	101	4	413	302
Nux Vomica	,,	149	170	547	479
Oils, Castor	,,	234	126	424	1,159
Olive	,,	118	240	870	1,148
Aniseed	,,	5	11	97	69
Cassia	,,	—	6	57	21
Rhubarb	,,	145	35	294	478
Saltpetre	tons	5,219	1,587	6,233	2,545
Sarsaparilla	packages	36	96	208	285
Senna	,,	108	238	1,166	840
Shellac	,,	6,052	5,538	50,190	37,050
Terra Japonica, Gambier	tons	234	257	995	1,040
Cutch	,,	81	76	1,600	2,058
Turmeric	,,	26	59	729	1,152

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns

will not offer. It seems evident that at present prices for the raw material, and this is still advancing, the alkaloid cannot bear a large profit, if any.

RHUBARB—Continues to arrive freely. 42 cases appear in the manifest of the ss. "India" due here to-morrow.

SAFFRON.—Firm at 42s. 6d. to 45s. for finest *Valencia*.

SENEKA ROOT.—Good Western is quoted on the spot at 1s. 1d. per lb., whilst new crop is offered to arrive at 10½d. per lb., *c.i.f.* terms.

SENNA.—*Alexandrian* continues in heavy supply, and holders are anxious to make sales. About a couple of tons, it is said, have been sold for export at rather lower prices than those mentioned in last week's sale. *Tinnevely* is in demand for the lower grades at 1¾d. to 2d. per lb.

SHELLAC. — The market is decidedly firmer in Calcutta, and this reacted here, and there is more inquiry all round. The supplies at the fortnightly auctions on Tuesday were moderate, and with a good demand about three-fourths found buyers at full rates, the value of *TN* being now 60s. to 61s. A total of 1145 cases were catalogued and 739 cases sold. Fine *Second Orange*: Of 306 cases offered 182 cases sold, fine lemony *LM&Co* No. 1 at 78s., good strong bright *SR* in diamond at 65s., good bright *RN* in diamond, part little matted, at 62s.. good strong bright *RB,GS* n circle at 61s., weak palish blocky *PB,GS* in circle at 61s.; the remainder bought in, *M* in circle fine pale lemony at 77s., and flint block ditto at 70s. *TN* qualities: 734 cases offered, and 552 cases sold, fair to good strong bright flat at 60s. to 61s., fair strong flat red at 59s. to 60s., ordinary reddish 57s. to 58s., weak flat reddish liver at 55s. to 56s.; all more or less cakey and blocky. good strong curly at 57s. to 58s., fair red 56s. to 57s., red Calcutta-worked at 54s. *Button*: Ordinary firsts cakey to blocky at 68s. to 69s., ditto seconds at 63s., ordinary circle 4 at 35s. to 36s. The speculative market is firmer, with more disposition to buy, and a good business has been done at advancing prices, chiefly for September delivery at from 60s. 6d. to 62s. per cwt., closing buyers at the latter rate.

SODA COMPOUNDS.—*Crystals* are firm at 57s. 6d. to 60s. per ton on the spot. *Bicarbonate*: £7 10s. per ton for the commercial 99 per cent., and 18s. 6d. per cwt. for the *free from monocarbonate* quality. *Hyposulphite* firm at £5 15s. to £6 10s. per ton. *Sulphide* (for unhairing hides): £8 to £9 per ton. *Caustic*: 70 per cent., £8 10s.; 60 per cent., £6 10s. to £7 per ton.

SPERMACETI. — American is offered at 1s. 4d. per lb.

SPICES (VARIOUS).—*Cassia lignea*: 30 cases sold at 41s., also 180 bales good broken at 32s. 6d. *Capsicums*: 8 bags Natal sold at 50s. to 58s. *Chillies*: 75 bales Zanzibar bought in at 32s. 6d., also 5 cases fine Japan at 50s. *Mace*: 12 cases Penang sold at 1s. 5d. to 1s. 8d., and 20 packages West India at 1s. to 1s. 8d. for ordinary to fine, and 2s. 2d. for pale bright. *Nutmegs* quiet. *Black Pepper*: Penang bought in at 2½d., and Lampong at 2⅞d. 61 bags Singapore sold at 3d. to 3⅛d. *White pepper*: Penang bought in at 4¼d., and Singapore at 6d. to 6¼d. for fine bold. *Pimento*: 30 bags sold at 2½d. to 2⅝d.

SULPHATE OF COPPER.—Quiet at £15 10s. to £16 10s. per ton according to brand.

SULPHONAL.—The makers have so far made no alteration in their nominal price, still, however, refusing to book orders. It is said that an important advance may be looked for before very long. Small quantities may still be had from second hand at 9s. 6d. per lb.

THYMOL—Is very quiet, and price is unchanged at 7s. per lb.

VANILLINE.—4s. 6d. per oz. is asked from second hand, while the agents for the chief makers are oversold, and cannot keep pace with the deliveries required, and consequently are unable to book fresh contracts for the moment. It would appear probable that we shall see better prices for this article.

NEWCASTLE CHEMICAL REPORT.

JULY 14, 1897.

The chemical line in this district is a shade better against orders for home and oversea use. Crystal Soda is just a trifle scarce through reduced stocks and a lessened make through the weather. Alkali is a fuller inquiry. Prices, however, are practically unchanged. Soda Crystals, 37s. 6d. to 55s. Bleaching Powder, £6 10s. to £7 10s. Sulphur, £4 15s. Alkali, 52 per cent., £5 5s. Soda Ash, 52 per cent., £4 per ton.

LIVERPOOL REPORT.

JULY 14, 1897.

Liverpool Market export. In consequence of shippers of Olive Oil holding back for a rise, stocks here are becoming rapidly lower, so that Spanish and Eastern oils are likely to advance shortly. Sales of Chilian Quillaya Bark have been effected at £17 per ton, an advance of 5s. per ton on the bids last week. Liverpool refined Linseed and Cottonseed Oils have experienced a slight rise, but Spirits of Turpentine has gone down a shade in price.

AMMONIUM SALTS.—*Carbonate* is still slow of sale at 3d. per lb. *Sal ammoniac*, 31s. to 33s. per cwt. *Sulphate*, £7 15s. per ton.

BEESWAX—Has been selling well at full rates, 17 packages of Sierra Leone were sold at £6 per cwt. and 10 bales of Gambia at £6 12s. 6d.

BLEACHING POWDER—Is unchanged at £6 10s. to £6 12s. 6d. per ton.

CANARYSEED—Continues very lifeless and, notwithstanding the low rates for Turkish, viz., 24s. to 25s. per 464 lbs., buyers are not to be tempted just at present.

KOLA NUTS—Are in good demand, 9 packages of dried found buyers at 2¾d. per lb.

OILS (FIXED) AND SPIRITS.—*Castor oils* are still hardening in price, Calcutta "good seconds" has advanced to 3⅜d. per lb.; Madras, 3¼d.; and French, first pressure, 3¼d.; and it is doubtful if any variety is now to be bought under 3¼d. per lb. *Olive oils* are somewhat scarce, and Levant oils likely to advance considerably if advices from abroad are to be credited. Malaga oil has sold fairly well of late at £30 10s. per tun and Seville at £29 10s. *Linseed oil*, Liverpool pressed, has advanced to 15s. 6d and 16s. per cwt. *Cottonseed oil*, Liverpool refined, has also gone up to 15s. 6d. and 16s. per cwt. *Spirits of Turpentine* is very slack, and has declined to 20s. 9d. per cwt.

POTASH SALTS.—*Bichromate* is unaltered from last week. The same remark applies to *Chlorate, Yellow Prussiate, Potashes, and Pearlash.*

MANCHESTER CHEMICAL REPORT.

JULY 14, 1897.

There is a good forward demand, especially for the States, and heavy chemicals remain firm. Sulphate of Ammonia has advanced slightly for Lancashire make since our last, and may be quoted £7 5s. to £7 7s. 6d. on rails. High strength Caustic Soda, 78 to 79 per cent., is firm at £9 to £9 5s. per ton, according to quality, on rails. Owing to the continued hot weather, Soda Crystals are scarce and very firm. Brown Acetate of Lime has an upward tendency, and Welsh is quoted £5 2s. 6d. to £5 5s. at station, Manchester, and best American, £5 2s. 6d. *c.i.f.* Solvent Wood Naphtha is scarce, and prices fully maintained. Yellow Prussiate has an upward tendency here for best Lancashire make, though unchanged at 6d. Pitch dull at 18s. 6d. per ton *f.a.s.* Manchester, and 20s. to 21s. East or West Coast. Green Copperas unchanged. Recovered Sulphur quoted £4 15s. per ton, bags on rails. Aniline Oil, 6¾d., and Salt, 6¼d.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Little & Walker, Physicians and Surgeons, 6, Bank Buildings and 12, Lingfield Road, Wimbledon.

Wilson & Dingan, Physicians and Surgeons, Oxford.

Ellis & Gordon, Surgeons and Apothecaries, Salisbury.

Morris, Smith and Wheeler, General Medical Practitioners, Silverdale, near Newcastle-under-Lyme, Stafford.

Musgrave, Milson & Clayton, Physicians and Surgeons, St. John's Wood, N.W.

Moxon & Falkner, Physicians and Surgeons, Kingston-upon-Hull.

Park & Morton, Surgeons, Houghton-le-Spring, Durham.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Massan & Didd, Soap Manufacturers, Kingston-upon-Hull.

Exchange—Offered and Wants.

OFFERED.

Miscellaneous.

Overstock.—½ gross 4d. tins health salt, 14s. 6d., also 2 gross ditto tins (empty), beautiful design, £1, cost 30s.; both delivered; samples, 2 stamps.—Slack's Stores, West Bromwich.

Soda-water trolley; a boy of eight can easily convey 3 doz. syphons and cases any distance; 35s., carriage paid.—Arthur and Co., Cambridge.

WANTED.

One Cylindrical Show-Bottle, height 18 in. to shoulder, circumference 33 in., in good condition; cut stopper; state price.—Rayner Sheerness.

PHARMACY ACT CASE.

Proceedings under Section 17.

At Lyndhurst, on Wednesday, July 14, John Golden Short, chemist and druggist, was summoned for selling to William Povey, on or about April 3, prussic acid, a poison within the meaning of the Pharmacy Act, 1868, and for delivering the same poison to the said William Povey, without making, or causing to be made, an entry in a book to be kept for that purpose, stating the date of the sale, the name and address of the purchaser, the name and quantity of the article sold, and the purpose for which it was stated by the purchaser to be required, and to which entry the signature of the purchaser was not affixed, contrary to the form of the Statute.—Defendant having pleaded guilty, Mr. F. G. Short said although his father had pleaded guilty, he should like to make a statement. On or about April 3, Povey came into the shop and asked for some prussic acid, as he wanted "to do away with some old 'uns." His father warned him about being careful with the drug, and let him have one ounce, labelling the bottle "poison," and with his own name and address upon it. He told Povey he must sign the poison register and left him to get it, but on his return the man had gone, although he had been told he would not be kept a minute. The Act allowed chemists to sell poisons to medical practitioners, veterinary surgeons, and chemists without their signing the book. His father had previously sold poisons to Povey for the purpose of dealing with dogs, he being a huntsman having a perfect knowledge of them. He was looked upon almost in the light of a veterinary surgeon, and very different to the ordinary person who might come into the shop and ask for poisons. His father was always most careful and very averse to letting people have poisons, and when he did, always made them sign the book. He had been in business over forty years and such a thing had never occurred before. He knew that Povey was accustomed to handle poisons, and must plead guilty to an omission in this case.—The chairman said it was admitted there was no entry in the book, as required by the Act of Parliament, and the Bench would inflict a reduced fine of £2, and the costs 7*s*.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Thomas Henry Duckworth, Mineral Water Manufacturer, etc., 55, Nile Street, Oldham, carrying on business at Britannia Street, Oldham.

PARTNERSHIP DISSOLVED.

(From the London Gazette.)

William Andrew Fox and Reginald John Ryle, carrying on business as Surgeons and Accoucheurs under the style of Bury, Fox & Ryle at Welland House, New Barnet, and Green View, Hadley Green.

NEW IDEAS AND TRADE NOTES.

APENTA WATER.

The Apollinaris Company, referring to an injunction which was issued last week against a chemist at Leeds, who had omitted to return some bottles of "Apenta" water with labels and capsules bearing the word Hunyadi on them, thinks it right to state, in justice to the chemist, that it was proved that he had re-labelled 14 bottles which he thought to be his entire stock, but that he had omitted to re-label two bottles which were in the shop window.

IDRIS & CO.'S SHARES.

Idris & Company, Limited.—The Directors regret that in consequence of applications for the "A" Preference Shares, new issue, having very greatly exceeded the required amount (notwithstanding the premium of 20 per cent. at which the issue is made), they have been compelled to disappoint a large number of applicants for allotments.

KOCH'S TUBERCULIN.

Professor Koch's New Tuberculin will be supplied through chemists in phials containing 1 millilitre at 8·5 marks each, and in 5 millilitre phials at 42·5 marks. Only certificated medical men, or persons provided with an authorisation from such, will be entitled to receive it.

NEW HYPODERMIC TABLOIDS.

In view of the increasing clinical evidence of the value of potassium permanganate as an antidote to opium and morphine poisoning, hypodermic tabloids, each containing 2 grains of the salt, are now being supplied by Burroughs, Wellcome & Co. in tubes containing twelve. These tabloids are readily soluble, and provide a ready means of putting the treatment into practice. It is stated that 1 grain of potassium permanganate antagonises 1 grain of morphine sulphate, even when the poison is absorbed into the system, and upon this the dosage is founded. The usual strength of the injection is 1 in 100. Another new hypodermic tabloid contains ergotinine citrate, 1/100 grain, and strychnine sulphate, 1/20 grain. The advantages of ergotinine over the aqueous extract of ergot in hypodermic injections are well known, and the addition of a salt of strychnine secures enhanced therapeutic effect. Hypodermic tabloids of ergotinine citrate, 1/100 grain, and strychnine sulphate, 1/20 grain, are supplied in tubes containing twelve.

CALF LYMPH.

The Birmingham Calf Lymph Establishment has appointed Messrs. Wyleys, Limited, wholesale and manufacturing chemists, of Coventry, and 52, Moor Street, Birmingham, its sole agents. The firm is open to appoint chemists as retail agents, the lymph supplied being sent out with every guarantee of purity.

THE ATTFIELD TESTIMONIAL.

Mr. W. Coles, photographer, Watford, is offering a large group photograph taken after the presentation of the Attfield testimonial, showing the album and silver plate. These may be had either unmounted or mounted, and as silver prints or platinotypes.

NEWS IN BRIEF.

Mr. M. H. Stiles, pharmaceutical chemist, 2, French Gate, Doncaster, announces that from July 1, 1897, he will carry on in his own name the business with which he has been associated since the early part of 1869, and which for the past eighteen years he has conducted under the title of "Dunhill & Stiles."

Pharmaceutical Society of Ireland.—Pharmaceutical Licence Examination.—The following have passed: Messrs. G. A. Scott, O. W. Rowlett, W. G. Mitchell, E. T. Elmes, J. B. Bolger, D. S. Jardin. Nine candidates have been rejected.

Mr. R. R. Hallaway, B.Sc., student of the Pharmaceutical Society and son of Mr. John Hallaway, pharmaceutical chemist, Carlisle, at the Durham College of Science has been awarded the Freire-Marreco Medal and a prize of books, and on the nomination of the College has been appointed to a Royal 1851 Exhibition Scholarship, value £150 a year.

Leicester Chemists' Outing.—A party of Leicester chemists, with their wives and daughters, had a most successful outing on Thursday, June 15, when they drove to Mountsorrel, Swithland, and Cropstone. At the former place they inspected the quarries, at the Swithland the new reservoir, and at the latter the costly engine-house and grounds erected in connection with the former. Tea was partaken of at the Reservoir Hotel, Cropstone, at which Mr. Goodess was thanked for having arranged such an enjoyable excursion, and a vote of sympathy was passed to Mr. Howard Lloyd in his sad bereavement through the loss of his daughter (Miss Lloyd) in the ill-fated P. & O. Steamer "Aden."

Mr. Thomas Christy has, we understand, transferred his collection of plants and drugs from Sydenham to his new residence, Manor House, Wallington, Surrey.

Professor Henry G. Greenish was married on Thursday, July 15, at Holy Trinity Church, Brondesbury Road, N.W., to Miss Alice Aikman, youngest daughter of the late David Aikman, of Ealing. The Professor's numerous friends will unite in wishing him a pleasant holiday during his honeymoon tour on the Continent, and the best of good luck in his married life generally.

Dr. H. H. Rusby, Professor of Botany and Materia Medica at the New York College of Pharmacy, is now at Kew working in the Herbarium of the Royal Gardens, at the determination of a large number of Bolivian, Venezuelan, and Trinidad plants.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

July 22, 1897.

Business has not been particularly brisk during past week. The fine weather and the advent of the holiday season of the year having combined to restrict transactions, Acid Citric and Tartaric remain firm. Cream of Tartar steady, Quicksilver and Mercurials, Iodine and Iodides, Bismuth and Salts unchanged. Quinine and Cocaine steady. Opium and Morphia dull. Codeia firm. Glycerin quiet, without change in value. Cod-liver Oil, fair business doing at present low price. Star Aniseed Oil has been an excited market, but closes quieter with sellers at somewhat easier prices. Shellac firm for spot, but somewhat weaker for arrival. Carbolic inactive. Menthol steady. Gentian Root weaker, and Saffron very firm. The following are prices ruling for some of the articles of chief interest:—

Acid Carbolic—Is quiet, best make being still quoted 7d. for 35-36° *Ice crystals* in quantity and bulk. *Crude* 60°, 2s.; 75°, 2s. 4d. *Liquid* of pale colour 1s. 3d. per gallon in 40 gallon casks.

Acid Citric—Is very firm, and makers are said to be full of orders for this month. Second-hand offers at 1s. 2d. per lb. on the spot.

Acid Tartaric—In strong demand at 1s. 2d. per lb. for *English*, and 1s. 1⅛d. per lb. for *foreign*.

Ammonia Compounds.—*Sulphate*: Firm at £7 10s. per ton for prompt 24 per cent. spot. *Muriate*: Steady at 25s. to 28s. per cwt. for 98 per cent. free from metals and 32s. per cwt. for the chemically pure. *Sal ammoniac*: 33s. and 31s. per cwt. for first and second lump respectively.

Atropia.—Firm at 12s. 6d. per oz. for the *Sulphate P.B.* in quantity and in bulk, and 2s. 6d. per oz. more for the *pure*.

Bismuth—Unchanged at 5s. for the *metal*, and 4s. 10d. for the *subnitrate* in quantity.

Cinchona.—At the public auctions on Tuesday the offerings were again moderate, only 1134 packages of all descriptions being catalogued. The larger proportion consisted of East India qualities, a good percentage being rich Ledger bark, which realised extreme rates, fully up to the last Dutch auction prices. *African*: 5 bales bought in. *Ceylon*: Of 106 bales 77 sold; *Ledgeriana*, stem, 3d. to 3½d.; stem and branch, 3⅜d.; hybrid original stem, 2⅞d.; renewed, 3⅛d. per lb. *Cuprea*: 228 bales bought in. *East Indian*: Of 641 packages 412 sold; *Ledgeriana*, original stem, 2⅛d. to 4⅝d.; branch, 2¾d. to 3½d.; do. and stem, 3d. to 3⅛d.; root, 4⅛d.; crown, original stem, 2⅞d.; stem and branch, 4d.; red original stem, 2⅛d.; renewed, 2d. per lb. *Java*: 154 bags sold; *Ledgeriana*, original stem, 5½d. to 6d.; branch, 5⅜d. to 5½d.; root, 3⅜d. to 5¾d. per lb.

Coal Tar Distillation Products.—*Toluol*: 2s. 4d. *Benzole*: 50 per cent., 2s. 3d.; 90 per cent., 2s. 3d. *Crude Naphtha*: 1s. *Solvent Naphtha*: 95 per cent. at 160°, 1s. 10½d. per gallon.

Cloves.—In auction 100 bales *Zanzibar* sold at 2⅛d. to 2⅝d.; 2 cases fair *Penang* sold at 6½d., fine bought in at 9d. Privately *Zanzibar* are steady but quiet at 2¼d. on the spot, and 2⅜d. October-December delivery.

Cocaine.—Market is steady without, however, very much doing, best brands are obtainable from second-hand in moderate quantity at 9s. 3d. to 9s. 6d. per oz., makers being still unable to book fresh orders.

Codeia—Steady at 12s. to 12s. 6d. per oz., and still scarce for immediate delivery.

Cod-Liver Oil.—It is thought the market has about touched the bottom, and a fair business has been done in good brands of new *Norwegian* quality at 65s. to 67s. 6d. per barrel. *Newfoundland* oil is quoted 2s. 3d. to 2s. 6d. per gallon as to quality.

Cream of Tartar—Is fairly steady. First white French *crystals* on the spot 77s. per cwt. *Powder* 79s. to 81s. per cwt.

Gentian Root—Is lower, and it would now be possible to buy for fairly prompt shipment at 23s. per cwt. London terms, or even lower.

Ginger.—*Cochin* continues dull, 210 bags rough kinds sold in auction at rates still tending easier; low dusty cuttings at 9s. 6d. to 10s.; fair cuttings, 13s.; common brown, 22s. 6d.; washed, 23s. 6d.; bright medium, old import, 31s. Of native cut kinds, 85 cases sold, small and medium, 38s. 6d. to 40s. 6d.; small and ends, 28s. to 30s. 120 bags limed *Japan* sold at 13s. *Jamaica* all bought in, middling to good at 80s. to 100s.

Hypophosphites.—Makers' price remains 3s. 3d. per lb. for *Lime*, *Soda*, or *Potash* in 10-cwt. lots.

Iodine—Remains at 7½d. per oz., price for *Pot. Iodide* being 9s. 9d., and for *Iodoform* 13s. 4d. per lb., in quantity and in bulk.

Insect Powder—Is in demand, and prices range from 9d. for the non-guaranteed to 1s. 1d. to 1s. 4d. per lb. for guaranteed qualities.

Isinglass.—At the periodical auctions on Tuesday 632 packages were offered, as against 574 packages last month. With a slow demand for most descriptions a quiet tone prevailed, and prices were, with few exceptions, easier. *Penang* was in steady demand, and was all sold at about previous rates. *Saigon* leaf went off slowly at again easier prices. Supplies of *Bombay* and *Kurrachee* were of good extent, although much less than at the previous auctions; the demand was slow, and holders being firm, only a small part sold, leaf at previous rates to slightly cheaper, new tongue lower, cake sold irregularly, other descriptions mostly bought in. *Para* lump sold steadily for first pile and dearer for second, but third 1d. to 2d., and fourth 2d. to 3d. lower; tongue easier. *Maranham* lump and tongue sold at lower prices. *West India* lump sold cheaper, except fine, which brought higher prices.

Japan Wax.—Sales on the spot at 42s. 6d. per cwt. for good squares, and for arrival at 35s. to 37s 6d. *c.i.f.*, according to position.

Leaves.—*Belladonna*: Foreign are offered at 42s. 6d. per cwt. *Henbane*: Foreign, 35s. per cwt.

Lithia—Is still quoted 9s. 8d. per lb. for the *Carbonate*.

Menthol.—Fine white dry crystal is still obtainable at 6s., and even somewhat below this for quantity. Buyers will probably do well to cover their requirements before the season further advances.

Mercurials.—Makers quote *Corrosive sublimate* 2s. 2d. and *Calomel* 2s. 6d. per lb., in 5-cwt. lots.

Morphia—Very quiet at unchanged price, say 4s. 7d. per oz. for the *Hydrochlorate powder* in quantity and in bulk.

Nitrate Silver—Continues to be offered at low rates, *crystals* being quoted in quantity at 1s. 6¼d. to 1s. 6½d. per oz.; *sticks*, ¼d. to ½d. per oz. more.

Oils Essential.—*Star Aniseed* has been an excited market this week, caused, it is said, by the "bears" being caught in Hong Kong. A large business has been done at steadily advancing prices, which close, however, on the spot at 7s. 3d. per lb., at which price there are more sellers than buyers. From Hong Kong the quotation comes 7s. 7½d. for July to September shipment *c.i.f.* *Peppermint*: American cables report a firm market with higher prices, on the spot *H.G.H.* is quoted 6s. 9d. per lb. *Cassia*: quiet and unchanged. *Citronelle*: steady at 1s. 2d. per lb. on the spot, whilst for arrival sellers ask 11½d. *c.i.f.* *Lemongrass*: steady at 2⅝d. to 2¾d. on the spot, and 2⅜d., *c.i.f.* to arrive.

Oils (Fixed and Spirits).—*Linseed*: Is very firm, pipes on the spot being quoted £14 5s., barrels £14 17s. 6d., with a premium of 5s. per ton for solely from E.I. seed. *Rape*: Firm; refined on the spot quoted £28. *Cotton*: Steady for refined on the spot at £15 5s. to £16, according to make and package. *Cocoanut*: Ceylon on the spot, pipes £22, hogsheads £23. *Cochin*: £26 10s. *Turpentine*: Quiet; American on the spot lower at 19s. 10½d. to 20s. per cwt. *Petroleum oil*: Dull; Russian spot, 4⅞d.; American, 4⅞d.; water white, 6d. to 6⅛d. per gallon. *Petroleum spirit*: American, 6¼d. to 6½d.; deodorised, 6¼d. per gallon.

Opium—Is practically a dead letter; prices are nominally unchanged. There is, however, little or nothing doing here in the article, while there is also no news of any importance from Smyrna.

Phenacetin.—Unchanged at 4s. per lb.

Potash Compounds.—*Chlorate* continues quiet but unchanged at 4d. per lb. *Prussiate* steady at 5½d. per lb. for *yellow*, and 1s. 2d. per lb. for *red*. *Bicarbonate* firm at 30s. per cwt. *Cyanide* steady at 10½d. per lb. for 98/100 per cent. *Bromide* unchanged at 1s. 8d. per lb. *Permanganate* is in good demand, and for immediate delivery the supply is small. *Iodide* continues in active demand without change of price.

Quicksilver.—Whilst price from importers direct remains at £7 5s. per bottle. Second hand holders are easier at £7 3s.

Quinine—Is inactive, but second-hand holders are firm, and a small business has been done at steady prices. German makers are not offering.

Saffron.—Market is very firm, 44s. to 45s. being asked for finest *Valencia*.

Shellac.—On the spot a fair demand prevails, with moderate sales at full rates, including *Second Orange* at 62s. per cwt., basis *TN*. The market for arrival is quiet and prices close easier, with sellers of *TN*, Oct-Dec. steamer, at 61s.; Calcutta quotes 63s., *c.i.f.* The speculative market is also weaker, with a small business, closing sellers, August delivery, 63s.; and September, 64s. per cwt.

Soda Compounds.—*Crystals* are firm at 57s. 6d. to 60s. per ton ex-wharf. *Bicarbonate*: £7 10s. per ton for the commercial 99 per cent., and 18s. 6d. per cwt. for the free from mono-carbonate. *Hyposulphite*, firm and in good demand at £5 15s. to £6 per ton.

Spices (Various).—*Cassia vera*: 22 bags Japan bark sold at 18s. *Chillies*: Flat. *Mace*: Dull; Penang bought in at 1s. 3d. 13 packages West India sold at 1s. 2d. to 1s. 4d. *Nutmegs*: Quiet. *Black pepper*: 234 bags Singapore sold without reserve at 3d. *White pepper*: Singapore bought in at 5¼d. for fair, and 6d. for fine bold. *Pimento*: Quiet; a few bags sold at 2½d., but greater part bought in at 2⅝d. to 2¾d.

Sulphonal.—Without change at 9s. 3d. to 9s. 6d. per lb. from second hand, makers declining to book further orders.

Owing to the season of the year, the offerings in to-day's drug sales were not excessive, while the demand for several of the articles offered was decidedly quiet. Owing to the August Bank Holiday, the next drug auction will be held four weeks hence. The following are the particulars of business done and prices ruling:—

Aconite Root.—24 bags *Japan* part sold previously; part held for 27s. 6d. per cwt.

Aloes.—Fair hard bright *Cape* sold at 22s. 6d. down to 16s. for inferior drossy. 7 boxes good dark drossy *Curacoa* were taken out at 38s. per cwt.

Annatto Seeds.—8 bags of medium quality sold at 2¾d. per cwt.

Argol—4 bags *Cape* taken out at 55s. per cwt.

Balsam Copaibæ.—3 casks held for 2s. 1½d. per lb.

Balsam Peru.—3 cases bought in at 7s. 6d. per lb.

Balsam Tolu.—3 cases taken out at 3s. per lb.

Buchu Leaves.—Only the round variety was offered, 20 bales being catalogued and better prices were realised. Fair green fetched 3½d. per lb., yellowish 2¾d. per lb. Long leaves are wanted.

Calumba Root.—This scarce article was in rather better supply, 145 packages in all being offered. One lot of 30 bags, "without reserve," sold well at 28s. per cwt. for very dusty sorts, a further parcel of 35 bags inferior sorts sold 21s. 6d. to 22s. per cwt., the balance being bought in at full prices.

Cardamoms.—In all 166 packages were offered, but except for the better grades there was very little demand. For fine bold pale Ceylon, Mysore character, 3s. 8d. per lb. was paid, being dearer for the second size, 3s. 5d. per lb.; smaller, 2s. 6d. to 3s. 1d. per lb. A case of very fine bold pale Malabar held for 3s. 4d. per lb.

Castor Oil.—Good *Calcutta* firsts sold at 3¼d. per lb., which shows a slightly easier market.

Cascara Sagrada.—199 bags only medium quality were held for 14s., 4 bales dull selling without reserve at 13s. per cwt.

Cascarilla Bark.—30 packages held for 30s. to 32s. for fair thin, and at 20s. per cwt. for siftings.

Cassia Fistula.—15 bags *West Indian* rather mouldy held for 10s., only 5s. 6d. per cwt. being bid.

Cayenne Pepper.—1 case sold at 9d. per lb.

Chiretta.—15 packages good green in pressed bales held for 4d. per lb.

Cinchona Bark.—5 bales *African* held for 3½d. per lb., 24 bales crown and grey for 6½d. to 1s., 17 bales yellow part sold at 6½d. for damaged; balance held for 1s. 2d. to 1s. 7d. per lb. according to quality.

Civet.—This article is in more plentiful supply, and lower prices are generally expected; 11 horns were offered, the quality on the average being better than for some time past. The whole was bought in at from 18s. to 24s. per oz.

Cinnamon-Leaf Oil.—3 cases held for 4d. per oz.

Coca Leaves.—24 bales fair *Truxillo* held for 10d. per lb.

Colocynth.—5 cases small to bold *Turkey* were held for 1s. 6d. per lb.

Condurango Bark.—158 bales of medium to fair quality were held for 2d. to 3d. per lb.

Crude Antimony.—50 cases *Japan*, part sold at £20 per ton.

Cubebs.—14 bags very dusty sold without reserve at 19s. to 19s. 6d. per cwt.

Cummin Seed.—44 bags *Malta* held for 33s. per cwt.

Cuttle Fish.—3 cases *Mogadore* sold at 3¼d. per lb.

Dragon's Blood.—One case slightly seedy block, slightly damp, was held for £8, a bid of £7 15s. being refused.

Ergot of Rye.—6 bags fair Spanish slightly weevily were held for 6d. per lb.

Eucalyptus Oil.—Good *Portuguese* held for 2s. per lb., fair *Australian* for 1s. per lb.

Galangal Root.—113 bags sold at 15s. 6d. per cwt.

Gum Arabic.—8 cases Aden held for 55s.; 1 case fair *grain* for £6 17s. 6d.; picked for £11 10s. per cwt.

Gum Benjamin.—Low seconds *Sumatra* sold for £5 10s.; fair *ditto*, but badly stained with paraffin oil at £6 10s. to £6 12s. 6d.; mixed *ditto*, some good at £7 10s. to £7 17s. 6d.; old seconds *Penang* were held for £4 15s.; low *ditto* for 62s. 6d. to 80s.; medium *Siam* part broken up block for £15; seedy block ditto selling at £5 10s. to £5 17s. 6d. per cwt.

Gum Elemi.—For a lot of 20 cases fair pale a bid of 22s. per cwt. was made, but importers' limit was 25s.

Gum Myrrh.—8 barrels fair *sorts* held for 36s., good pale Aden picked for £5 10s. per cwt.

Gum Guaiacum.—10 cases half fair block, half drossy, sold at 2¾d., which shows a somewhat firmer market, a similar parcel having lately been sold at 2½d. per lb.

Gum Olibanum.—4 cases sold without reserve at 12s. per cwt.

Gum Tragacanth.—4 cases were held for 90s. to £12, according to quality.

Honey.—Good *Jamaica* sold at 27s. to 28s.; medium to fair *ditto* at 20s. to 23s. 6d. Fair *New South Wales* held for 27s., *South Australian* selling for 23s. *Chilian* sold, without reserve, at 22s. per cwt.

Ignatius Beans.—27 bags held for 4d. per lb.

Ipecacuanha.—Of the *Rio* variety 37 bales were catalogued. Good fair was held for 6s. 7d. to 6s. 8d. per lb., at which sales have been made privately this week. For ordinary thin about 20 bales sold at 6s. 3d. to 6s. 4d. per lb., mainly at the former price for export to America. 15 bales *Carthagena* were also offered, but bought in at 4s. 9d. to 5s. per lb., according to condition.

Jalap.—Fair sound heavy root partly sold at 5d. per lb.

Kola Nuts.—6 bags fair small washed were part sold at 4d. per lb.

Lime Juice.—5 hogsheads sold subject to approval at 8½d. per gallon.

Lime Oil.—5 cases *West Indian* bought in at 4s. 9d. per lb.

Manna.—1 case good *Flake* held for 3s. 3d. per lb.

Nutmeg Oil.—12 cases held for 2¾d. per oz.

Nux Vomica.—42 bags fair bold held for 8s. 3d. per cwt.

Orange Peel—Was chiefly bought in at 6d. for thick cut and 8½d. to 9d. for thin cut.

Orange Flowers.—2 cases held for 2s. 6d. per lb.

Patchouli Oil.—5 cases Fisher's bought in at 1s. 2d. per oz.

Patchouli Leaves.—20 bales taken out at 6d. per lb.

Quince Seed.—13 bags of *Cape* were offered, but were bought in at 1s. per lb. which was stated to be the price. Privately transactions have taken place in quantity at 1s. per lb.

Rhubarb.—Good bold round *Shensi*, part rough, three-quarters good, quarter dark fracture, held for 2s. 2d.; second ditto for 1s. 11d.; bold flat for 1s. 9d.; rough small ditto for 1s. 4d. per lb.

Sarsaparilla.—21 bales *Lima* part sold at 1s. 4d.; fair *Jamaica* held for 2s. to 2s. 2d.; *Native* ditto part sold at 9d. to 11d.; balance held for 1s. 1d. per lb; 49 bales *Mexican* sold very cheaply at 2¼d. per lb.

Seneka Root.—3 bales chumpy sold at 1s. per lb.

Senna.—*Tinnevilly*: it is reported the crop this year will be very poor and in small supply, but it is impossible to place much reliance on such reports from India, and the chief importers are without any information, which would rather point to a normal state of affairs. About 100 bales, all in second hands, were offered, but only a few bales sold at full prices. *Alexandrian*: In all 34 cases were offered, but only 1 case sold at 8½d. per lb.; the balance was bought in. *Pods* are held for 8d. per lb.

Soy.—62 casks fair were held for 1s.,

12 casks mixed with dirt selling without reserve at 6¼d. to 6½d. per gal.

SQUILLS.—9 bags held for 3½d. per lb.

STAR ANISEED OIL.—5 cases taken out at 7s. 3d. per lb.

STAVESACRE SEED.—5 bales of fair quality were held for 40s. per cwt.

STROPHANTHUS SEED.—5 bags *Kombé* taken out at 3s. 3d. per lb., there being no bid.

TAMARINDS.—13 barrels fair *West Indian* sold at 7s. 6d. per cwt.

TONQUIN BEANS.—*Paras* are slow of sale, middling to good black, 1s. 6d. to 1s. 9d., ordinary to fair 8d. to 1s. *Angosturas*, bold frosted black, 7s. 6d. per lb.

TURMERIC.—20 bags *Cochin* bulb held for 8s. 6d. per cwt.

VANILLOES.—Only 93 tins were catalogued this week, and of these a fair proportion were in second hands. The better qualities sold at full prices. Good 8-inch *Seychelle* beans, 28s. to 28s. 6d. per lb. 7 to 7½-inch 26s. to 26s. 6d. per lb. Shorter lengths, 21s. to 23s. 6d. per lb.

VERMILLION.—4 cases *China* bought in at 2s. 2d. per lb.

WAX.—30 packages fair to good *Jamaica* part sold at £7 12s. 6d. to £8, balance being held for £8 to £8 7s. 6d. It is stated that crop is now over. Fair *Madagascar* held for £6 5s., fair *Zanzibar* for £6 7s. 6d. to £6 10s., *Australian* for £7, part selling at £6 5s.; medium *French* bought in at £7 5s.

MANCHESTER CHEMICAL REPORT.

JULY 21, 1897.

A quieter feeling is prevalent here, especially for export, and this is confirmed rather by the largest firm in the Cheshire district having put a certain number of men on short time. This is believed to be owing mainly to the falling off in the American demand, a large quantity of stuff having been packed off with all speed owing to the prospective operation of the increased tariff. Brown Acetate of Lime is about half-a-crown per ton under last week, and Sulphate of Copper is at £16 to £16 5s. for best brands, and £15 10s. to £15 15s. for re-sale lots. Yellow Prussiate tends upwards, and Lancashire make is firm at 6d., and even gas made is quoted 5½. Naphthas are unchanged, but Benzols appear to have recovered slightly from the depression of the past few weeks. Sulphate of ammonia is steady at late rates on rails here. Alum easy. Pitch dull. Green Copperas firm, and Lancashire makers continue well supplied with orders.

NEWCASTLE CHEMICAL REPORT.

JULY 21, 1897.

This business of the district is, on the whole, a trifle better, as fresh shipping orders are in more circulation. Certain Tyneside made chemicals are likely soon to be withdrawn absolutely from German markets to avoid competition with German manufacture. On the other hand the German produce, by arrangement, it is stated, will not be forced on English markets in the way of a similar competition, so that home values in both countries will be enhanced. This truly is one way of bringing about protection without Government interference. So far, however, prices remain unchanged, and are quoted as follow: Caustic Soda, 70 per cent., £7 to £7 10s. Soda Ash, 52 per cent., £4. Alkali, 52 per cent., £5. Sulphur: £4 15s. Bleaching Powder, according to markets, £6 10s. to £7 10s. Soda Crystals: 37s. 6d. to 55s. per ton, according to markets.

LIVERPOOL REPORT.

JULY 21, 1897.

The rise in Castor Oil noticed last week still continues, and is likely to do so, the demand here being good for all varieties. Olive Oil is only to be obtained at an advance of £1 to £2 per tun on recent figures, the supply of Zante Oils being very short. Another slight reduction has taken place in the price of Spirits of Turpentine. Sales of Peruvian Honey, Sierra Leone Chillies, Guinea Grains, and Balsam of Capaiba are reported at satisfactory prices.

AMMONIUM SALTS.—*Carbonate*, 3d. per lb. *Sulphate* is firmer, £7 15s. per ton. *Sal ammoniac*, 33s. and 31s. per cwt.

BALSAM OF COPAIBA.—5 cases of Pará were sold at auction for 1s. 9¼d. per lb. in store.

BLEACHING POWDER—Is somewhat quiet at £6 12s. 6d. per ton.

CANARYSEED.—Turkish is very slow of sale, and although the price is as low as 23s. 6d. to 24s. per 464 lbs., sales are few, the only transaction reported being a sale of 800 bags.

COPPERAS—Is firm at 38s. and 36s. per ton for Lancashire and Welsh respectively.

COPPER SULPHATE—Is quiet at £15 17s. 6d. per ton.

CHILLIES.—30 bags of fine Sierra Leone fruit were disposed of at 35s. per cwt.

GUINEA GRAINS.—6 bags made 18s. per cwt.

HONEY.—40 barrels of Peruvian sold for 19s. 6d. per cwt.

KOLA NUTS.—12 bags dried found buyers at 2¾d. per lb.

OILS (FIXED) AND SPIRITS.—*Castor oils* of all varieties follow the upward tendency noticed last week, with every indication of attaining still higher prices. Calcutta "good seconds," 3¼d. to 3⅜d. per lb.; Madras, 3½d.; and French 1st pressure, 3⅜d. to 3½d. per lb. *Olive oils* have advanced from £1 to £2 per tun; Zante is selling at £29 to £30; Seville £29 10s.; and Malaga at £30 per tun. *Linseed oil* and *Cottonseed oil* of Liverpool make are selling fairly well at 15s. 6d. to 16s. per cwt. *Spirits of turpentine* is now quoted at 20s. 6d. per cwt.

POTASH SALTS.—*Pot.* and *Pearlashes* are merely nominal at 19s. and 30s. per cwt. respectively. *Cream of tartar* is quiet at 78s. per cwt. *Chlorate* firm at 4d. per lb. *Bichromate* 4⅝d. per lb. *Saltpetre* 21s. 6d. per cwt.

LATE ADVERTISEMENTS.

Assistants Wanted.

JUNIOR ASSISTANT wanted for quick Retail and Dispensing business in London, about the end of July. Apply to W. T., care of Messrs. Evans, Lescher & Webb, 60, Bartholomew Close, E.C.

A COMPETENT, well-trained Pharmacist, with first-class qualifications, and good organising experience and abilities, to take charge of a department. Write full particulars of age, qualifications, experience, and salary, to MORPHINE, Box 41, Sell's Advertising Offices, London.

MANCHESTER. — Smart ASSISTANT, about 24. Qualified. Accustomed to a high-class quick trade. Personal application preferred, or if by letter, state references, age, and salary required, enclosing photo (to be returned), to RAWSTHORNE & Co., Chemists, Withington, Manchester.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d. —Tully, Chemist, Hastings.

Miscellaneous.

What offers for 88 by 39 air-bed, new, in perfect condition? Approval if desired.—Yates, Chemist, Blackburn.

Lancaster's Omnigraph Hand Camera, good condition, carries six plates, two view finders, carriage paid, 12s. 6d. Sample snapshots, any number, one stamp each.—Apply to Herbert Jackson, 432, Victoria Street, Grimsby.

Photographic Mounts. cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000 Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s. 100. Samples free.—Peck, East Dereham, Norfolk.

Books.

Minor Books.—Wills' 'Practical Botany,' 1s. 9d.; Pereira's 'Selecta Prescriptis,' 2s. 6d.; Scott's 'Structural Botany,' 2s.; 'Elementary Physics' (Wright), 1s. 6d.; 'Inorganic Chemistry' (Jago), 2s.; 'Practical Histological Botany' (Davis), 1s.; 'Elementary Organic Chemistry' (Turpin), 1s. 6d., or 11s. for lot, carriage paid. **Wanted.**—Green's 'Botany,' latest edition, and Wills' 'Elements of Pharmacy.'—Minor, 64, High Street, Grantham.

Offered.—Maisch's 'Materia,' Roscoe's 'Chemistry,' both new; Bentley's last large edition, 'Selectæ Prescriptæ,' B.P. 1885, lot Prelim. books. Wanted.—Green's 'Botany,' Remsen's 'Organic,' Muter's 'Analysis.'—Allen, 25, Aigburth Road, Grassendale.

NEW IDEAS AND TRADE NOTES.

THE EXHIBITION AT BRUSSELS.

LINDLEY'S 'Walks in Belgium, with Brussels Exhibition and the Ardennes,' published at sixpence, is a very handy guide for those who intend visiting the forthcoming exhibition. It contains a sketch map of the Ardennes, a sketch route map, and one of the streets of Brussels, besides being profusely illustrated with pictures of most of the places of interest and of various scenes worthy of attention. An article entitled "Dull Useful Information" gives full details as to route, time, and cost. The guide is issued in connection with the Great Eastern Railway Company's new accelerated service viâ Antwerp, and may be obtained at all bookstalls, or at 30, Fleet Street, E.C.

SOAP AT THE CONFERENCE.

MESSRS. D. & W. Gibbs, Limited, of the City Soap Works, London, have arranged with their representative, Mr. T. F. Buckman, to have a show room at St. Enoch's Hotel, Glasgow, from August 9 to 14 inclusive, where he will be pleased to interview anyone attending the Conference.

THE DISTILLERS COMPANY, LTD.

THE twenty-first ordinary general meeting of the Distillers Company, Ltd., which makes the well-known "D.C.L." yeast and malt extract, was held at the registered offices of the Company on Thursday, July 22. The report issued to the shareholders by the directors shows that the powerful Company is in a peculiarly prosperous condition. With a capital of over one and a half millions sterling, the directors are able to recommend a final dividend of 12*s.* per share—which, with interim dividend of 8*s.* per share, represents a total dividend for the year of 10 per cent. Shares are £10 fully paid. In addition to the dividend a bonus of 5*s.* per share is to be paid, or equivalent to a dividend and bonus of 12½ per cent. The Distillers Company, Ltd., have a Reserve Fund of £140,000 and a Fire Fund of £20,000. Mr. Andrew Drysdale, who for so many years ably presided as chairman and managing director, having died on May 23 last, the directors have appointed W. D. Graham Menzies, Esq., of Hallyburton, as Chairman of the Board, and William H. Ross, Esq., General Manager and Secretary.

ERYTHROL TETRANITRATE.

THIS newly-introduced drug, which promises to be of value in conditions of cardiac pain with high arterial tension, is being supplied by Messrs. Burroughs, Wellcome & Co. in ½ and 1-grain tabloids. The drug has also been used as a vaso-dilator in angina pectoris and in the asthmatic attacks of chronic nephritis. In the treatment of angina pectoris it seems to have been used to prevent the onset of attacks. The ½-gr. tabloids are put up in bottles of twenty-five, and 1-gr. in bottles of twelve.

DEATH TO MOTHS.

MESSRS. H. WEEKES & Co., of 24 and 25, Fenchurch Street, London, E.C., are offering a new preparation to prevent the ravages of moths, named "Camphocedra," which may with advantage be used for the protection of furs, woollens, carpets, rugs, curtains, couches, chairs, etc. It is sold in 1*d.* packets with gauze front, and sprinkler boxes at 6*d.* each.

NEWS IN BRIEF.

PHARMACEUTICAL SOCIETY.—A Special General Meeting of the members and associates in business of the Pharmaceutical Society will be held at 17, Bloomsbury Square, W.C., on Wednesday next, at 3 p.m. The only business before the Meeting will be the confirmation of the proposed new Bye-laws.

THE GERMAN APOTHEKER VEREIN holds its annual meeting this year at Strassburg in Alsace, commencing on Monday, August 23, under the presidency of Herr Max Frölich, and continuing until the following Friday.

PRIVATE C. E. SAUNDERS, 3rd Middlesex R.V., son of Mr. Charles Saunders, chemist and druggist, of Highgate, won a badge and £6 in the competition for the "St. George's" at Bisley. His shooting in both stages was very good.

THE P.A.T.A. DINNER will take place at the Holborn Restaurant on Thursday, August 17, at 7.30 p.m., the date fixed being the Thursday in the week during which the Chemists' Exhibition will be held, as the promoters are anxious that in addition to London friends, as many as possible of the country members of the Association and well-wishers will be present. They hope to be honoured with the attendance of lady friends, and with the assistance of the local secretaries of the P.A.T.A. an attempt will be made to arrange for special travelling facilities, from the larger centres at least. Single tickets are 7*s.* 6*d.* each; double tickets (for a lady and gentleman), 12*s.* 6*d.*; and any chemist expecting to be present should apply promptly to the Secretary, 2 and 3, Stonecutter Street, London, E.C.

SELLING ADULTERATED RHUBARB TINCTURE.—James Ashton, grocer, Croston, was summoned at Chorley Petty Sessions, on Tuesday, July 20, for selling adulterated tincture of rhubarb.—The county analysts certified that the sample contained 3·86 per cent. total solid matter, mainly extract of liquorice; 39·55 per cent. of alcohol, corresponding to 82·13 per cent. proof spirit; and 56·58 per cent. of water. The sample was weak in spirit, and practically devoid of rhubarb, and of all other ingredients of the British Pharmacopœial tincture of rhubarb, of which extract liquorice was not an ingredient.—After hearing evidence the Chairman said the magistrates were convinced that defendant was liable for the sale of the adulterated article in question. It was an absolute farce to sell an article of that description as tincture of rhubarb. It was the worst sample they had come across. Taking in account that it was the first complaint against the defendant they would deal leniently with him and he would be fined 21*s.* and costs.—Messrs. Daish, Salter & Co., grocers, Croston, were also similarly summoned.—The county analysts certified that the sample contained 5·02 per cent. solid matter, mainly extract of liquorice and sugar; 23·69 per cent. alcohol, corresponding to 50·37 per cent. proof spirit, and 71·29 per cent. water. The sample contained 40 per cent. excess of water, and was devoid almost entirely of rhubarb, one of the proper ingredients of tincture of rhubarb.—The Chairman said the small prices paid led, he believed, to a good deal of adulteration. The Bench felt they could not treat the present case as they had done the other. The defendants kept a number of shops, and therefore the case was more serious. It was a serious thing to sell such shockingly adulterated articles. The penalty in this case would be £5 and costs, and if any more cases were brought before the Bench a heavier penalty would probably be inflicted.

THE GOVERNMENT BILL amending the law relating to the Sale of Food and Drugs will be introduced into the House of Commons by Mr. Chaplin, the President of the Local Government Board, on Monday next. There is no intention of proceeding with the Bill, and it is only made public in order that those concerned may read, mark, learn, and inwardly digest the official proposals for the removal of a very unsatisfactory condition of affairs. The Bill will be printed and circulated before the vacation, and we shall be able to institute a comparison between the remedy of the Local Government Board and the specific of Mr. Kearley.

CARBOLIC ACID, administered in mistake for medicine, has claimed one more victim in Francis Coye, 45, labourer, Belfast. On Monday morning, June 19, he was taken ill, and his wife got a bottle of medicine from a doctor, and after giving him a dose placed it on a shelf beside a bottle of carbolic acid. In the evening she gave him another dose which, however, proved to be from the carbolic bottle. An inquest was held as the result, a verdict of "Death from misadventure" being returned. The jury attached no blame to anyone, the poison bottle being properly labelled, and the contents used in ignorance by the wife.

IN ANOTHER CARBOLIC ACID CASE, Coroner Newton, of Stockport, remarked, when holding an inquest with respect to the death of a woman whose death was due to carbolic acid poisoning, that "the chemist was not to blame." The deceased sent a small girl to a local chemist for a pennyworth of carbolic acid, but he refused to serve her. Afterwards, however, when a bigger and older girl went, stating it was needed for whitewashing purposes, he supplied the poison, the recital of this evidence calling forth the above remark of the coroner.

THE BRIGHTON ASSOCIATION OF PHARMACY enjoyed a most successful outing on Thursday, July 22. At 9.45 a.m. a party of about eighty left Brighton Station for an excursion to Bramber, Steyning, and Parham. The places visited were Bramber Castle, supposed to be one of the oldest in England, which takes its name from an old Saxon word "Brymmburh," meaning a fortified place. Another interesting place visited was the

church of St. Nicholas, which was granted to the monks of St. Florence about 1066, and remained with them till all their possessions were assigned to Magdalen College, Oxford, with whom the presentation still remains. After lunch at the White Horse, Steyning, the party started for Parham Park, where, by courtesy of Earl de la Zouche, they were allowed to enter the old Elizabethan Mansion, to view the valuable paintings and the large collection of old armour and numerous family portraits. The heronry, situated amongst the immense trees on the upper side of the park, was also visited. The return journey was again broken at Steyning, where dinner was in readiness at the White Horse, after which progress was made towards Brighton, the whole party having spent a very enjoyable day.

THE BACILLI OF CHOLERA and other deadly diseases are not very likely objects to tempt thieves, but when rabbits and other animals have been inoculated with the bacilli there is then a possibility of their being tempted to make a dishonest "penny" by stealing and afterwards selling them and the bacilli at the same time. Such a thing happened recently in Paris, where certain thieves entered a chemical laboratory and carried away a large number of rabbits which had already been inoculated with cholera and other bacilli. The police made every effort to recover the rodents without success, so that it is more than probable that they were eaten by the citizens.

AMMONIA was taken by Fanny Smith, of Cross Roads Inn, near Haworth, on Friday July 23, and as a result she died on the following Tuesday.

THE CHARGE OF MANSLAUGHTER against Lennox Watson, the wholesale spirit merchant, who supplied arsenical plasters to Miss Elizabeth Blacker, of Thorganby, near York, for the cure of cancer (see *Pharm. Journal* for July 3, page 12), has been followed by a verdict of "Not guilty." Justice Grantham, in summing up, said the prisoner knew the character of the drug he was using, and unless he was careless and indifferent in the way he used it, he could not be found guilty of manslaughter because he had used it, and the prosecution had failed to show that there was gross and culpable negligence.

MARRIAGES.

STOTT—FITZSIMONS.—July 26, at St. Philips, Southport, by the Rev. W. H. Marsden, George Stott, only son of Charles Stott, Fairfield Crescent, Liverpool, to Elizabeth Eleanor Fitzsimons, eldest daughter of Archibald Fitzsimons, Lethbridge Road, Southport.

HOLMES — GREATBATCH. — On the 27th inst., at St. Stephen's, Ealing, by the Rev. W. Tupholme, D.D., Vicar, Frederick George Holmes, Chemist, Brill, to Lillie Greatbatch, daughter of the late Isaac Greatbatch, London and Tendring, Essex.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

JULY 29, 1897.

Business can hardly be said to have been active during the past week, and it would appear improbable that we shall see any real activity until the autumn sets in. Quinine is firm. Cocaine steady. Opium and Morphia weak. Codeia unchanged. Glycerin the turn better. Citric a shade easier. Tartaric firm for English, foreign being slightly easier. Cream of Tartar weaker. Iodine, Iodides, Bismuth and Salts. Quicksilver and Mercurials unchanged. Gentian Root lower. Borax and Boracic Acid very quiet. Turpentine dearer. Cod-liver Oil inactive. Camphor very dull. Prices ruling for articles of chief interest are as follows :—

ACID BORACIC—Quiet at 25s. per cwt. for *crystals*, and 27s. per cwt. for *powder*.

ACID CARBOLIC.—Market is quiet and practically unchanged, best make being still quoted 7d. for 35-36° *ice cryst.* in quantity and bulk; other qualities and packing in proportion. *Crude* 60° 2s. 1d., 75° 2s. 4½d. *Liquid*, pale colour, 1s. 3d. per gallon for quantity and in bulk packing.

ACID CITRIC—Is the turn easier, although quotations remain nominally unchanged at 1s. 2d. per lb.

ACID OXALIC—Is firm at 3½d. to 3¾d. per lb. net.

ACID TARTARIC—Is firm for *English* make at 1s. 2d. per lb., for the *foreign*, however, there seems less inquiry, and quotations are a shade easier at 1s. 1d. to 1s. 1¼d. per lb.

AMMONIA COMPOUNDS.—*Sulphate*: Quiet at £7 10s. for grey prompt 24 per cent. *Bromide*: 2s. 1d. per lb. *Iodide*: 14s. 6d. per lb. *Sulphocyanide*: 1s. 2d. per lb. for the pure. *Sal ammoniac*: Sublimed firsts and seconds, 33s. and 31s. per cwt.; crushed (for batteries), 33s. to 35s. per cwt.; powdered, 34s. to 36s. per cwt. *Muriate*: 98-99 per cent. free from metals, 26s. to 28s. per cwt.

ARSENIC.—White *lump*, 32s. per cwt.; white *powder*, 25s. per cwt.

BISMUTH.—Price of the *metal* remains at 5s. per lb., and 4s. 10d. for the *subnitrate* in half-ton lots.

BLEACHING POWDER.—Steady at £7 10s. to £8 per ton on the spot according to quantity.

BORAX—Is a very quiet market, with quotations for quantity at 15s. per cwt. for *crystals* and 16s. per cwt. for *powder*.

CAMPHOR.—The market for *crude* is all but lifeless, and quotations are nominally 92s. 6d. per cwt. for *China*, and 97s. 6d. per cwt. for *Japan*, *c.i.f.* terms. *Refined* is steady at the late reduction.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: 2s. 3d. *Benzole*: 50 per cent., 2s. 1d.; 90 per cent., 2s. 1d. *Crude naphtha*: 1s. *Solvent naphtha*; 95 per cent at 160° C., 1s. 10½d. per gallon.

COCAINE—Very quiet, price for best brands remaining 9s. 3d. to 9s. 6d. per oz.

CODEIA—Steady at 12s. to 12s. 6d. per oz., according to quantity, and still scarce for early delivery.

COD-LIVER OIL.—A very quiet market, with but few transactions this week. *Norwegian* is nominally quoted 65s. to 67s. per barrel, whilst in *Newfoundland* a small business has been done at, it is said, 2s. 3d. per gallon.

CLOVES.—Of *Zanzibar* 455 bales were offered in auction, but only 35 bales sold at 2⅛d. to 2⅜d.; of 44 cases *Penang*, only 9 cases sold, without reserve, at 6½d. to 8½d. Privately *Zanzibar* are quiet but firm, sales have been made at 2⅝d. on spot.

CREAM OF TARTAR—Is easier, with but very little business passing. On the spot it is possible to buy at 77s. 6d. per cwt. for *crystals* and 78s. to 79s. for *powder*.

GALLS.—The market continues inactive, and but few retail sales have been made. *Blue* and *white* are neglected, but there has been some inquiry for *green*.

GENTIAN ROOT—Has quieted off with sellers on the spot at 27s. per cwt., but for arrival later prices are lower.

GINGER.—*Cochin* continues very dull, and about 600 bags rough kinds were all bought in, ordinary to good washed at 26s. to 32s. Of cut kinds, 65 cases limed native sold, small and ends, 28s.; medium, 45s. to 48s.; limed *Japan* bought in at 15s. 6d. *African* bought in at 21s. *Jamaica* also mostly bought in; middling to good at 76s. to 85s.; only 10 barrels sold, common and small at 65s. to 72s., and 1 half-barrel good bold at 85s.

GLYCERIN.—It is said that large purchases of crude glycerin, which have lately been made, have materially altered the position of the market, and as the price of the crude is rising daily, the refiners will shortly find themselves compelled to raise their prices. At the moment, however, there still seems anxiety to sell, and contracts could be made for some brands at 52s. to 53s. per cwt., whilst the agents for the better-known brands ask more money.

GUM ACACIA—Is rather quiet with a few sales of good soft at 80s. per cwt.

GUM TRAGACANTH.—Seconds are still neglected, but the medium and lower qualities of the new arrivals have met with a good demand, and fair sales have been made at steady rates. Firsts are quoted £13 10s., seconds £12 10s., thirds £11, fourths £8 to £10.

IODINE—Remains at 7½d. per oz., *Iodides* being unchanged at 9s. 9d. for *Pot. iodide*, and 13s. 4d. for *Iodoform* for quantity and in bulk.

JAPAN WAX—Continues fairly steady, but is very quiet. Good squares on the spot are quoted 42s. 6d. per cwt., whilst for arrival near at hand 37s. 6d., and for

August to September at 35s. per cwt., *c.i.f.*, are the quotations.

Menthol.—Good dry white *crystals* can still be bought at 6s. per lb., or perhaps a trifle less for case lots.

Mercurials—Are unchanged at 2s. 2d. for *corrosive sublimate*, and 2s. 6d. per lb. for *Calomel* in 5-cwt. lots.

Morphia.—Very quiet and unchanged at 4s. 7d. for the *Hydrochlorate* powder in quantity and in bulk packing.

Oils Essential.—*Star Aniseed*: After being very dull, with sellers at 7s. for spot, speculation in the article has set in, and price closes strong at 7s. 6d. per lb. *Peppermint*: American reports still speak of the strong position of the article, but importers of the *HGH* seem willing to continue selling at 6s. 9d. per lb. for case lots; for large quantities about 3d. less is the quotation. *Japan* is inactive: Dementholised is quoted 3s. per lb., and 40 per cent. 4s. per lb., *c.i.f.* terms *Cassia* very quiet; 5s. is quoted for 60-65 per cent., and 5s. 6d. for 80-85 per cent., both *c.i.f.* *Citronelle* unchanged at 1s. 2d. per lb. spot.

Oils (Fixed) and Spirits.—*Linseed* is dearer and very firm on the spot, although quiet for forward delivery; the former is quoted £15 5s. for pipes, and £15 15s. for barrels. *Rape*, firm at slightly dearer rates, £28 to £28 5s. being the spot quotation for refined. *Cotton* remains firm at last week's quotations of £15 5s. to £16, according to make and package. *Coco-nut* dearer. *Ceylon* on the spot, *pipes*, £22 10s.; *hogsheads*, £23 10s. *Palm* easier at £21 10s. on the spot. *Turpentine* dearer, but closes quiet; *American*, on the spot, 20s. 6d. per cwt. *Petroleum Oil* flat at last week's quotations. *Petroleum Spirit* lower; *American*, 6d. per gallon; *deodorised*, 6¼d.

Opium.—Very quiet and weaker, in view of fact that the duty of $1 per lb. will now prevent further shipments to the United States probably for some time to come. Morphia manufacturers are only buying from hand to mouth in expectation of being able to buy cheaper before very long, and the prospects for the article would, therefore, appear to be anything but promising. Prices vary from 8s. for common to 11s. for finest, according to sort and quality.

Orris Root.—From Leghorn this is offered at 53s. per cwt. for *Florentine* selected, 47s. per cwt. for small white, and 46s. for sorts all *c.i.f.* terms. *Verona*, 37s. per cwt. *c.i.f.* for small white.

Phenacetin.—Makers appear to be no longer anxious sellers at low prices lately ruling. It is, however, still possible to buy in quantity at 4s. per lb.

Podophyllin.—Good soluble quality is firm at 12s. to 12s. 6d. per lb., according to quantity.

Potash Compounds.—*Chlorate* is slightly dearer at 4¼d. per lb. on the spot. *Permanganate* firm and still rather scarce on the spot; nominal quotations unchanged. *Bromide* unchanged at 1s. 8½d. per lb. *Bicarbonate* steady at 30s. per cwt. *Iodide*: A good business passing at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Prussiate*: Yellow quiet at 5½d. per lb., red steady at 1s. 2d. per lb.

Quicksilver—Dull, but price from importers remains unchanged at £7 5s. per bottle, second-hand holders quoting 2s. less.

Quinine.—Market is decidedly firm, and it is confidently expected that makers will advance their price ere long. The agents for the best brands are not free sellers, while from second hand same could hardly be bought in quantity at 9½d. per oz., an advance in makers' prices would appear the more probable in view of the repeated advances in the price of bark.

Senna.—*Alexandrian* continues to arrive freely, and demand remains slack. Sales are of quite a retail character at about 9d. per lb. for fair leaf, 6d. to 7d. per lb. for broken ditto, 3d. per lb. for siftings. *Pods* are more plentiful, and are quoted nominally at 6d. to 8d. per lb. *Tinnevelly*: By the steamer "Oriental," due here August 1, about 100 bales of new crop will arrive, and these will probably be offered in the auctions of August 19.

Shellac.—At the fortnightly auctions on Tuesday the supplies offered were very moderate, but the demand being very slow, only a small proportion found buyers at about last rates. Good to fine *Second Orange* is very firmly held. A total of 1285 cases offered and 249 cases sold. Fine *Orange*: 50 cases offered and sold, Octagon *B* fair pale of the mark little matted at 77s. to 80s. Fine *Second Orange*: Of 391 cases 65 sold, good pale reddish *DJ* in diamond at 71s., bright bronze red and blocky at 65s., good pale *TN* in diamond blocky at 57s. to 61s. *TN* qualities: 574 cases offered and 29 cases sold, weak sickly palish at 57s., weak flat reddish at 55s., blocky at 54s. to 55s., low dark bronze blocky at 51s. to 52s. *Garnet*: 35 cases offered and bought in, *PBG* free at 63s. blocky at 62s. *Button*: Of 242 cases 112 sold, partly without reserve, good pale firsts at 71s., ditto cakey at 62s. to 65s., ordinary dark seconds at 62s., blocky ditto at 59s. glassy to fair circle 2's at 52s. to 57s., ordinary fourths at 40s. For arrival prices are unchanged, *TN* October-December steamer being still quoted at 60s. per cwt. *c.i.f.*, but no buyers.

Soda Compounds.—*Crystals* quiet at 57s. 6d. per cwt., *ex* wharf. *Bicarbonate* £7 10s. per ton for the commercial 99 per cent., and 18s. per cwt. for the free from monocarbonate quality. *Bromide* 2s. 1d. per lb. *Hyposulphite* in good demand at £6 per ton for ordinary brands and £8 per ton for "Scherings." *Iodide* 11s. 7d. per lb.

Spices (Various).—*Chillies*: 5 cases fine Japan bought in at 50s. *Mace*: 9 cases Penang sold at 1s. 10d. to 1s. 11d; 25 packages West India sold at 1s. 1d. to 1s. 6d. *Nutmegs* quiet. *Black Pepper*: 20 bags good bright Singapore sold at 3⅛d.; also 75 bags, without reserve, at 2 15/16d. to 3d. *White Pepper*: Nearly 400 bags offered were all bought in; Penang at 4¼d. to 4⅜d., Siam at 5¼d., and Singapore at 5⅛d. to 5¼d. *Pimento*: Only 8 bags sold at 2½d.

Sulphate of Copper—Quiet at £15 10s. to £16 5s. per ton, according to make and package.

Sulphonal.—Makers still decline to book orders. There are, however, sellers from second hand at 9s. 3d. to 9s. 6d. per lb., according to quantity.

Sulphur—Continues firm at £6 5s. per ton for *roll*, and £6 15s. for *sublimed*.

Turmeric—Is firm, and Madras finger is quoted 16s. to 17s. per cwt. for good to fine bright.

MANCHESTER CHEMICAL REPORT.

July 28, 1897.

To-day's market has been somewhat slack, and there are few changes to report in alkalies. Caustic Soda is very firm, and forward contracts are only negotiable at from half-crown to five shillings per ton over last year's prices. The likelihood of an advance of ten shillings in Ammonia Alkali has so far not been confirmed, and may have arisen out of the combination with Continental makers in regard to certain markets. Brown Acetate of Lime, which has been very firm for some time, has receded, and some qualities are quoted as low as £4 12s. 6d. per ton. Saltcake is rather firmer, and Chlorate of Soda is steady. Makers are fairly supplied with orders for Green Copperas, though the higher figures recently quoted are paid with reluctance. Welsh, however, continues scarce. Naphthas are unchanged, but Benzols are slightly firmer. Pitch about a shilling higher than last week. Sulphate of Copper quiet at £16 per ton, best brands delivered here, re-sale lots £15 15s. Creosote is in demand for early delivery at fair prices.

NEWCASTLE CHEMICAL REPORT.

July 28, 1897.

Further steadiness prevails on this market. In fact, some articles find a stronger demand, notably Caustic Soda, stocks of which are exceptionally low. Prices generally are unchanged, and are as follow:—Bleaching Powder: £6 10s. to £7 10s. Soda Crystals: 37s. 6d. to 55s. Caustic Soda: 70 per cent., £7 to £7 10s. Soda Ash: 52 per cent., £4. Alkali: 52 per cent., £5. Sulphur: £4 15s. per ton.

LIVERPOOL REPORT.

July 28, 1897.

A steady upward movement in the price of oils generally has been observable during the week. Castor and Olive Oils are particularly firm, whilst Linseed and Cottonseed Oils after a long depression, show signs of higher rates, whilst Spirits of Turpentine, in consequence of improved demand, has again reached 21s. per cwt. There is a good market for Linseed at present, but sellers are not by any means numerous, showing that higher prices are probable.

Ammonium Salts—Are unchanged from last week. *Carbonate*, *Sulphate*, and *Sal ammoniac* all remaining somewhat quiet.

Beeswax.—40 sacks of good Chilian sold for £6 15s. to £7 per cwt., and 6 packages of Gambia realised £6 10s. per cwt.

Bleaching Powder—Is in moderate demand at £6 12s. 6d. per ton *f.o.b.* for hard.

Canaryseed—Is still unchanged in quotation, viz., 23s. 6d. to 24s. per 464 lbs. for Turkish, no transactions being reported.

Castor Seed—220 bags of Parahyba seed sold at 10s. per cwt.

Copperas—Is still priced at 38s. per ton for Lancashire, and 36s. for Welsh, at which prices it is firmly held.

Copper Sulphate—Is quiet at £15 17s. 6d. per ton.

CREAM OF TARTAR—Has receded to 77s. per cwt. for "finest white," but it is quiet and business limited.

GINGER.—Small amounts of Sierra Leone ginger sold at 17s. per cwt.

LINSEED—Is very firm and sales have been few, and those Turkish seed, at 32s. 6d. to 33s. 6d. per 416 lbs. There are no sellers now under 34s., and at this price the amount is limited.

OILS (FIXED) AND SPIRITS.—*Castor oil* continues at high prices, but business is not very great. Calcutta oils bring 3⅛d. per lb., and Madras and French, first pressure, 3½d. *Olive oils* have been selling briskly recently; 70 tuns were sold at £29 10s. to £30 for Levant and Zante oils, but no Zante is now to be had under £30. Candia: £30 10s.; and Seville, £29 to £30 per tun. *Linseed oil*: In consequence of linseed rising in price, Liverpool pressed linseed oil has advanced to 16s. 6d. per cwt. *Cottonseed oil* has moved up a little, 15s. 9d. to 16s. 3d. per cwt. being the price asked here. *Spirits of turpentine* is in moderate demand at the improved figure of 21s. per cwt.

POTASH SALTS.—*Potashes* are only in retail demand at 19s. per cwt. *Pearlash*, 30s. per cwt. *Chlorate*, steady at 4d. per lb. *Bichromate*, 4⅝d. per lb.

SODIUM SALTS.—*Caustic Soda*, 70 per cent., firm at £7 5s. per ton; 60 per cent., £6 5s. *Crystals*, £2 17s. 6d. *Borax*, quiet at 16s. per cwt. *Chlorate*, 4⅞d. per lb. *Nitrate* is steady on the spot at 7s. 6d. to 7s. 9d. per cwt.

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"Clinical Papers on Surgical Subjects." By Herbert W. Page. 8vo., cloth. 5s. London: Cassell. 1897.

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OFFERED—(*continued*).

Wills' 'Materia Medica'; Attfield's 'Chemistry' (Latest). What offers or exchange.—Quercus, 5, Serle Street, W.C.

What offers for *Pharmaceutical Journals* from March 2, 1895, to June 26, 1897, 2 Nos. missing.—Archibald T. Jones, 214, Little Moor Lane, Oldham.

New recipe for corn-paint, infallible; costs 2s. per pint; price 2s. 6d.—L., 45, Picton Road, Wavertree, Liverpool.

OFFERED—(*continued*).

Shop Fittings.

Stock and Fixtures for immediate disposal, at valuation; would suit a branch or otherwise.—Write to E. and I. J. Dadley, 21, Cartergate, Nottingham.

Drugs and Chemicals.

What offers for 4 cwt. (about) ground stavesacres? Carriage paid.—Stockdale, Market Place, Thirsk.

NEWS IN BRIEF.

British Pharmaceutical Conference.—There will be a meeting of the Executive Committee at the Grand Hotel, Glasgow, on Monday, August 9, at 6.30 p.m.

Mr. J. A. Gordon, late of Edinburgh, has acquired the business carried on at 12, Barnton Place, Stirling, for many years by Mr. J. McNicol.

Medicine Stamp Act Case.—At Southwark, on July 28, before Mr. Slade, John Michael Munroe, High Street, Borough, was summoned by the Excise authorities under the Medicines Stamp Act, 52 Geo. III., c. 150, s. 2, for selling pills and purifying medicine without Government stamps. Mr. Hawkins prosecuted. The defendant pleaded, first, that he was only manager of the shop, and secondly, that he had been unable to obtain the stamps at the local post-office. Mr. Hawkins replied that the actual vendor was liable, and that there would not be more than a day's delay in getting the stamps from Somerset House, as the post-office was bound to do if requested. Mr. Slade imposed penalties amounting to £6.

"Camwal" continues to extend the sphere of its operations, the new Manchester branch being now open and ready to supply goods to members of the Association.

The Administration of the Vaccination Acts has been the subject of a question in the House of Commons by Mr. Channing, who hoped that, in view of the report of the Royal Commission, the Local Government Board would take further action to discourage prosecutions. Mr. Chaplin was in sympathy with the remarks of the hon. member, but at the same time the existing law must be upheld, and he was not prepared to take the responsibility of going beyond it. In future, however, vaccination would be performed in one of two ways, either directly from the calf or by means of calf lymph preserved with glycerin.

The Tourist Guide to the Continent, published by authority of the Great Eastern Railway Company, at 30, Fleet Street, E.C., includes excellent maps, numerous illustrations, and costs sixpence only. The author is Mr. Percy Lindley, whose "Walks in Belgium" was referred to last week, and the work now referred to is arranged on similarly attractive lines.

Chemist's Daughter Robbed.—At Holywell, Flintshire, on August 4, Frank Wallace Spriggs, 72, Godwin Road, Forest Gate, London, was charged with assaulting and robbing Miss Annie Hughes, daughter of Roger Hughes, chemist and druggist, Rhuddlan, on July 13. The evidence of Miss Hughes was to the effect that as she was cycling from Rhuddlan to Cacrswys she was stopped by a man on horseback, who she now identified as the accused. At a lonely spot on the road he dismounted and awaited her approach. When she reached him he seized her, threw her down, and attempted to assault her. She resisted with all her power, and then the accused hit her violently with his fist about the face and head, and robbed her of a gold curb bracelet and diamond ring, valued together at thirteen pounds. The prisoner set up an alibi, and called his mother, who stated that her son was in London on July 13. Spriggs, who said he was prepared to call other witnesses in corroboration, was committed to the Flintshire Assizes to take his trial.

"Accidental Poisoning" was the verdict returned at an inquiry respecting the death of Martha Theobald, 77, who died on Sunday, August 1, from the effects of poison. The deceased woman was an inmate of Lambeth Workhouse, and on Friday, July 31, paid a visit to her daughter at Westminster, and in the course of the afternoon drank a quantity of carbolic acid which had been purchased for disinfecting purposes. There were several women in the room at the time, who were described by a witness as being "all very drunk and comfortable."

That Carbolic Acid is not the easiest way by which to quit this life is well known to all having the slightest acquaintance with the poison, but Coroner Graham (Durham), seems to be of opinion that people generally are not aware of this fact, otherwise there would not be so many cases of suicide in which carbolic acid is the agent employed. At an inquiry at Harton Workhouse, on July 23, with respect to the death of a man who died from poisoning, the coroner remarked that it was time that the terrible effects of carbolic acid were known. People who were inclined to follow the example of this poor man should know that this poison produced the most excruciating agony, then they would have less of these cases. The match poisoning cases which used to be so common had greatly decreased on account of the evidence of doctors at the inquests, showing the fearful pain caused by the phosphorus. He hoped that when people learned of the effects of carbolic acid they would shrink from it.

Laudanum has caused the death of a man named Quay at Airdrie. He had been in the habit of getting laudanum for rheumatic pains, and on Monday night, August 2, he swallowed twopennyworth of the poison, dying the next morning. Whether he drunk the laudanum with intent to kill himself, or simply took an overdose, there is no evidence to show. He was sixty-seven years of age, and had been out of work for some time past.

Messrs. Idris & Co., Ltd., have, we understand, purchased an estate in Wales, which includes the summit of Cader Idris mountain and the celebrated Llyn-cau Lake and Valley, with farms near Tal-y-Llyn Lake. This is a most unique property, Llyn-cau Lake being a celebrated trout lake, just beneath the rocky summit of Cader, of great depth, supplied by inexhaustible springs which pour out of the lake along Nant-y-gader, forming several lovely waterfalls on the way to Tal-y-Llyn Lake.

Dispensers to English Poor-Law Unions.—The English Pharmaceutical Society has, very naturally, taken notice of the regulation issued by the Local Government Board, that, for the future, Army dispensers, qualified according to the Army regulations, are now accepted as Poor-law dispensers, although they possess no licence as either pharmacist or apothecary. The object of the Local Government Board, it would appear, is to provide employment for discharged Army pensioners at the expense of the regular pharmaceutists and the sick poor, and it seems that the Government is determined to maintain that policy, for we find that the reply of Mr. Chaplin to a question put to him in the House by Mr. Lyttleton was that "the order had not been issued without careful consideration."—*Medical Press and Circular.*

Sugar and Muscular Exertion.—It is a fact well known to Alpine tourists that on difficult climbing excursions an increased desire is felt for the consumption of sweets and sweetened foods, and many who never touch such things at home devour large quantities of them on these tours. It is also frequently remarked how eagerly the guides appropriate any sugar that may be left over and consume it *en route*. At the instigation of the Prussian War Office, investigations have recently been made by means of a special apparatus into the question whether the consumption of small quantities of sugar rendered the tired muscles capable of renewed exertion. In order to obtain a practical result, the person who was made the subject of the experiment was kept totally ignorant of the object of the experimenters. On one day a sweet liquid was administered containing 30 grammes of sugar, on the next day a similar liquid containing a sufficient amount of saccharin to render it distinguishable from the other as regarded taste. When a very large amount of muscular work had been performed, it was found that a greater quantity of work could be got through on the days when the sugar was given than on the days when saccharin was given. The blood had become very poor in sugar in consequence of the severe muscular effort which had previously been gone through, and hence the administration of a comparatively small quantity of sugar had the effect of producing an increased capability for work.—*English Mechanic.*

Phosphorescence of Ozone.—M. Marius Otto has just discovered an experimental fact, that was described recently in his name before the Academy of Science by M. Friedel, and that may be productive of important results. This fact relates to the phenomena of luminescence to which ozone gives rise in special conditions. The fact was observed for the first time during the aspiration of ozonised air by means of a water aspirator. The light took its rise at the point of contact of the water and the ozone, and the water remained luminous for five or six seconds after issuing from the aspirator, so that a flask filled with this luminous water and taken into a dark room could be followed distinctly. The experiments were made with ozonised oxygen, containing forty to

fifty milligrammes of ozone to the litre (about half a grain to the quart), and made with ozonisers invented by the author. It seems that the luminosity thus produced by the contact of ozone and water is due to the presence, in the latter, of organic matter of animal or vegetable origin, and that most organic substances are able to produce, with ozone, phenomena of phosphorescence. This is, then, a very particular and very interesting case of low temperature combustion, and a new example of the production of cold light.—*La Nature.*

Pills.—The advance in pharmacy which has taken place during the Queen's reign is very remarkable and very creditable to everybody concerned. At the commencement of the reign people seem rather to have preferred that their draught should be nauseous. "Elegant pharmacy" was hardly dreamed of. The first great advance was the preparation of active extracts in place of decoctions and infusions which were not only nauseous, but uncertain. The object of Squire and his immediate successors was to obtain the active principles of the drug in a small compass and in a thoroughly active state. This was a move in the right direction, and the services rendered by pharmacy to medicine in this way can hardly be exaggerated. At the same time it must be recognised that in elegant pharmacy, as in everything else, discretion must be mingled with zeal, and that we must not sacrifice essentials for externals. The means taken to render the dose agreeable to look at, and not disagreeable to take, must not be such as to prevent the drug from acting. Two things may and do happen. One is that the pill is never dissolved at all, and is expelled as any other foreign body would be expelled, having produced no therapeutic result whatever; the other is that the pill is very slowly dissolved, and instead of producing the desired result at the desired time, produces its result later, perhaps at some very undesirable time. The moral is most certainly not that we should go back to the barbaric pharmaceutical methods of early Victorian days, but that the manufacturers of compressed drugs and coated pills should bear in mind this possible disadvantage in their products. The evil can easily be prevented, and there are many manufacturing chemists who are fully alive to the point on which we are now dwelling. In ordering pills and compressed drugs the matter should be kept in mind, and the solubility of various samples tested, for the patient may suffer, and very undeserved discredit may fall upon the practitioner if this precaution be neglected. —*British Medical Journal.*

MARRIAGE.

Timms—Allan.—On August 3, at 9, Irving Street, Dumfries, by the Rev. Alexander Chapman, M.A., parish of St. Mary's, Alfred Henry Timms, solicitor, Swadlincote, Derbyshire (son of George Timms of Savings Bank, Ashby-de-la-Zouch), to Mary Reid, second daughter of William Allan, pharmaceutical chemist, Dumfries.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

August 5, 1897.

The advent of the holiday season of the year combined with the abnormally hot weather has tended to check business, transactions having, in consequence, been somewhat limited. Quinine remains firm. Cocaine steady. Opium and Morphia weak. Codeia firm. Quicksilver and Mercurials unchanged. Cod-liver oil steady. Glycerin slightly firmer. Menthol dearer. Shellac quiet. Citric, Tartaric, and Cream of Tartar firm. Orris Root slightly better. Borax and Acid Boracic again weaker. Roots and Herbs mostly dearer. We quote following prices for articles of chief interest:—

Acid Boracic.—Price is again weaker, and from second hands it would be possible to buy at 24s. per cwt. for *crystals*, and 26s. per cwt. for *powder*.

Acid Carbolic.—Market is somewhat firmer, the hot weather having caused an increased demand. Price for best make of 35° to 36° *ice crystals* remains at 7d. for quantity and in bulk. *Crude*, 60°, 2s. 1½d.; 75°, 2s. 4½d. *Liquid*: Pale colour in quantity and in bulk, 1s. 2d. per gallon.

Acid Citric.—Firm at 1s. 2d. to 1s. 2½d. per lb., makers, it is reported, being much behind with deliveries.

Acid Tartaric.—*English* on the spot firm at 1s. 2d. per lb. *Foreign* quiet 1s. 1d. to 1s. 1¼d.

Aloes.—During July the stock of *Curacao* in gourds has been augmented by 1300, which style of packing is much in request.

Ammonia Compounds.—*Sulphate*; steady at £7 10s. for grey prompt 24 per cent. London. *Sulpho-cyanide*: 10d. to 11d. per lb., according to quantity. *Oxalate*: 6¼d. per lb. for crystals. *Bromide*: 2s. 1d. per lb. *Iodide*: 14s. 6d. per lb. *Chloride*: 98 per cent. free from metals, 25s. to 26s. per cwt.; chemically pure quality 30s. to 32s. per cwt. *Sal ammoniac*: 31s. to 33s. for sublimed lumps.

Asafœtida.—The demand has quite fallen off again, but the market is exceedingly strong in face of small first hand stock. Quotations range from 55s. per cwt. for brownish block, to 100s. per cwt. for good free drop.

Bleaching Powder.—Firm at unchanged rates, £7 10s. to £8 per ton, according to quantity.

Camphor.—The *crude* article continues exceedingly quiet, with quotations nominal. *Refined*: The German refiners have reduced their prices as follows:—

	For 1 ton or more. Per lb.	For 10 cwt. or more. Per lb.	For 5 cwt. or more. Per lb.
In bells of about 5 lbs. . . .	1/2¾	1/3¼	1/3¾
,, tablets of 16, 8, or 4 ozs.	1/2¾	1/3¼	1/3¾
,, ,, 3 ozs.	1/3¼	1/3¾	1/4¼
,, ,, 2 ,, ...	1/3¾	1/4¼	1/4¾
,, ,, 1 oz.	1/4¼	1/4¾	1/5¼
,, ,, ¾ oz.	1/4¾	1/5¼	1/5¾
,, ,, ½ ,, ...	1/5¼	1/5¾	1/6¼
,, ,, ¼ ,, ...	1/5¾	1/6¼	1/6¾
,, ,, ¼ ,, ...	1/6¼	1/6¾	1/7¼

Chaulmoogra Oil—Has been in fair inquiry, and sales in original cases have been made at 2s. 3d. to 2s. 6d. per lb.

Cloves.—*Zanzibar* remain quiet, and no business of importance has taken place, but prices are steady on the spot; basis of fair at 2¾d. per lb.

Coal Tar Distillation Products.—*Toluol*: 2s. 2d. *Benzole*: 50 per cent., 2s. 1d.; 90 per cent., 2s. 1d. *Crude naphtha*: 30 per cent. at 120° C., 11d. *Solvent naphtha*; 95 per cent. at 120° C., 1s. 9d. per gallon.

Cocaine.—Market very steady, it being thought that we must after all see higher prices for the article before very long. Makers of the best brands are not free sellers, while from second hand it is still possible to buy in moderate qualities at 9s. 3d. to 9s. 6d. per oz.

Codeia—Firm, especially for early delivery at unchanged price, say 12s. to 12s. 6d. for the pure, according to quantity.

Cod-liver Oil.—Holders are firm, but as buyers hold off no business is passing in the article. There is a pretty general feeling that higher prices are bound to rule as the season of consumption draws nigh. Quotations are nominal at 65s. to 70s. per barrel for this season's non-freezing *Norwegian* oil, and 2s. 3d. to 2s. 6d. per gallon for *Newfoundland*.

Cream of Tartar.—This market is firmer, 95 per cent. French *crystals* being quoted 77s. per cwt., with English ground *powder* at 2s. per cwt. more.

Ferri et Ammon. Citras—Is dearer in sympathy with the firmness of citric at 1s. 3d. per lb.

Gentian Root—Is rather firmer, and 26s. to 26s. 6d. per cwt. would have to be paid for good quality for fairly early delivery.

Glycerin.—Some important contracts have been made in the belief that we shall see higher prices shortly. Prices range from 54s. to 57s. 6d. per cwt., but there are still many buyers who are holding off in the expectation of getting in at lower rates in a few weeks' time.

Henbane Extract—Is becoming scarce, and it is thought probable decidedly higher prices will rule. From 6s. to 8s. per lb. is asked, according to quantity.

Herbs and Leaves.—*Comfrey* leaves are dearer at 30s. per cwt. *Pulsatilla*: much dearer at 32s. 6d. per cwt. *Tarragon*: dearer; *Herb* in bunches, 35s.; *Leaves*, 65s. per cwt. *Spearmint*: *Herb* cut dearer at 30s. to 34s. per cwt.; *Leaves* and *tops* 56s. per cwt.

Ipecacuanha.—A fair business has been done in *Rio* since the sales at late rates. Stocks of this grade are small, being 196 bales, as against 408 bales this time last year.

Japan Wax—Is fairly steady although quiet, good squares on the spot, 42s. 6d. per cwt.

Lactucarium.—German is dearer at 12s. to 12s. 6d. per lb., and is very scarce.

Menthol.—There has been a good inquiry for this during the past few days, resulting in a fairly considerable business up to 6s. 3d. per lb. for spot and higher prices for arrival. The cause of the excitement appears to be the receipt of a cable from Japan, stating that the peppermint crop there is about 30 per cent. short.

Morphia—Remains very weak, with but little doing, price being nominally unchanged at 4s. 7d. per oz. for the *Hydrochlorate Powder*; it would appear probable that we shall see distinctly lower prices for this article in the not too remote future.

Oils (Essential).—*Peppermint*: On the spot quotations range from 6s. 6d. to 6s. 9d. per lb., whilst for shipment one American agent offers at 6s. per lb., *c.i.f.*, in 10-case lots. *Japan*, in view of the cable as mentioned under menthol, holders are inclined to ask higher rates. *Star Aniseed*: Quiet at 7s. 6d. per lb. *Cassia*: Very dull with nominal spot prices; for August to September shipment, 75 to 80 per cent. is offered at 5s. 3d. per lb. *c.i.f.* terms. *Citronelle*: Quiet at 1s. 2d. per lb. on the spot, with retail sales thereat; a parcel of about 50 cases just arrived is offered at 1s. 1½d. *Lemon grass*: quiet and unchanged at 25s. 8d. *Caraway*: English drawn, is lower at 5s. per lb. *Cloves*: English drawn, lower at 2s. 2d. per lb. *Bergamotte*: Much dearer at 10s. per lb.

Oils (Fixed).—*Linseed* is a very strong market at a further advance. *Pipes* on the spot £16 2s. 6d., barrels £16 10s. *Rape*: Firm. Refined on the spot £28 5s. *Cotton*: Firm, refined being quoted £15 10s. to £16 5s., according to make and package. *Coconut*: Ceylon on the spot £22 10s. to £23 10s., as to package. Cochin £28. *Palm*: Lagos £21 10s. *Castor*: Very firm, Calcutta firsts 3¾d. to 4d. per lb.

Opium.—Market remains unchanged with, however, a weaker tendency. Prices vary from 7s. 9d. to 11s. 6d. per lb., according to quality and quantity.

Orris Root.—The market is rather firmer, good selected *Florentine* being offered at 55s. per cwt., *c.i.f.*, London.

Pepper.—Continued firmness prevails in the market for *Singapore*, and a good business has been done for arrival at a further advance. Sales are estimated at 200 tons, including June to August steamer, at 3⅞d., and closing further buyers thereat.

Potash Compounds.—*Chlorate*: Rather quieter again at 4⅛d. per lb. *Citrate*: Dearer at 1s. 2½d. per lb. *Bromide*: Steady at 1s. 8d. to 1s. 9d. per lb. as to quantity. *Bicarbonate*: English, 40s. per cwt.; foreign, 30s. per cwt. for either crystal or powder. *Carbonate*: 25s. per cwt. *Iodide*: Firm with good business doing at 9s. 9d. to 10s. 3d. per lb. as to quantity. *Cyanide*: 1s. 7d. to 1s. 8d. for the B.P. quality, and 10d. to 1s. for the 98-100 per cent. for mining purposes. *Hypophosphite*: Unchanged at 3s. 6d. per lb. *Oxalate*: Firm at 5d. per lb. for the neutral.

Quicksilver—Is easier from second hands at £7 2s. 6d. per bottle, importers still asking £7 5s. It is, however, thought that in the event of any large buyers coming on the market the latter would reduce their price to get the business.

Quinine.—A good business has been done at 9d. per oz. from second hands, and the market is very firm, manufacturers not offering. Stocks have been reduced this month.

Roots (Various).—*Aconite*: 35s. to 37s. 6d. per cwt. for German. *Angelica*: Loose, 22s.; twisted, 30s. per cwt. *Arnica*: 52s. 6d. to 55s. for ordinary; 63s. for picked. *Belladonna*: Very scarce, and price quite nominal. *Calamus*: 31s. per cwt. for peeled. *Colchicum*: Sliced, 35s. per cwt. *Dandelion*: Very scarce. *Enula*: 28s. 6d. per cwt. *Hellebore*: White with fibre, 23s. 6d.; without fibre, 34s. 6d. per cwt. *Sumbul*: 9d. per lb. *Tormentilla*: 33s. per cwt.

Rose Leaves—Are in active demand, and higher prices have been paid. *French* are quoted 1s. 4d. per lb. and *Dutch* 1s. 2d. per lb.

Seeds (Various).—*Strophanthus* are moving off in fair quantities, price for Kombé being 3s. 6d. to 4s. per lb. as to quantity. *Colchicum* quiet at 42s. 6d. per cwt. *Dill*, 28s. to 30s. per cwt. *Hemlock*, 23s. 6d. per cwt. *Henbane*, 35s. to 40s. per cwt. as to quality. *Cardamom*, in good demand at rather higher rates since last auctions.

Senna.—The new crop of *Tinnevelly* is arriving slowly. It is thought that 200 to 300 bales will be ready for the next drug auctions on the 19th inst. Stocks have been now reduced to almost the low level of last year. *Alexandrian* is in large supply, and holders are anxious to realise, but buyers hold off.

Shellac.—The demand on the spot is slow, and only small transactions are reported at last rates. The speculative market is rather firmer to-day, but in the absence of sellers business is difficult. Buyers of *TN* August delivery at 61s. 6d., and September 62s.

Silver Nitrate—Is lower at 1s. 5¾d. per oz. for *crystals* and 1s. 6d. per oz. for *sticks*.

Soda Compounds.—*Crystals*: 57s. 6d. to 60s. per ton, ex wharf. *Bicarbonate*: 7s. 6d. to 8s. per cwt. as to quantity for the commercial quality, and 18s. for the free from monocarbonate. *Tartarata*: 70s. to 73s. per cwt., according to quantity. *Bromide*: 2s. 1d. per lb. *Carbonate, B.P.*: 9s. to 12 per cwt. as to quantity and packing. *Iodide*; 11s. 4d. to 11s. 7d. per lb.

Spirit Rectified.—With the news of the terrible floods in Silesia and Saxony and the very heavy damage to the large potato industry in these countries, the market for rectified spirit is distinctly firmer. It is, of course, impossible to say yet what this damage will amount to, but it would seem certain that we shall see higher prices.

Sulphur—Is very firm at £6 5s. per ton for *roll*, and £6 15s. for *flowers*.

Sulphate of Copper—Continues quiet at

MONTHLY STATEMENT OF DRUGS, ETC., WAREHOUSED IN LONDON.

August 1, 1897.

		July.		Stocks, July 31.	
		Arrivals.	Deliveries.	1897.	1896.
Aloes (all kinds)	packages	2,914	556	6,006	6,268
Balsams ,,	,,	19	67	442	711
Bark, Cinchona	,,	1,405	2,863	20,572	24,340
Quinine Sulphate	ounces	35,200	59,648	1,391,392	1,675,600
Beeswax	packages	826	316	2,855	2,268
Camphor	,,	1,588	1,042	11,881	14,672
Cardamoms	,,	156	270	1,005	606
Cochineal	,,	264	197	2,224	1,535
Colombo Root	,,	140	37	175	313
Cubebs	,,	32	—	354	320
Dragon's Blood	,,	19	14	84	154
Galls (all kinds)	,,	2,041	651	4,734	9,202
Gum, Ammoniacum	,,	1	6	31	45
Arabic, all kinds	,,	2,875	1,937	13,470	14,744
Asafœtida	,,	20	28	291	580
Benjamin	,,	243	313	3,158	2,562
Galbanum	,,	—	1	—	2
Gamboge	,,	11	4	315	203
Guaiacum	,,	—	4	70	52
Kino	,,	—	9	24	21
Mastic	,,	—	3	8	16
Myrrh	,,	—	1	527	644
Olibanum	,,	70	326	2,169	3,721
Tragacanth	,,	1,088	409	3,380	4,756
Ipecacuanha	,,	65	77	234	347
Jalap	,,	—	37	376	332
Nux Vomica	,,	—	57	490	576
Oils, Castor	,,	106	148	382	1,209
Olive	,,	255	267	858	1,281
Aniseed	,,	—	1	96	60
Cassia	,,	60	1	117	24
Rhubarb	,,	142	72	364	435
Saltpetre	tons	1,439	1,436	6,236	4,229
Sarsaparilla	packages	194	85	317	323
Senna	,,	48	226	988	945
Shellac	,,	5,316	5,377	50,129	40,653
Terra Japonica, Gambier	tons	548	325	1,218	824
Cutch	,,	66	86	1,579	2,077
Turmeric	,,	27	56	681	1,106

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns

£15 7s. 6d. to £16 5s. per ton according to make and package.

Turpentine—Is again dearer, and 20s. 9d. to 20s. 10½d. per cwt. are the general quotations. The market at the close is a shade easier.

NEWCASTLE CHEMICAL REPORT.

August 4, 1897.

Business still keeps moving fairly well. The hot weather continues to interfere with the making of Soda Crystals, and Caustic Soda is still scarce. Sulphur is moving with more freedom. Quotations are, Bleaching Power, £6 10s. to £7 10s. according to markets. Soda Crystals, 37s. 6d. to 55s. according to markets. Caustic Soda, 70 per cent., £7 to £7 10s. Soda Ash, 52 per cent., £4. Alkali, 52 per cent., £5. Sulphur, £4 15s.; roll, £6 5s.; flowers, £8 per ton.

LIVERPOOL REPORT.

August 4, 1897.

Business this week has been somewhat irregular, owing to the holidays, but prices generally have been maintained, and in the case of Linseed and Oils, such as Castor, Olive, Cottonseed, and Linseed, an advance has taken place. A similar upward tendency is to be remarked in Spirits of Turpentine, which has undergone two slight rises in price during the week.

Ammonium Salts.—*Carbonate* is quiet at 3d. per lb. *Sal ammoniac*: 33s. per cwt.; 2nd quality, 31s. *Sulphate* is quiet at £7 15s. per ton.

Bleaching Powder—Is unchanged from last week, being quoted at £6 12s. 6d. per ton for hard.

Canaryseed—Is in slightly better demand, 500 bags of Turkish sold ex store at 23s. 3d. per 464 lbs.

Copperas—Lancashire, 38s. per ton; Welsh, 36s.; Holders are firm.

Copper Sulphate: £15 15s. to £15 17s. 6d. per ton.

Cream of Tartar—Is in very quiet demand at 77s. per cwt.

Ginger.—100 bags fine Sierra Leone at 17s. per cwt. ex store.

Oils (Fixed) and Spirits.—*Castor oil* is very firm with an inclination to higher prices. Calcutta oil is selling at 3⅝d. and 3¾d. per lb.; French first pressure at 3¾d. to 3½d., and Madras at 3½d. per lb. *Olive oil* is firm in tone, but the demand is not quite so brisk as last week. Prices, however, are unaltered. Zante has been selling at £30 per tun, and Seville at £30 to £30 10s. *Linseed oil* has again advanced, Liverpool pressed oil in export casks being now quoted at 16s. 9d. to 17s. per cwt. *Cottonseed oil* has also risen in price; Liverpool refined in barrels for export is selling at 16s. to 16s. 6d. per cwt. *Spirits of turpentine* is held for 21s. 6d. per cwt., and is in good demand.

Potash Salts.—*Potashes* and *Pearlash* only find a retail sale, the former at 19s. per cwt., and the latter at 30s. *Chlorate*: In improved demand at 4d. per lb. *Bichromate*: 4⅝d. per lb. *Saltpetre*: 21s. 6d. per cwt.

Sodium Salts.—*Borax* is dull at 15s. per cwt. *Chlorate*: 4⅞d. per lb. *Crystals*: £2 17s. 6d. per ton. *Caustic soda*: 70 per cent., £7 5s. per ton; 60 per cent., £6 5s. per ton.

Sulphur.—Roll, £6 7s. 6d. per ton; flowers, £7 7s. 6d. to £7 10s. per ton.

MANCHESTER CHEMICAL REPORT.

August 4, 1897.

There is again no particular change to report in heavy chemicals, and there is great firmness. Caustic Soda, especially high strength, is very scarce, and soda crystals, in consequence of the hot weather, are very scarce. Bleaching Powder is firm at £6 7s. 6d. to £6 12s. 6d. per ton, soft wood casks, on rails. Recovered Sulphur is unchanged. Pitch is firm at 19s. per ton, *f.a.s.*, Manchester; 21s. to 22s. London; 21s. 6d. Hull and Garston. Green Copperas is still scarce for Lancashire make, but Welsh is more plentiful. Yellow Prussiate in fair request at 6d. for best local product. Creosote very firm at 1¾d. to 2d. There is no change in Naphthas, but Benzols have a lower tendency here. Sulphate of Copper remains nominally at £16 per ton for best brands delivered Manchester. Brown Acetate is quoted £4 17s. 6d. per ton for Welsh, and best American £4 15s. to £4 17s. 6d., *c.i.f.*, Manchester.

NEW BOOKS AND NEW EDITIONS.

"The Outlines of Physics": an elementary textbook. By Edward L. Nichols. Pp. 112+452. Cr. 8vo., cloth. 7s. 6d. net. London: Macmillan. 1897.

"Surgical Diseases of Children." By Dr. Edmund Owen. Illustrated. Pp. 520. Dy. 8vo., cloth. 21s. London: Cassell. 1897.

"Harvey and Galen"—the Harveian Oration, delivered before the Royal College of Physicians October 19, 1896. By Dr. F. J. Payne. Pp. 51. 8vo., cloth. 2s. 6d. net. London: Henry Frowde. 1897.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

G. D'Alberte & Co., Wholesale and Export Perfumers and Manufacturing Chemists, 197 and 199, Kennington Road, S.E.

Edwin J. Sykes, Physician, York House, West Green Road, Tottenham.

James H. Gillispie, Veterinary Surgeon, 8, Vaughan Avenue, Doncaster.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Laughland, Mackay, & Baker, Australian Merchants, 50, Lime Street, E.C. James Laughland & Alexander Mackenzie Mackay will continue the business under the style of Laughland, Mackay, & Co., and will receive and pay all debts due to the former firm.

William Murray Leslie, M.D., F.R.C.S., & John Gordon Leslie, M.B.C.M., Medical Practitioners, 1, Norton Folgate, E.C. Debts will be received and paid by William Murray Leslie.

Priestley & Hopkinson, Medical Practitioners, Withington and Fallowfield, Manchester. Debts will be received and paid by either of the late partners.

LATE ADVERTISEMENT.

Assistant Wanted.

LONDON, W.C.--To Students.--In-doors. Part time Assistant, in good class business. Convenient for "Square" or Chancery Lane Schools. Address full particulars to Tempus, "Pharm. Journal Office," 5, Serle St., W.C.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Shop Fittings.

Stock and Fixtures for immediate disposal, at valuation; would suit a branch or otherwise.—Write to E. and I. J. Dadley, 21, Cartergate, Nottingham.

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d.—Tully, Chemist, Hastings.

Miscellaneous.

Photographic Mounts, cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000 Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s. 100. Samples free.—Peck, East Dereham, Norfolk.

OFFERED—(*continued*).

What offers for *Pharmaceutical Journals* from March 2, 1895, to June 26, 1897, 2 Nos. missing.—Archibald T. Jones, 214, Little Moor Lane, Oldham.

20 doz. No. 4 Acme metal polish; 18 tins No. 12 do.; 2 2s. 6d. Rudolph's Oriental elixir; 5 1s. 6d. kreochyle; 10 No. 11 Maw's feeding-bottles; 2 2s. 9d. Norton's camomile pills; 4 2s. 6d. Benger's liq. pancreaticus; Attfield's 'Chemistry,' 9th edition; quantity of surplus drugs; list on application.—Drug Stores, 79, Market Street, Stalybridge.

Cantilever-pattern enlarging lantern, with 8-in. condenser, ¼, ½, ¾ carriers, duplex burner, leather bellows, portrait lens; complete as new, £7 10s.—G. S. Bray, 24, Spurstowe Road, Hackney.

Surplus Stock.—Carriage paid, 3 ozs. antipyrin, 8s.; 1 doz. Carter's Liver Pills, 10s. 3d.; ½ doz. Seigel's Pills, 4s. 5d.; ½ doz. Williams' Pink Pills, 11s. 6d.; ½ doz. 2s. 9d. Steedman's, 10s. 6d.; ½ doz. Towles' Pills, 4s. 3d.; ⅓ doz. Holloway's Pills, 3s. 1d. Or exchange Dental or Photographic Apparatus.—Burge, Fernhead Road, Paddington.

WANTED.

"Homœopathic B.P.," last edition; *C. & D.* current Diary; state cash price.—Howorth, 49, Withnell Road, Blackpool.

NEW IDEAS AND TRADE NOTES.

DERMACURA SUPERFATTED SOAP.

Messrs. Raimes, Clark & Co., of Edinburgh, have introduced an excellent superfatted soap which they call "Dermacura." Containing no "free alkali," a high percentage of fatty acids, and a minimum quantity of water, it is an excellent specimen of a high-grade toilet soap. The lather produced is plentiful and lasting, and the perfume with which it is scented, extremely fragrant. After practical trial, as well as from chemical tests, we find it to be an excellent shaving and toilet soap, and wherever introduced, should prove a popular article.

EUNATROL—A NEW CHOLAGOGUE.

Dr. Blum has found that soaps administered internally, both in man and animals, have a remarkable effect in promoting the flow of bile. Under the name of eunatrol, a pure oleate of sodium has been employed, and is stated to be very efficacious in stimulating the action of the liver. The preparation is introduced in the form of chocolate-coated pills, four of which are recommended to be taken in the morning, and four at night after meals. As these pills are somewhat larger than are usually dispensed in this country, and as the number is greater for one dose than is generally ordered here, we fear that this fact will prove somewhat detrimental to the popularity of the article. In England, although pills are taken in large quantities, they are preferred as small as possible, and the public may be inclined to favour a less efficacious remedy, which may be taken with greater comfort. We find that the sodium oleate contained in these eunatrol pills is in a plastic condition, possibly were it reduced to the powdered form the bulk of the pill would be materially decreased and thereby rendered more generally acceptable to the public. The pills may be obtained from Messrs. Widenmann, Broicher & Co., 33, Lime Street, E.C.

OVALINE SOAP.

We favourably noticed this soap a short time since. From a batch of recent testimonials just received we find that our opinion has been endorsed by several well-known physicians and specialists.

EUCHININ.

This new derivative of quinine, which is obtained by the action of chlorocarbonic ethyl ester on quinine. The chemical formula is—

$$CO<\begin{matrix}O\cdot C_2H_5\\ O\cdot C_{20}H_{23}N_2O\end{matrix}$$

The preparation is very slightly soluble in water, has practically no taste, and is further characterised by the absence of unpleasant after-effects which are produced by quinine. The dose given is from 15 to 30 grains, 15 grains of euchinin being equivalent to 10 grains of quinine. It is administered in wafers or cachets, or suspended in wine or soup. Excellent results have been obtained with it in the treatment of pertussis, the few cases in which it failed were found to be equally intractable with quinine. Euchinin is manufactured by Zimmer and Co., and may be obtained from Messrs. Widenmann, Broicher and Co., 33, Lime Street, E.C.

UBIQUITOUS APOLLINARIS.

We learn from our evening contemporary *The Star* that the King of Siam when slumming in the East End of London was able to refresh himself at the Eastern Hotel with whisky diluted with Apollinaris. Our royal guest was probably well pleased to find he was still within the confines of civilisation.

ALMANACKS FOR 1898.

The first batch of 1898 almanacks to reach us are those issued by Mr. H. Silverlock, of 92, Blackfriars Road. They are as usual most tastefully produced, and worthy of this firm's old-established reputation. We have received from the same source a price-list of fancy labels printed in colours, which will be sent to any chemist on application.

THE MONTH'S WHOLESALE PRICE-LISTS.

Messrs. Evans, Gadd & Co., of Exeter, send us a copy of the special exhibition number of their monthly price-list. In this their excellent preparation of malt and Devonshire cream, "Ambrosia," is prominently brought before the notice of the trade, and numerous other specialties which are worth attention, including an excellent line in perfumery. The firm also forward us a list of over 100 pages devoted to packed goods and patent medicines.

Messrs. Harrington Brothers, of Cork, whose London address is 53A, City Road, E.C., issue a compendious list of fine chemicals, including organic and inorganic preparations, chemicals for scientific and analytical work, volumetric solutions, fluorescent screens for X ray work, minerals, and specimens for museums, salts of rare metals used for incandescent gas mantles, and, in fact, almost every chemical which has any definite technical or scientific application. To pharmacists the reputation of this firm for magnesium salts, to which they have devoted special attention, and which they manufacture on a very large scale, is well known.

Messrs. Evans, Sons & Co., of Liverpool, in their recently-issued price-list have taken up a strong line in granular effervescent preparations, their "Raspberry Citrate" and "Montserrat Citrate" being agreeable preparations which are very popular during the summer season. The list of Hawley's counter adjuncts is a very complete series of useful and attractive articles for counter display. Among the first to introduce valoid fluid extracts to the notice of pharmacists in this country, the Liverpool firm continue to make a leading line of these valuable and excellent preparations.

Heinrich Haensel's quarterly list, issued by his English agent, W. Poppelreuter, 59, Portland Street, Manchester, shows that terpeneless essential oils are gaining favour among those who have to handle these articles. The degree to which the removal of the terpenes is stated to increase the volume for volume flavouring or perfuming power of the oil is remarkable. Thus, terpeneless orange and lemon oils are stated to be thirty times more powerful than the natural oil. Clove, aniseed, citronella, fennel, peppermint, and star anise oils are claimed to be rendered twice as powerful by the removal of the terpenes.

Among the novelties to which Messrs. Harker, Stagg, and Morgan, of 15, Laurence Pountney Lane, E.C., call attention in this month's price-list, we note a line of assorted tooth powders in sixpenny boxes, which should prove an attractive counter adjunct; palatable and inseparable petroleum emulsion, containing one-third its weight of the hydrocarbon, which will keep well; a new perfume, "Orchid essence"; and a standardised coca-wine, which may be sold without a wine licence. A special line is also made of "torpedo"-shaped, gelatin-coated horse balls.

Messrs. Wright, Layman & Umney, of 48 and 50, Southwark Street, in their list for the current month direct special attention to their pearl-coated pills, a list, with formulæ selected from their pill catalogue, of those useful for retailing being given. Compressed tablets are also included. A special line is made of essential oils, and of concentrated or terpeneless oils, manufactured in the firm's laboratories, are brought prominently under notice.

It is not often that English wholesale houses issue price-lists which, from an artistic and typographical point of view, are likely to attract attention, in fact, very frequently the reverse is the case. Messrs. Allen & Hanburys, of Plough Court and Bethnal Green, who for upwards of a century have been in the front rank of the pioneers of pharmaceutical advance, have shown their enterprise in this direction, where reform is much needed, by issuing a list which is both elegant and artistic. This enterprise is the more noteworthy when we learn that the list is printed by the firm with their own press. The ornamental cover is tastefully illuminated with a coloured picture of an old-time alchemist, regarding a vial of a liquid preparation. The type and illustrations possess a high degree of finish, and render the list a noteworthy departure in pharmaceutical typography.

FILTER PAPERS.

The filter papers manufactured by Messrs. Schleicher and Schüll can now be obtained in many varieties and qualities, so as to suit all kinds of operations, whether analytical or pharmaceutical. In addition to the well-known acid-washed filters, which are practically free from ash, filter papers are now supplied that have been treated with absolute alcohol, in order to give a paper which is free from fat, and such filters will no doubt be appreciated in many laboratories. Fat-free filters can also be obtained in the form of thimbles, for use in the Soxhlet tube or as percolators. Diffusion shells to supplant parchment paper for dialysing, hardened filter cones for pump work instead of the platinum cone, and hardened filters for caustic liquors are among the other novelties in filter papers, which are adapted to the re-

quirements of pharmacists. The London agents for these papers are Messrs. Townson and Mercer.

NEWS IN BRIEF.

Messrs. Burroughs, Wellcome & Co. notify that during the months of June, July, and August their London offices, warehouses, and wharf will be closed at 1 o'clock on Saturdays.

Mr. Chas. A. Bentley, assistant to Mr. Anthony S. Buck, of Bedford Street, Liverpool, has been successful in the recent examinations of Edinburgh University. Mr. Bentley has passed the second professional examination for the degree of M.B., C.M., in anatomy, physiology, materia medica, and therapeutics.

Professor Victor Meyer, the well-known chemist, died at Heidelberg on August 8.

Appointment of a City Analyst.—The Bradford City Council has accepted a recommendation of the Sanitary Committee that, subject to the confirmation of the Local Government Board, Mr. F. W. Richardson, the consulting chemist to the Corporation, should be appointed as public analyst for the city under the Food and Drugs Act at a salary of £50 per annum, with an allowance of £25 per annum in respect of drugs, appliances, and laboratory accommodation.

The Annual Dinner of the P.A.T.A. takes place on Thursday evening, August 19, at 7.30 p.m. at the Holborn Restaurant. As already announced, single tickets, 7*s.* 6*d.*, and double tickets (lady and gentleman), 12*s.* 6*d.*

Camphor Liniment Case.—At the instigation of the Health Committee of the Birmingham City Council, on Tuesday, August 10, George Day Horton, chemist and druggist, of Birmingham, was summoned for selling adulterated camphor liniment.—The prosecution was conducted by Mr. Hiley (Assistant Town Clerk), and Mr. Porter defended.—Evidence of the purchase of some liniment from defendant's shop having been given, Dr. Alfred Hill, the city analyst, said that he had analysed the liniment and found it contained ten parts of camphor to ninety of olive oil, or practically 50 per cent. less of camphor than was required. A second sample of the liniment that he analysed he found to be all right. The liniment was used for a variety of complaints, such as rheumatism, bronchitis, congestion, and colds, and the camphor being the more important agent, the result would be that the liniment would only be half as good as it should be.—Mr. Porter: You do not complain of the quality of the camphor?—Dr. Hill: Oh, no, only the quantity.—For the defence Mr. Porter said that he had a good explanation to offer. The fact was the two pound bottle in which defendant kept the liniment was accidentally broken, and a four pound bottle was supplied in its place. The assistant who made up the fresh stock of liniment only used half a pound of camphor—the quantity for a two pound bottle—instead of one pound, and that was how the mistake had arisen.—The Chairman of the Bench said they were quite willing to believe the affair was a case of inadvertence, and that there was no intention to defraud the purchasers. At the same time the purchaser did not get what he was entitled to. He pointed out that the maximum penalty was £20, but under the circumstances a penalty of 20*s.* and costs only would be imposed.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

August 12, 1897.

Business has been by no means active during the past week, while the changes in either direction, either upwards or downwards, have been of but little practical importance. Glycerin is the turn harder. Cod-liver Oil quiet but steady. Quinine firm, with a decided upward tendency. Opium and Morphia weak. Codeia firm. Cocaine steady. Sulphonal and Phenacetin quiet. Quicksilver, Mercurials, Iodine, and Iodides unchanged. Menthol and Star Aniseed Oil dearer. Citric, Tartaric, and Cream of Tartar firm, Borax and Boracic Acid weak. Carbolic steady, Shellac quiet but firm. Camphor a shade dearer for crude. The following are present prices for articles of principal interest:—

Acid Boracic—Is dull, and can be bought at 25s. for *crystals*, and 2s. per cwt. more for *powder*.

Acid, Carbolic—Remains steady at 7d. per lb. for 35 to 36° *ice crystals* in quantity and bulk, other qualities and packing in proportion. *Crude*, 60°, 2s. 2d.; 75°, 2s. 5d. per gallon. *Liquid*, 95 per cent., pale colour, 1s. 2d. to 1s. 3d. per gallon, according to quantity.

Acid Chrysophanic.—One or two foreign makers appear anxious to press sales almost *à tout prix*, and for quantity it is probable that 10s. per lb. would be accepted, a figure which, in view of the price asked for raw material of good quality, would appear to be hardly justified.

Acid Citric—Is steady at 1s. 2½d. per lb. for the B.P. quality. Consumption of this article has, in consequence of the warm weather, been extremely large. The general opinion appears, however, to be that we shall see easier prices as soon as the summer demand commences to slacken.

Alcohol.—Price is firm at 7½d. to 8d. per gallon for ordinary potato spirit. It is thought that the value of the article will advance.

Ammonia Compounds.—*Sulphate*: Flat grey prompt 24 per cent. London £7 8s. 9d., Hull £7 8s. 9d., Leith £7 8s. 9d. Beckton terms £7 7s. 6d. *Sulpho-cyanide*: 10½d. to 1s. per lb. *Oxalate*: 6¼d. to 6½d. for crystals. *Bromide*: 2s. to 2s. 1d. *Iodide*: 11s. 4d. to 11s. 7d. *Chloride*: Free from metals 25s. to 27s. 6d., chemically pure 30s. to 32s. 6d. *Sal ammoniac*: 30s. to 35s. for sublimed lumps.

Atropine—Is very firm at 12s. 6d. per ounce for the *sulphate* and 3s. per ounce more for the *pure*, raw material remaining very scarce and dear.

Bismuth—Is unchanged at 5s. per lb. for the *metal*, and 4s. 10d. for the *subnitrate*, and 5s. 5d. for the *carbonate* in 5 cwt. lots.

Bleaching Powder—Is worth £7 to £7 10s. on spot, according to quantity.

Borax—Dull and weak at 15s. per cwt. for *Crystal*, and 16s. for *Powder*.

Cacao Butter.—In auction 300 cases *Cadbury's* sold at 10¾d. to 11⅛d. per lb., the average price obtained being 10⅞d., against 11⅛d. in July and 11⅝d. in June; for 205 cases *Dutch* there were no buyers.

Camphor.—The market for *Crude* is quiet but firm. Business has been done at 97s. 6d. per cwt. for *Japan*, August-October shipment, *c.i.f.* There are, however, no longer sellers at this figure.

Castor Oil—Is very firm, 32s. 6d. is asked for *French* first pressing and 31s. 6d. for second pressing on the spot. *Calcutta* firsts 4d. to 4¼d. per lb.

Cloves.—Only 40 bales *Zanzibar* offered in auction, of which 10 bales sold at 2⅝d.; 53 bags *Amboyna* bought in at 4⅛d.; of *Penang*, 50 cases unpicked sold, without reserve, at 5¼d.; good picked being bought in at 9d. Privately *Zanzibar* are in good demand at firm rates. Considerable sales have been made at 2⅜d. spot, up to 2⅝d. for Jan.-March delivery.

Coal Tar Distillation Products.—*Toluol*: Commercial 2s. 3d., pure 3s. 3d. *Benzole*: 50 per cent. 2s. 1d., 90 per cent. 2s. 1d. *Crude naphtha*: 30 per cent. at 120° C. 1s. *Solvent naphtha*: 95 per cent. at 120° C. 1s. 9d. per gallon.

Cocaine—Remains quiet. Makers of the best brands are not free sellers, while from second-hand 9s. 3d. to 9s. 6d. per oz. is the price according to quantity and make.

Cod-Liver Oil—Is steady at 65s. to 72s. 6d. for best non-freezing new seasons. At these Norwegian prices buyers will probably do well to secure a fair stock before the improvement sets in, which is confidently expected later in the year. *Newfoundland* is slow of sale at 2s. 3d. to 2s. 6d. per gallon.

Codeia—Is in good demand, and still scarce for prompt delivery, price asked being 12s. to 12s. 6d. per oz. for the *pure*, according to quantity.

Colombo Root—Is scarce, and full prices would be paid for really good quality if available.

Cream of Tartar—Quiet but steady at 77s. 6d. for first white *crystals* on spot; *powder*, 80s. to 81s. 6d. per cwt.

Cutch—Is very slow of sale at unchanged prices.

Galls.—*China* are very quiet at un-

changed price. *Persian blues* dull and weak. *Greens* in demand, but buyers will not pay prices asked by holders.

Gambier.—Weak at 12s. 6d. for block. 150 tons, August to October steamer, sold at 12s. 1½d., *c.i.f.*, there being still sellers at this figure.

Gentian Root—Is quoted 26s. 6d. to 27s. 6d. on spot, and 1s. 6d. to 2s. per cwt. less for arrival.

Ginger.—*Cochin* very dull; of 1640 bags rough kinds offered, only 60 bags sold—cuttings 14s., sea-damaged rough 23s. to 23s. 6d.—the rest being bought in at 25s. to 28s. for ordinary to fair washed. 197 cases cut kinds mostly bought in, A, 85s.; B, 65s.; C, 42s.; a few cases bold cut sold at 70s. to 77s. Of *Japan*, 144 bags sold at 13s. to 15s. 6d. *Jamaica* went off flatly; of 314 packages only 25 sold, small and middling 70s. to 72s., good to fine bright 84s. to 90s.

Glycerin.—Is steady at £52 10s. to £55 per ton, according to quantity and brand, for best white double distilled 126° in tins and cases. It is thought that the article has touched bottom, and that we may very likely see a distinct reaction when the demand for winter consumption begins to make itself apparent.

Iodine—Unchanged at 7½d. per oz.; *Iodides* being also unaltered at 9s. 9d. to 10s. 3d. for *Potass.*; 11s. 4d. to 11s. 7d. for *Sodii*, and 13s. 4d. to 13s. 7d. per lb. for *Iodoform* according to quantity.

Lithia.—Price of the Carbonate is 9s. 4d. to 9s. 9d. per lb., according to quantity.

Menthol.—Market is decidedly firmer; 6s. 3d. has been paid for spot, and 6s. 6d. per lb. is now asked for good dry white crystals, price to arrive being about the same as for spot. It is expected that the article will further improve.

Mercurials.—Makers have made no alteration in their prices, which remain 2s. 2d. per lb. for *corrosive sublimate* and 2s. 6d. per lb. for *calomel* in half-ton lots.

Morphia—Is very dull, with a distinctly downward tendency, price remaining nominally, unchanged at 4s. 6d. to 4s. 7d. for the *Hydrochlorate powder* according to quantity.

Oils Essential.—*Star Aniseed* has been active and in large demand for American. The article has become somewhat quieter, limited sales having been made as high as 8s. per lb. for spot and now landing, while 7s. 9d. is asked to arrive. *Oil peppermint*; Contrary to expectations has still further receded in price, as low as 6s. 4½d. having been been quoted for *H.G.H.* to arrive. *Lemon* is a shade firm, the actual advance in price is, however, so far only nominal.

Oils (Fixed and Spirits).—*Linseed* quiet but firm. Pipes on the spot, £16 7s. 6d. to £16 15s.; barrels, £16 15s. to £17; solely from E. I. seed, 2s. 6d. dearer. *Rape* quiet. Ordinary spot, £26 10s. to £27. *Refined*, £28 5s. to £28 10s. *Cotton* very firm. Crude London spot, £15 15s. to £15. Refined £16 to £17, according to make and package. *Coconut*: *Ceylon* spot pipes £22 10s., hogsheads £23 10s., September to October £21, *c.i.f.* *Cochin*: Spot £28, September to October £26 10s., *c.i.f.* *Olive Oil*: *Spanish* £30, *Mogador* £29, *Levant* £31. *Palm oil*: Lagos, on spot, £22 10s. to £23. *Petroleum*: flat; *Russian*, spot, 4½d. to 4¾d.; September-December, 4½d.; *American*, spot, 4¾d. to 5d.; September-December, 5d.; *water white*, 6⅛d. to 6¼d. *Petroleum spirit*: *American*, 5½d. to 6d.; deodorised, 6d. to 6½d.

Opium—Is dull and weak, prices remaining nominally 7s. 9d. to 11s. per lb., according to quality.

Orris Root.—Market is quiet. It is stated that, in view of the low price, many growers will not dig the root this year, which would mean greatly reduced supplies. Really fine *Florentine* is worth 55s. per cwt. Other qualities in proportion.

Oxalic Acid—Is quiet at 3¾d. per lb. nett. delivered in London

Phenacetin.—It is stated that present price of 3s. 9d. to 4s. is not remunerative. Makers are, however, nevertheless keen to secure orders for quantity at anything above the lower figure named.

Potash Compounds.—*Chlorate* quiet at 4⅛d. to 4¼d. per lb., according to quantity. *Citrate* firm at 1s. 2d. to 1s. 3d. *Bromide*: 1s. 8d. to 1s. 9d. for *English* make, *foreign* being obtainable at rather lower figures. *Bicarbonate*, crystals or powder, 40s. for *English*, 32s. 6d. for *foreign*. *Carbonate*: 25s. to 27s. 6d. per cwt. *Bichromate*, 4⅝d. to 4¾d. *Cyanide*: 1s. 8d. for P.B. quality and 1s. (large quantity less) for the 98-100 per cent. quality for mining purposes. *Hypophosphite*: 3s. 6d. *Iodide*: 9s. 9d. to 10s. 3d. *Oxalate*: Neutral, 5d. *Permanganate*: 72s. 6d. to 75s. for small crystals, 5s. more for large crystals. *Prussiate*: 5½d. to 6d. per lb., according to quantity and make.

Quicksilver—Unchanged at £7 5s. from first hand, £7 3s. from second hand.

Quinine—Market is very firm; makers of brands most in demand will not sell in quantity, while from second hands only small lots can be bought at 9¼d. to 9½d. per lb. The general idea appears to be that market is certain to advance tangibly before very long.

Quillaia Bark.—Price has advanced to £19 per ton, the article being in short supply, caused, no doubt, by the fact that the low figures previously ruling have checked imports.

Rosin.—*Strained* spot, 4s. 9d. to 5s. per cwt.

Shellac.—Demand has been small but more active, and a fair business has been done in *Second orange* at full prices of last auction. 300 cases *AC Garnet* sold at 70s. to 72s. for blocky to fine flat leaf, cakey at 71s. Market for arrival is quiet, but steady; *Second Orange* sold August to September steamer at 62s. 6d.; October to December 62s., *c.i.f.* The speculative market is quiet and easier, *TN* offering at 63s. 6d. for August and 64s. 6d. for September delivery. Calcutta market, firm.

Silver Nitrate.—The fall in the value of the metal has disorganised the market for the *nitrate*. Prices vary from 1s. 5d. to 1s. 6d. for *crystals*, and 1s. 5½d to 1s. 6½d. for *sticks*, according to quantity. Buyers are, however, only covering their wants from hand to mouth, fearing a further drop in prices. The idea has been freely expressed that on basis of 2s. per oz. for the *metal* large orders for the *salts* would be readily forthcoming.

Soda Compounds.—*Crystals*: 57s. 6d. to 62s. 6d. per ton *ex* wharf. *Caustic*: 70 per cent., £8 to £8 10s.; 60 per cent., £1 per ton less. *Bicarbonate*: 8s. to 8s. 6d. per cwt. for *commercial*, and 18s. 6d. for the *free from monocarbonate* quality. *Carbonate P.B.*, 9s. to 12s. per cwt., according to quantity and packing. *Bromide*, 2s. to 2s. 1d. per lb. *Nitrate* at £7 7s. 6d. to £7 10s. for ordinary commercial on the spot, and 5s. per ton more for the *refined*. *Iodide*, 11s. 4d. to 11s. 7d. per lb., according to quantity.

Spices (Various).—*Capsicums*: 4 bags good Natal sold at 57s. *Chillies*: 20 bales Zanzibar sold at 28s. 60 bags Sierra Leone bought in at 42s. 6d. *Cassia lignea*: 100 boxes good, old import, sold at 42s. 6d., ordinary new being bought in at 36s., and good broken at 34s. *Cinnamon chips*: 200 bags Ceylon bought in at 3d. *Mace*: 80 cases Penang sold; pickings, 1s. 3d.; middling red, 1s. 5½d.; 6 cases Bombay bought in at 1s. 7½d.; 16 packages West India sold at 1s. 3d. to 1s. 6d. *Nutmegs* quiet. *Black Pepper*: Penang bought in at 3d., Tellicherry sold at 3d., Wynaad bought in at 3d., Malabar sold at 3⅜d. *White Pepper*: 40 bags Penang sold at 4⅞d.; Singapore bought in at 5⅜d. *Pimento*: 90 bags sold at 2⅜d.

Sticklac—Very dull. 20 cases *Tonquin* offered in auction were bought in at 42s. per cwt. for bold free.

Sugar of Milk—Is firm, really finest quality *powder*, guaranteed pure being quoted 65s. to 67s. 6d. according to quantity.

Sulphate of Copper—Is quoted 16s. per cwt. on the spot.

Sulphonal—Can still be obtained from second hand at 9s. 3d. to 9s. 6d. per lb., according to quantity, the makers still refusing to book orders.

Sulphur—Is firm at £6 5s. to £6 10s. for *roll*, and £6 15s. to £7 5s. for *flowers*.

Tartaric Acid—Firm at 1s. 2½d. per lb. on the spot for English, and 1s. 1½d. for foreign.

Turmeric—Dull and weak. Lots lately offered in auction were all bought in.

Turpentine—Is firm. American on the spot being quoted 20s. 9d.; Sept.-Dec., 21s.; Jan.-April, 21s. 9d.

MANCHESTER CHEMICAL REPORT.

August 11, 1897.

Although the Board of Trade returns are fairly satisfactory so far as the chemical trade as a whole is concerned, there is a notable decrease to the United States, caused by the operation of the McKinley Tariff. This will no doubt right itself ultimately, but meantime the output is being restricted in the great centres of Widnes, Northwich, etc., and prices are well maintained. Caustic soda is exceedingly firm, the demand for high strength stuff continuing. Sulphate of Ammonia is steady for Lancashire make at about £7 7s. 9d. on rails. Brown Acetate in request at £4 15s. to £4 17s. 6d. for Welsh delivered at station, Manchester, while best American may be quoted abont the same *c.i.f.* here. Benzols are in better demand at 2s. to 2s. 1d. for 50's to 90's. Naphthas are also firm, and fairly good sales of miscible have been made at about 3s. 9d.

per gallon. In Pitch there is little doing at 17s. per ton, *f.a.s.* Ship Canal. Peroxide of Manganese is firm at £13 10s. to £14 per ton, and Battery Manganese £9 to £9 10s. Local makers of Yellow Prussiate and Green Copperas are fairly supplied with orders. Sulphate of Copper has a hardening tendency.

NEWCASTLE CHEMICAL REPORT.

August 11, 1897.

The continuance of the warm weather is lessening the stocks of Soda Crystals. Caustic Soda is still scarce, but general values go unaltered. Prices are:—Soda Crystals, according to markets, 37s. 6d. to 60s. Bleaching Powder: £6 10s. to £7 10s. Caustic Soda, 70 per cent., £7 to £7 10s. Sulphur: £4 15s.; roll, £6 5s.; flowers, £8. Alkali, 52 per cent., £5. Soda Ash, 52 per cent., £4.

LIVERPOOL REPORT.

August 11, 1897.

In consequence of the small shipments of Linseed from South America, its price is very firm here at present, and in sympathy that of Linseed Oil has advanced since last week's report to 18s. per cwt. Cottonseed Oil is also very scarce and dearer, whilst Castor and Olive Oils steadily maintain their quotations of last week with a hardening tendency as regards the price of Olive Oil, whose future position is by no means easy to define.

Ammonium Salts—Are unchanged since last week.

Bleaching Powder—Is quiet at £6 2s. 6d. per ton, f.o.b. for "hard."

Beeswax.—13 bales of Sierra Leone at £5 15s. per cwt., and 9 packages of Gambia at £6 10s.

Canaryseed—Is steady but slow of sale, about 600 bags of Turkish have been sold at prices between 23s. and 24s. per 464 lbs. for inferior and good qualities respectively.

Copperas—Is very firmly held, Lancashire at 38s. 6d. per ton, Welsh at 36s.

Copper Sulphate—Is quiet at £15 15s. per ton.

Linseed—Is strong in tone, with but little offering either on the spot or to arrive. The sales reported are all of Turkish seed at 33s. 6d. to 34s. 6d. per 416 lbs. ex store, some 2000 bags in all.

Oils.—*Castor oils* are still at high figures, Calcutta, "good seconds," is offering at 3⅞d. to 3½d. per lb., Madras at 3½d., and French, first pressure, at 3½d. *ex* store, and 3⅞d. *ex* quay. *Olive oils*, whilst still high in price, have not been sold to any great extent lately, as stocks are very low and holders are not anxious to sell out. Candia oil has been disposed of at £30 10s. per tun, and Seville at £29 10s. to £30 10s. *Linseed oil* of Liverpool pressure has advanced to 17s. 6d. and 18s. per cwt., at which rates it is firmly held. *Cottonseed oil* is scarce, and in consequence has advanced to 16s. 6d. and 17s. per cwt. *Spirits of turpentine* is in good demand at 21s. 6d. per cwt.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

George Sewell Sutton, Chemist and Druggist, 31, Stoke Road, Gosport.

Edward George Marke, Chemist and Druggist, 2, Victoria Place, Gravelly Hill, Warwickshire.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Mason and Fraser, Physicians, Apothecaries, and Surgeons, 36, Pelly Road, Plaistow. The practice will be carried on and debts received and paid by John Gillie Fraser.

Spencers and Howorth, Mineral Water Manufacturers, Oswald Street, Accrington. The business will be carried and debts received and paid by Richard and James Spencer.

Emerson and Barker, Surgeons, Apothecaries and Accoucheurs, Wantage, Berks.

MARRIAGES.

Richmond—Bates.—On August 4, at St. Mary's Church, Oldham, by the Rev. Reginald Harvey, M.A., Joseph Frederick, fourth son of the late William Richmond, to Betsy Helen, A.P.S., and eldest daughter of Hiram Bates, M.P.S., Chemist, Oldham.

M'Gibbon—Shaw.—On August 10, at Saffronhall, Hamilton, by the Rev. H. M. Hamilton, D.D., assisted by the Rev. J. MacGibbon, B.D., Blackford (cousin of the bridegroom), George Laidlaw M'Gibbon, Chemist and Druggist, Edinburgh, to Annabella M'Kenzie, third daughter of James Shaw.

LATE ADVERTISEMENT.

Engagement Wanted.

Temporary Engagement desired by a Qualified chemist. Pharmacist, 51, High Holborn, W.C.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C.; where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Dozen each Williams', Carter's, Cockle's Pills, Steedman's Powders, 2s. 9d.; C. B.'s Chlorodyne, small, 3s., 12s.; half dozens, 1s., 16s. Post free. Cash with order or reference. Send for list.—Eastman, Forest Lane, Stratford.

Photographic Mounts, cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000 Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s. 100. Samples free.—Peck, East Dereham, Norfolk.

Surplus Stock.—1 cwt. each acid oxalic, aloes barb., pulv. curcumæ, loose black-lead, Servants' Friend black-lead in 2-oz. packets; quantity Chapman's oils, 1s. Aspinall's enamels, 6d. and 1s. metallic paint, 5-pt. percolator (Y. Glass Co.); what offers?—Fletcher, Indigestion Cure Warehouse, Eckington, Derbyshire.

Overstocked—20 lbs. very nice oil of lemon, the lot at 2s. 6d. lb.; smaller quantity, 2s. 9d., free on rail; sample, 3 stamps. No. 2 Wilcox gun metal pump, practically new, only used for water, 25s.—Moss, Chemist, Little Lever, Bolton.

Surplus Stock.—Carriage paid, 3 ozs. antipyrin, 8s.; 1 doz. Carter's Liver Pills, 10s. 3d.; ½ doz. Seigel's Pills, 4s. 5d.; ½ doz Williams' Pink Pills, 11s. 6d.; ½ doz. 2s. 9d. Steedman's, 10s. 6d.; ½ doz. Towles' Pills, 4s. 3d.; ½ doz. Holloway's Pills, 3s. 1d. Or exchange Dental or Photographic Apparatus.—Burge, Fernhead Road, Paddington.

Twenty Black Store Bottles, W.M., stoppered, 1 gall. size; Enterprise tincture press; brass counter-scales, 12-in. beam; large bell-metal mortar and pestle.—Phillips, Chemist, Wolverhampton.

Soda-water Trolley; a boy of eight can easily convey 3 dozen syphons and cases any distance; 35s., carriage paid.—Arthur and Co., Cambridge.

Proprietary Article.

Marza Wine, 32s. 5d., carriage paid.—Sussex Drug Company (Limited), 135, Queen's Road, Brighton.

Books.

Attfield's 'Chemistry,' Bentley's 'Botany,' Lindley's 'Botany,' Tome's 'Dental Surgery,' Heath's 'Minor Surgery and Bandaging.' What offers?—Winhall, 2, Tennyson Buildings, Ashley Road, Parkstone.

Vine's 'Botany,' 9s.; Oliver's 'Systematic'; Maish's 'Materia Medica.' Also microscope by Crouch, with 1 in. and 1/6th objectives, in mahogany case; price £3 17s. 6d.—W. E. M., 28, Gracechurch Street, City.

Minor.—How to pass easily! cheaply! well! Stamped envelope.—Laws, Chemist, Streatham, S.W.

What offers for *Pharmaceutical Journals* from March 2, 1895, to June 26, 1897, 2 Nos. missing.—Archibald T. Jones, 214, Little Moor Lane, Oldham.

OFFERED—(*continued*).

Optical and Photographic.

Student's Microscope, by Crouch; 1-in. and ⅛-in objectives; 2 eye-pieces; £3 10s.—Hewitt, Eastgate, Rochester.

Shop Fittings.

Complete Fixtures and Utensils, suitable for branch business, bottles, pink dome-top jars, counter-cases, etc.—Smith, Chemist, Gosport.

Stock and Fixtures for immediate disposal, at valuation; would suit a branch or otherwise.—Write to E. and I. J. Dadley, 21, Cartergate, Nottingham.

Apparatus.

Suppository, bougie and pessary mould, each Maw's pattern, no further use, under cost. Particulars from Warnes, Chemist, 233, Gray's Inn Road, W.C.

WANTED.

Formula Wanted for pure white petroleum emulsion. Equal in appearance and inseparability to Angier's; reasonable price.—Bayley, Chemist, Aston, Birmingham.

Green's 'Botany' and Newth's 'Chemistry,' state editions. Particulars to—Hermann Rouff, Reading.

Mortars, pill-machine, and general utensils for new branch.—Jones, Sutton Coldfield.

NEWS IN BRIEF.

IXth International Pharmaceutical Congress.—At the moment of going to press we learn that it has been decided to hold the next International Pharmaceutical Congress at Paris, three years hence.

Mr. William Botham, son of Mr. J. Botham, pharmaceutical chemist, Manchester, has passed the recent matriculation examination of the London University.

The Austrian Apotheker Verein holds its annual meeting at Lemberg, from September 5 to 9 inclusive.

Mr. Robert Lionel Sherlock, of St. Helens, student of the Pharmaceutical Society, is first on the list of successful candidates competing for the Department of Science and Art Royal Exhibition Scholarships.

Mr. E. L. N. St. Cyr, pharmaceutical chemist, member of the Pharmaceutical Society of Great Britain and of the Society of Arts of London, a former student of the School of Pharmacy, etc., has been decorated by the Government of the United States of Venezuela as "Commander of the Distinguished Order of Bolivar," for distinguished services rendered to suffering humanity and for services rendered to the Government.

Newcastle Chemist's Death in Switzerland.—The death of Mr. George Frater, chemist and druggist, Newcastle-on-Tyne, is reported from Switzerland as having taken place under most mysterious circumstances. Mr. Frater was travelling alone, and apparently was attacked near Annemasse and robbed of all his money. He was found lying unconscious in the roadway and was conveyed to a hotel, where he died after lingering a few days. Two men have been arrested on the charge of being concerned in the robbery.

Singular Death from Poisoning.—Kate Carrigan, 25, of Weaste, on Friday, August 6, was engaged in washing some blankets. She got a bottle containing ammonia, and finding it difficult to get the cork out, placed it between her teeth. When the cork left the bottle, a quantity of the ammonia went into her mouth. She was conveyed to the Salford Hospital, where death took place early on Monday, August 9.

Messrs. Burroughs, Wellcome & Co. have received a cablegram informing them that they have been awarded ten gold medals at the Queensland Exhibition. These medals were awarded for their exhibit of goods, comprising Kepler Malt Extract, Kepler Solution, Hazeline, and "Tabloid" and "Soloid" compressed chemical and medicinal substances.

A Medical Officer and Dispenser's Salary.—At the meeting of the Hampstead Board of Guardians on August 12, a letter was read from the Local Government Board, in reference to the Guardians' proposal to appoint a resident medical officer at the workhouse infirmary, at a salary of £40 per annum, with board and apartments. He was to have the double qualification, and would be required, in addition to his medical work, to do all the dispensing required for the workhouse. The Local Government Board now stated that the salary of £40 was inadequate, and that the Board considered that it should be £60, or if he had to do dispensing, £80 per annum. Mr. B. A. Lyon, the vice-chairman, remarked that the subject would require careful reconsideration (*sic*). It was decided to postpone the consideration of the letter until after the holidays.—*Daily Telegraph.*

The Sale and Use of Petroleum Hair-wash has experienced a decided check since the inquest held after the fatal accident to a lady reported in our columns a few weeks ago. At Westminster Police-court two West-end hairdressers have been summoned by the London County Council under the Petroleum Acts of 1871 and 1879, for storing petroleum contrary to the regulations, and without a licence from the local authority. They were each fined 20*s.* and two guineas costs. The Public Control Department of the Council has also issued a public notice intimating that petroleum hair-wash is petroleum within the meaning of the Petroleum Acts, and can only be lawfully kept in accordance with the provisions of those Acts. The notice continues:—"The liquid, which is also called 'Antiseptique Liquide' 'Dry Shampoo,' 'Petrole,' 'Le Fin de Siècle,' and by other names, consists chiefly of petroleum spirit, which freely gives off inflammable vapour at ordinary temperatures. This vapour flashes or fires on contact with light, fire or electricity, not only in the immediate vicinity of the liquid, but at considerable distances therefrom. Being heavier than atmospheric air, the vapour will, under favourable conditions, travel or flow considerable distances, and it has been known to ignite at over 40 feet from the point from which it proceeded. Several accidents have occurred from the petroleum spirit having been fired by electricity generated in cleaning clothes, and some of the accidents in using petroleum hair-wash may have arisen from electricity generated in applying the wash to the hair. The application of petroleum spirit to the hair is so exceptionally dangerous that it is hoped perfumers and hairdressers will do their best to discourage the practice."

Accidental Poisoning Cases have been rather numerous during the present month. A Liverpool a boy 15 months old, while playing in a room, discovered several bottles on the shelf, one of them contained carbolic acid, and the child drank some of the contents before an elder sister, who was in the room, perceived what was taking place. Death occurred the following morning. Another boy, aged 8, at Southport, made a decoction of "Spanish juice" in a bottle and put it down to settle. It was dark at the time, and on taking a drink he picked up a bottle of carbolic acid by mistake. He died three hours later. Carbolic acid was also responsible for the death of a girl, aged 9, at Birmingham. Finding some liquid in a ginger-beer bottle which was about to be washed, she drank a quantity of it with a fatal result. A piece of bread which had been soaked in rat poison was picked up from the ground and eaten by a two-year-old child at Newlyn, near Penzance. An inquest was subsequently held, when it was suggested that the bread had been carried by rats to the place where the child found it. Another case was that of a girl, aged 15, employed by a gilder, in whose business potassium cyanide in solution is frequently used. At an inquest held with respect to her death it transpired that the shop in which the girl worked was a small one containing a number of vats of cyanide of potassium, and the theory was advanced that she had mistaken a vessel containing the poison for a tub of water, and had partaken of it.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

August 19, 1897.

Business has been distinctly quiet during the past week, the changes of any importance which have taken place during this period having been practically *nil*. Quinine is dearer with a further improvement confidently anticipated. The fall in price of silver has had its effect on the price of the salts. Opium and Morphia dull. Codeia steady. Sulphonal, Phenacetin, and Acetanilid without change. Cocain quiet. Glycerin and Cod-liver Oil dull. Citric and Tartaric and Cream of Tartar steady. Carbolic quiet. We quote as follows:—

Acid Boracic—Very quiet, and tending lower, *crystals* being quoted at £24, and *powder*, £26 per ton.

Acid Carbolic—Is quiet but steady at 7d. for the first make 35°-36° *ice crystal* in quantity and in bulk. Other qualities and packing in proportion. *Liquid*: Pale colour 95 per cent. in 40 gallon casks 1s. 2d. to 1s. 3d. per gallon.

Acid Chrysophanic.—Some makers continue to press for orders, and would perhaps accept somewhat less than 10s. per lb. for larger quantity. Raw material of good quality remains scarce and comparatively dear.

Acid Citric—Continues very scarce on the spot, prices nominally being unchanged at 1s. 2d. to 1s. 2½d. per lb., according to make.

Acid Tartaric—Is firm and scarce. *English* on the spot, 1s. 2d. per lb.; *Foreign*, 1s. 1½d. per lb.

Ammonia Compounds.—*Sulphate* steady; grey prompt, 24 per cent., London, £7 10s.; Hull, £7 10s.; Leith, £7 8s. 9d. to £7 10s.; Beckton terms, £7 6s. 3d. to £7 7s. 6d. *Sulpho-Cyanide*: 10½d. to 1s. per lb. *Oxalate*: 6¼d. for crystals. *Bromide*: 2s. to 2s. 1d. *Iodide*: 14s. 6d. per lb. *Chloride*, free from metals, 98 per cent., 25s. to 27s. 6d.; chemically pure quality, 30s. to 32s. 6d. *Sal Ammoniac*: 30s. to 35s. for sublimed lumps.

Borax—Continues exceedingly dull of sale, and the lower prices which are again quoted do not encourage buyers to come on the market. *Crystals* are quoted £14 10s. per ton, with *powder* at 10s. per ton more.

Coal Tar Distillation Products.—*Toluol*: Pure, 3s. 4d. *Benzole*: 90 per cent., 2s. 1d. *Solvent naphtha*: 95 per cent. at 160° C., 2s. per gallon.

Chamomiles—Are lower at 36s. per cwt. for finest Belgian flowers, down to 30s. for fair.

Cinchona.—The offerings at the London auctions on Tuesday were again small, being only 856 packages of all descriptions. There was a very steady demand, and the bulk sold at fully firm rates. *Ceylon*: Of 167 bales 58 sold, Ledgeriana good original chips, 5d.; fair, 3¾d. to 4⅛d. per lb. *Columbian*: Of 133 bales 126 sold, soft, 2⅛d. per lb. *East Indian*: Of 441 bales 251 sold, Ledgeriana stem, 5¼d.; branch, 2⅞d. to 3½d.; branch and stem, 3¼d.; root, 3⅞d.; good renewed, 4¼d.; Crown original, 2d. to 3½d.; renewed, 4¼d.; red original stem, 2⅞d. to 3d.; renewed, 4⅝d. per lb.; mixed, 2⅞d. per lb. *Java*: 115 packages sold, Ledgeriana stem, 3⅜d. to 6⅜d.; branch, 4d. per lb.

Cloves.—276 bales *Zanzibar* in auction all bought in at 2¼d. to 2⅜d. Also 37 cases picked *Penang* bought in at 8d. to 10d. Privately *Zanzibar* quiet, closing buyers August to October delivery, 2$\frac{7}{16}$d., and October to December at 2$\frac{3}{8}$d.

Cocaine—Is quiet at 9s. 3d. to 9s. 6d. per oz. from second hand, at which latter price makers would probably also be willing to book orders to a moderate extent.

Cod-liver Oil.—There is practically no business doing in this article, and prices are quite nominal at 65s to 70s. per barrel for finest non-congealing *Norwegian*, but with a moderate demand prices would in all probability advance. For *Newfoundland* oil 2s. 3d. per gallon is the nominal quotation, but probably rather less would be taken for quantity.

Codeia—Is steady at late rate, say 12s. to 12s. 6d. per oz. according to quantity.

Cream of Tartar—Is quiet owing to slack demand, but the position of the article is so strong that it only requires a better enquiry to send prices up. First white French *crystals* are quoted 77s. to 77s. 6d. per cwt., with *powder* at 79s. to 81s. per cwt.

Ginger.—Of 447 bags rough *Cochin*, 108 bags fair washed sold at 25s. to 25s. 6d. Cut kinds mostly bought in, A 80s. to 85s., B 70s., C 48s.; a few cases native sold at 31s. 6d. to 35s. *Bengal* bought in at 16s. and *Japan* at 14s. About 90 barrels *Jamaica* sold, common dark 68s. to 70s. 6d., small washed 71s. to 73s., middling 74s. to 78s., good bright 82s.

Glycerin.—Some good contracts are said to have been made for *German* brands of doubly distilled chemically pure s.g. 126° in tins and cases at 52s. 6d. per cwt. in spite of lower quotations by some English makers. For the more approved brands, such as *Scherings* and *B. & S.* higher prices are asked.

Iodine—Unchanged at 7¼d. *Iodides* also remaining unaltered.

Mercurials.—Makers have not altered their prices in spite of the reduction in the value of the metal, asserting that their prices are still the same as when quicksilver was previously quoted £6 17s. 6d. per bottle.

Morphia.—Price remains nominally 4s. 7d. for the *Hydrochlorate salt* in quantity and in bulk.

Oils (Fixed) and Spirits.—*Linseed*: dull and easier for forward; on the spot £16 5s. for pipes, and £16 10s. for barrels. *Rape*: refined on the spot dearer at £28 5s. *Cotton*: unchanged at £16 to £17, according to make and package. *Coconut*: firm and dearer. *Ceylon*: on the spot £23 for pipes, and £23 15s. for hogsheads. *Cochin*, spot, £28; *Palm*, quiet, £22 10s. *Turpentine*: quiet and easier, American on the spot 20s. 7½d. per cwt. *Petroleum Oil*: flat, *Russian*, 4⅞d.; *American*, 4⅞d.; water white, 6⅛d. per gallon. *Petroleum Spirit*: American, 5½d. to 6d.; deodorised, 6¼d.

Opium.—Very dull at unchanged prices, the general opinion remaining that value will recede in the not too distant future.

Potash Compounds.—*Chlorate*: 4⅛d. to 4¼d. *Bichromate*: 4⅝d. to 4¾d. *Prussiate*: 5½d. to 6d. *Citrate*: 1s. 2d. to 1s. 3d. *Bromide*: 1s. 8d. to 1s. 9d. *Bicarbonate*: 40s. for English; 30s. for foreign. *Carbonate*: 22s. 6d. to 27s. 6d., according to quality. *Cyanide*: 1s. 8d. for P.B., and 1s. for the 98 to 100 per cent. mining quality. *Hypophosphite*: 3s. 6d. per lb. *Iodide*: 9s. 9d. to 10s. 3d., according to quantity. *Permanganate*: 70s. to 75s. for small crystals; large crystals, 5s. more.

Quicksilver—Is quiet at the late reduction, first hands still asking £6 17s. 6d. per bottle, with second-hand holders offering at 6d. less. The imports this year have been far in excess of previous years, whilst the exports have fallen off considerably.

Quillaia Bark—Is dearer at £20 per ton, with but few sellers.

Quinine.—Although at the moment quiet is very firm, and a few thousand ounces have changed hands at 9½d. per oz. for *B. & S.* and for *Brunswick* makes. The present position appears to be ripe for an advance, and the more so as the principal makers are declining to book orders, refusing even to name a price.

Resorcin.—Makers have reduced price to 5s. 6d. per lb. for cwt. lots in bulk.

Shellac—Is very quiet, although firm, with small sales on the basis of 62s. to 63s. for *TN*, with buyers October-December steamer at 60s. 6d. per cwt. *c.i.f.* For delivery there are buyers of August at 62s., and for September a small business has been done at 64s., with further sellers at this price.

Senega Root—Does not improve in value. For *Western* 1s. 1d. per lb. is asked on the spot, whilst for forward delivery 10½d., per lb., *c.i.f.* terms, is quoted.

Serpentaria Root—Is quiet, but firmly held on the spot at 1s. per lb.

Soda Compounds.—*Crystals*: 52s. 6d. per ton ex-ship. *Caustic*: 70 per cent., £8; 60 per cent., £7. *Bicarbonate*: 8s. for commercial and 18s. for the free-from-monocarbonate quality. *Carbonate*: P.B., 10s. to 12s. per cwt. *Bromide*: 2s. to 2s. 1d. per lb. *Iodide*: 11s. 4d. to 11s. 7d. as to quantity. *Hyposulphite*: 6s. to 8s. per cwt. according to make and packing.

Spices (Various).—*Chillies* dull; 100 bales *Zanzibar* bought in at 30s. *Capsicums*: 3 bales *Nepaul* sold; long yellow, 28s.; round, 24s. *Cassia lignea* quiet at 43s. 6d. *Mace* steady; 10 cases *Penang* sold; middling, 1s. 6d.; bold bright, 2s. to 2s. 4d.; 26 packages *West India* sold at 1s. 3d. to 1s. 7d. *Nutmegs* in better demand and rates firmer, to 1s. dearer for good. *Black Pepper*: *Singapore* sold at 3d. to 3⅛d.; *Aleppy* bought in at 3⅛d.; *Bombay* sold at 3d. *White Pepper*: 47 bags fine bright bold *Singapore* sold at 5⅞d. *Pimento* is firmer; 208 bags sold at 2⅛d.

Sulphate of Copper—Quiet at £15 10s. to £16 10s. per ton, according to make and package.

The drug auctions went off without very much animation, a not inconsiderable number of the lots offered failing to find purchasers. Ipecacuanha was steady. Cardamoms very firm, and Sarsaparilla slightly easier, beyond which there are no particular changes to report. The following are the particulars up to time when our report left:—

Aloes.—Of Cape 23 cases were offered; fair hard bright sold at 21s. 6d. to 22s. per cwt.; softish and drossy at 15s. to 19s. *Curacao*: 128 boxes fair dark held for 15s. *Socotrine*: 85 kegs and 37 cases were not reached when we went to press; 16 cases of only very medium quality, in skins, met with no competition, and were bought in at 70s. per cwt.

Ambergris.—4 tins, part dark and undeveloped, were held for 50s. per oz.

Aniseed.— 50 bags fair *Syrian*, part sold at 16s., while for 97 bags fair *Russian* 16s. 6d. per cwt was required.

Asafetida.—211 cases were catalogued, of which quantity 36 had been shown before. Among the new arrivals some very good quality was shown, but the parcel was not offered until after our report left.

Balsam Copaiba.—26 cases held for 2s. 2d., 1 case of inferior quality selling at 1s. 6d. per lb.

Balsam Peru.—5 cases were held for 7s. 6d. per lb.

Belladonna Root.—2 bales held for 50s. per cwt.

Buchu Leaves.—Green rounds sold at 3½d., ditto slightly yellow being held for 3¼d., while fairly green longs fetched 4½d. per lb.

Canella Alba.—3 bales fair quality were taken out at 25s. per cwt

Cardamoms.—These were represented by 195 cases, which met with strong competition, and practically the whole sold at full to dearer rates, fine bold pale *Ceylon-Mysore* selling at 3s. 7d. to 3s. 9d. per lb.; good bold, 3s. 3d. to 3s. 4d.; and small, 2s. 9d. to 2s. 11d.; decorticated, 2s. 9d. to 3s. 1d. per lb., according to quality.

Cascara Sagrada.—For 87 bales of fair

quality the priee required was 13s. 6d. per cwt.

Camphor.—1 cask *refined* was bought in at 1s. 3d. per lb.

Cascarilla Bark.—Of 86 packages part sold at 45s. for fair bold ; fair thin held for 40s. ; and thin twiggy for 25s. to 35s., part selling at 27s. 6d. per ewt.

Cassia Fistula. — For 38 bales fair medium to bold West Indian there was no bid, 16 packages inferior were taken out at 10s. per cwt., only 2s. 6d. being bid for thin mouldy.

Cassia Fistula Beans.—8 cases were taken out, price not being mentioned.

China Star Aniseed.—49 cases were taken out at 90s. per cwt.

Chinese Vermilion.—2 cases sold at 2s. 2d. per lb.

Civet.—10 horns just imported were offered in auction. Quality was good, but there was no demand, and the lot was bought in at 20s. per oz. A further 3 horns old import were also bought in.

Colocynth.—8 cases fair small to medium pale *Turkey* were held for 1s. 3d. per lb.

Colombo Root.—19 bales poor washed fetched 28s. per cwt.

Cubebs.—10 bags medium *Bombay* were held for 24s., and 32 bags fair *Singapore* for 30s. per cwt.

Cus Cus Root.—23 bales cleaned were held for 30s. per cwt.

Cuttle Fish.—3 casks very small sold at 2½d. per lb.

Dill Seed.—4 bags held for 18s. per cwt.

Dragon's Blood.—Of 26 cases part sold at £5 15s. for medium bright lump to £6 7s. 6d. to £6 10s. for dull slabs, balance being held for 65s. to £7 according to quality.

Ergot of Rye.—24 bags fair sound *Russian* held for 6d. per lb. ; very weevily *Spanish* for 4d., *ditto* bold slightly weevily for 9d. per lb.

Galangal Root.—100 bales fair bold sold at 25s. per ewt., subject to approval.

Gamboge.—5 cases good bright were bought in at £8 15s. per cwt.

Guaiacum—Was in large supply, 49 packages having lately arrived from New York. The bulk sold practically without reserve at 1s. 8d. per lb. for very fine glossy block, 1s. 6d. for good ditto, rather woody ditto 1s. 3d. down to 1½d. for very common.

Guaza.—10 robbins fair green tops, but rather dusty, were bought in at 3¾d. per lb.

Gum Ammoniacum.—11 cases, dark part blocky, part woody, were held for 30s. to 35s. per cwt.

Gum Arabic. —Good pale grain to bold was held for £14 to £15, fair grain fetching £6 17s. 6d. Good sorts part hard held for 85s , inferior ditto for 30s. per cwt.

Gum Benjamin.—Really fine free *Siam* was held for £18 to £20 17s. 6d., good fair block realising £15 and common ditto £ 10s. to £6 15s., lower quality being held for 60s. to 90s. Fair Penang part sold at £5 10s. to £7 5s., low ditto at 47s. 6d. to 52s. 6d.

Gum Elemi.—20 cases fair pale held for 26s. per ewt.

Gum Myrrh.—6 bags medium sorts were taken out, only 25s. being bid ; for another parcel of dusty sorts, 52s. 6d. was owner's idea of price ; fair sorts were held for 60s., and pale fair medium for £5 per cwt.

Gum Olibanum.—43 cases were taken out at 40s. to 52s. 6d. per cwt.

Honey.—Good *Jamaica* sold at 24s. to 25s., fine held for 27s., a bid of 25s. being refused. 74 cases fair *Californian* part sold at 30s. per cwt.

Ipecacuanha—Was in very moderate supply. Of 47 bales *Rio* only a few sold at 6s. 2d. to 6s. 4d. per lb., being a shade easier. There appeared more disposition to sell, but buyers held off. Of 18 packages *Carthagena* a few bales sold at 4s. 9d. per lb.

Japan Aconite Root.—14 bags were bought in at 28s. per cwt.

Kamala.—2 cases of fair quality were held for 5d. per lb.

Kola Nuts.—Fair quality but rather dull held for 4d., small very dull selling at 2½d. For fair bold fairly bright 5d. per lb. was the price.

Menthol.—2 cases good white dry cryst. *Kobayashi* brand were bought in at 6s. 3d. per lb.

Musk.—7 caddies *Tonquin* bought in at 50s. to 80s. per oz.

Oils (Essential).—*Cinnamon* : 2 cases were sold at 1s. 7d. per oz. *Cinnamon leaf* : About 20 cases were bought in, limit being 6d. *Laurel* : 1 case bought in, only 1s. per lb. being bid. *Peppermint* : 5 cases Dodge and Olcott sold without reserve at 4s. 6d. 10 cases *dementholised Japan* being bought in at 3s. *Eucalyptus* : For 10 cases fair Australian only 9d. was bid, price required being 1s. 3d. per lb.

Orange Peel.—6 cases old thin cut were held for 4d. to 6d. per lb.

Podophyllin Root.—For 3 bags a price of 50s. per cwt. was named.

Quince Seeds.—8 bags good *Cape* held at 1s. per lb., at which privately sales have been made.

Rhubarb.—5 cases rough wormy flat *high-dried* were held for 9d., medium to fair *ditto* for 1s. 1d. to 1s. 2d. ; medium round *Canton*, part sold at 1s. 4d. to 1s. 7d. ; good ditto held for 1s. 8d. to 1s. 10d. ; flat *ditto* for 1s. 3d. to 1s. 6d. ; good round and flat *Shensi* held for 1s. 6d. to 4s. per lb. according to quality.

Rose Oil.—5 bottles *East Indian* were held for 4d. per oz.

Sarsaparilla.—17 bales *Jamaica* held for 1s. 10d. to 2s. for 1 to 3*CCD* respectively ; 26 bales *ditto* selling at easier rates, viz., 1s. 8d. to 1s. 11d. per lb.

Senna.—Two pareels of *Tinnevelly* of reeent arrival, and supposed to be of new crop, were offered, but consisted of very small spotted leaves, which, however, sold at full rates at from 1d. to 1½d. per lb. Of the second-hand offerings only part sold at full rates. Further reports from India state that the quality of the new crop is exceedingly poor, and will not be of average extent. *Alexandrian* leaves are in full supply and demand is slow.

Strophanthus Seed.—6 bags fair *Kombé* bought in at 3s. 3d. per lb.

Tamarinds.—12 packages *West Indian* held for 8s., and 50 casks *East Indian* for 9s. per cwt.

Tragacanth.—17 cases were bought in at £4 to £8 per cwt.

Turmeric.—14 bags fair bright *Madras* sold, subject to approval, at 16s. 6d., fair *Cochin* being held for 13s. per cwt.

Vanilloes—Were represented by 178 tins, the bulk selling at full to dearer rates.

Wax.—Fair *Australian* was bought in at £6 10s., medium *East Indian* at £5 to £6. Fair *Zanzibar* realising £5 10s. to £5 17s. 6d., fair to good *Madagascar* held for £6, and 6 casks *Mogador* for 82s. 6d. per ewt.

MANCHESTER CHEMICAL REPORT.

August 18, 1897.

There is again little ehange to report in heavy chemicals, which are firmly held for home aecount. In order to maintain prices as far as possible, the output is being restricted both in the Lancashire and Cheshire centres. Meantime Caustic Soda of high strength is inquired for, and Bleaching Powder is fairly firm at £6 2s. 6d. to £6 10s. per ton for softwood casks on rails. Ammonia Alkali is still quoted £3 17s. 6d. per ton, bags, on rails. Alum is very quiet and about half-crown lower in quantity. Sulphate of Copper is rather firmer at £16 5s. to £16 10s. for best brands here. Green Copperas is in better demand for local eonsumption, but for export it is rather quiet at 35s. *f.a.s.* Manchester, and 40s. to 42s. *f.o.b.* Liverpool. Benzols and Naphthas are steady. Pitch low, 17s. being quoted *f.a.s.* Ship Canal.

LIVERPOOL REPORT.

August 18, 1897.

The sales during the week include small quantities of Turkish Linseed at good rates. Turkish Canaryseed, whose position is improving, and for which better prices are expected, and Beeswax, good prices for which still rule, both for African and South American varieties. West African produce has been well to the fore, quantities of Sierra Leone Ginger finding purchasers at full rates, with sales reported of low quality, Sierra Leone Chillies, and dried Kola Nuts. Oils generally are practically unchanged in price since last week, the market for Castor, Olive, Linseed, and Cottonseed Oils being very steady, with a good demand at full prices. Quillaya Bark is particularly firm, Chilian bringing as much as £20 a ton.

Ammonium Salts.—*Carbonate* is quiet at 3d. per lb. *Sal ammoniac* : Selling at 33s. and 31s. per cwt., and *Sulphate* at £7 15s. per ton.

Beeswax—Maintains its prices, 9 packages of Gambia having been sold at £6 10s. per cwt., and 12 sacks of Chilian at £6 15s. per cwt.

Bleaching Powder—Continues quiet at £6 12s. 6d. per ton *f.o.b.* for hard.

Canaryseed—Gives indications of recovering itself, holders refusing business at recent unremunerative rates. 100 bags of good Turkish were sold at 24s. per 464 lbs. ; 200 bags inferior at 23s., and 50 bags of fine Spanish seed at 37s. per 464 lbs.

Chillies—Of common quality sold at 17s. per cwt.

Copperas—Is scarce and firmly held, Lancashire at 38s. per ton, and Welsh at 36s.

Copper Sulphate—Offers no feature worthy of notice, and is still at £15 15s. per ton.

Ginger—Has been selling at 15s. to 17s.

per cwt. for Sierra Leone, according to quality.

Honey.—50 barrels of Pile 2 Chilian were bought up at 21s. 6d. to 22s. per cwt., and about 100 barrels of low grade Peruvian sold at 19s. 6d. per cwt.

Kola Nuts—Which have been somewhat short here lately, have sold to the extent of 45 packages of dried nuts at from 2¾d. to 3¼d. per lb.

Linseed—Is exceedingly firm in all positions with little offering, and no evident inclination for business on the part of holder even at present rates. Some 1500 bags of Turkish seed have been disposed of at 34s. 6d. per 416 lbs.

Oils (Fixed) and Spirits.—*Castor oils* are doing a fair business at last week's prices with a good inquiry. Calcutta and Madras are selling at 3½d. per lb. and French 1st pressure at 3⅞d. to 3½d. per lb. *Olive oils* are still in small compass, with firm prices and a strong market. Sales of Seville are reported at £29 10s. to £30 10s. per tun; Candia at £30 10s. to £31; and Gallipoli at £37 10s. *Linseed oil* firmly maintains its recent advance to 17s. 6d. and 18s. per cwt. for Liverpool pressed oils. *Cottonseed oil* is unchanged and in good demand at 16s. 6d. to 17s. per cwt. *Spirits of turpentine* rose to 21s. 9d. early in the week, but have now come down to 21s. 6d. per cwt., at which price it is steady, with a slightly quieter demand.

Potash Salts.—*Potashes*: 19s. per cwt. *Pearlashes*: 30s. per cwt. *Chlorate*: 4d. per lb. *Saltpetre*: 21s. 6d. per cwt.

Cream of Tartar—Is slow of sale and unchanged at 77s. per cwt.

Quillaya Bark.—Chilian has sold at £20 per ton.

MARRIAGE.

Turner—Harris.—On August 16, at St. Cuthbert's Church, Thetford, by the Rev. William G. Mabin, Vicar of St. Andrew's, Kilverstone, William Spencer Turner, pharmaceutical chemist, Willingham, to Annie, fourth daughter of Edwin Harris, of Thetford.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Curtis and Falkner, Surgeons and General Medical Practitioners, Shalford, near Guildford. Debts will be received and paid by Wilfred Curtis.

Watts and Flook, Photographers, 48, Queen's Road, Bristol. Debts will be received and paid by Thomas Henry Watts.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

George Rainsford and Frank Cartwright (trading as Rainsford and Cartwright), Mineral Water Manufacturers, Chester Road, Erdington, Warwickshire.

John Williams, Chemist and Veterinary Surgeon, 25, George Street, Pontypool.

Elizabeth Atkinson (trading as Elise Duval and the American Photo Co.), Photographer, 84, Cross Lane, Salford, formerly carrying on the same business in co-partnership with Ernest Conway Hall and Walter Wells Bowman, under the style of Brooks and Co., at 60 and 62, Oldham Street, Manchester, and at 84, Cross Lane, Salford.

Llewellyn Vosper Rees (trading as Rees and Co.), Chemist, 11, Woodwell Crescent, St. George's Road, Bristol.

NEW BOOKS AND NEW EDITIONS.

"A New System of Medicine by Many Writers.' Edited by Thomas Clifford Allbutt. Vol. III. Pp. 12+1004. 8vo. 25s. net. London: Macmillan. 1897.

"Electric Movement in Air and Water, with Theoretical Inferences." By Lord Armstrong. Illustrated. Pp. 55. Imp. 4to., cloth. 30s. net. London: Smith, Elder. 1897.

"An Account of an Investigation as to Short Period Cyclical Changes in the Magnetic Condition of the Earth and in the Distribution of Temperature on its Surface." By Joseph Baxendell. Pp. 7. 8vo., sewed. 1s. net. London: W. Wesley. 1897.

"A Contribution to the Study of (I.) Some of the Decussating Tracts of the Mid and Inter-Brain, (II.) of the Pyramidal System in the Mesencephalon and Bulb." By Rupert Boyce. 'Phil. Trans,' B, vol. clxxxviii. Pp. 211+221, sewed. 1s. London: Dulau. 1897.

"Outlines of Veterinary Anatomy." By O'Charnock Bradley. 3 Parts in one Vol. Illustrated. Pp. 596. Cr. 8vo., cloth. 10s. 6d. London: Baillière. 1897.

"Atlas of Human Histology." By Dr. Arnold Brass and Dr. R. A. Young. 66 plates in colours. Pp. 160. Letterpress, sm. 4to., half mor. 31s. 6d. net. London: Baillière. 1897.

"Diet and Cookery for Common Ailments." By a Fellow of the Royal College of Physicians and Phyllis Browne. Cheap edition. 8vo., cloth. 2s. 6d. London: Cassell. 1897.

"Elementary Text-Book of Zoology." By W. Claus and A. Sedgwick. Vol. II. New edition, fully illustrated. 8vo., cloth. 16s. London: Sonnenschein. 1897.

"Diseases of Dogs": Their causes, symptoms, and treatment, for the use of amateurs. By Hugh Dalziel. Fourth edition. Entirely re-written and brought up to date. Illustrated. Pp. 150. Cr. 8vo., paper. 1s. London: Upcott Gill.

"The Pocket Therapist": A Concise Manual of Modern Treatment for Students and Junior Practitioners. By Dr. Thos. Stretch Dowse. Pp. 200. 12 mo., leather. 5s. net. London: Simpkin. 1897.

"Synoptical Flora of North America." By A. Gray and B. L. Robinson, vol. I., part I., fascicle II. Polypetalæ, from the Caryophyllaceæ to the Polygalaceæ. Pp. 7+300. 8vo., sewed. 11s. net. London: W. Wesley. 1897.

"A Manual of Botany." By J. Reynolds Green. Second Edition. Illustrated. Vol. I., Morphology and Anatomy. Pp. 12+406. Cr. 8vo., cloth. 7s. 6d. London: J. and A. Churchill. 1897

"Familiar Wild Flowers." By F. E. Hulme. Cheap edition, 5 vols. Illustrated. Pp. 160, and 40 coloured plates; each vol. ex. cr. 8vo., cloth. 3s. 6d each. London: Cassell. 1897.

"Good Health, or the Physiology of Dietetics and Massage." By F. C. Ireland. Pp. 234, cr. 8vo., cloth. 2s. 6d. net. London: Simpkin. 1897.

"Chlorosis, the Special Anæmia of Young Women: Its Causes, Pathology, and Treatment." By Dr. E. Lloyd Jones. 8vo., cloth. 2s. 6d. London: Baillière. 1897.

"The Spas of Wales: Their Medicinal and Curative Properties" By T. R. Roberts. Illustrated. Pp. 128. Cr. 8vo., boards. 1s. London: John Hogg. 1897.

"Electricity and Magnetism for Beginners." By F. W. Sanderson. Illustrated. Pp. 10+244. Globe 8vo., cloth. 2s. 6d. London: Macmillan. 1897.

"A Course of Practical Histology." By Professor Edward Albert Schafer. Second edition. Illustrated. Pp. 12+208. Cr. 8vo., cloth. 7s. 6d. London: Smith, Elder. 1897.

"A Treatise on the Medical and Surgical Diseases of Infancy and Childhood." By Dr. J. Lewis Smith. Eighth edition. Illustrated. Pp. 987. Large 8vo. 21s. London: H. K. Lewis. 1897.

"Excretory Irritation and the Action of Certain Internal Remedies on the Skin." By Dr. David Walsh. Pp. 68. 8vo., cloth. 3s. 6d. London: Baillière. 1897.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Splendid Soda-Water Machine, "Compactum," nearly new, plant in itself, turnover and syphon-fillers attached, water and pressure-gauges, no lime, no acid, no gasometer, 350 doz hand, 700 power, cost £50 1895, price only £35, no fault.—Norfolk Spa Co., Diss.

Two gross each 5 and 10-oz. egg-shape soda water bottles, new; offers or exchange.—P. P., 416, Higher Broughton, Manchester.

Overstocked.—20 lbs. very nice oil of lemon, the lot at 2s. 6d. lb.; smaller quantity, 2s. 9d., free on rail; sample, 3 stamps. No. 2 Wilcox gun metal pump, practically new, only used for water, 25s.—Moss, Chemist, Little Lever, Bolton.

Dozen each Williams', Carter's, Cockle's Pills, Steedman's Powders, 2s. 9d.; C. B.'s Chlorodyne, small, 3/12/; half dozens, 1/16/. Post free. Cash with order or reference. Send for list.—Eastman, Forest Lane, Stratford.

Spectacles, every sight required, bright as new same retailing own shop, 2s. 6d. each), 6 doz., 18s.; 1 doz., 4s. Mahogany half-plate camera, double extension, wide-angle movement, rise and fall, double book slide, splendid R R lens, Iris diaphragm, Thorton-Pickard time and inst. shutter, with speed indicator, £3 5s.—Johnson, Chemist, Edward Street, New Cross.

Optical and Photographic.

Student's Microscope, by Crouch; 1-in. and ⅛-in. objectives; 2 eye-pieces; £3 10s.—Hewitt, Eastgate, Rochester.

Photographic Mounts, cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000. Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s. 100. Samples free.—Peck, East Dereham, Norfolk.

Books.

'Pharmaceutical Journal,' 1890–1897, 1892–1895 bound; 'Chem. and Drug. Diaries,' 1894 and 1897; Prantl and Vine's 'Botany,' 1886. What offers? or books in exchange.—Currie, 40, Barnton Street, Stirling.

Vine's 'Botany,' 9s.; Oliver's 'Systematic' Maish's 'Materia Medica.' Also microscope by Crouch, with 1 in. and 1/6th objectives, in mahogany case; price £3 17s. 6d.—W. E. M., 28, Gracechurch Street, City.

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d.—Tully, Chemist, Hastings.

Proprietary Article.

Marza Wine, 32s. 6d., carriage paid.—Sussex Drug Company (Limited), 135, Queen's Road, Brighton.

WANTED.

Newth's 'Inorganic Chemistry,' Reynolds' 'Organic Chemistry,' Green's 'Botany,' Vol. I., Ince's 'Latin Grammar'; second hand, cheap.—Bowden, 24, Southmoor Road, Oxford.

Any old stock of Winter's Rypophagon soap bought.—Apply, Dulley, Cromer.

Wanted. Best mahogany wall-cases, or glass doors for same, mirrors, recess glass-labelled shop-rounds, and glass shelving for window-enclosure.—Particulars, by letter, to Roadnight, Sidcup, Kent.

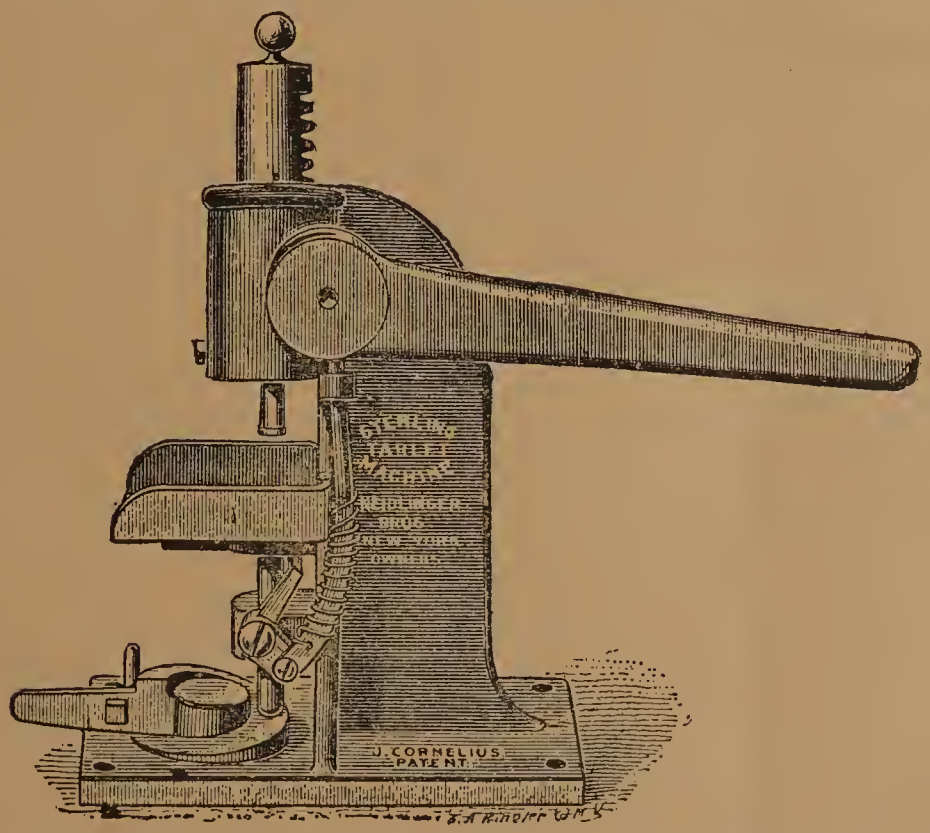
NEW IDEAS AND TRADE NOTES.

SOUTHALL'S BIBLICAL HERBARIUM.

Messrs. Southall Bros. and Barclay, Birmingham, have prepared a Biblical Herbarium with the especial object of illustrating the botany of the Bible. The cabinet contains over sixty carefully-selected specimens in card boxes and stoppered glass jars, and with a few exceptions, the whole of the plants and plant-products mentioned in the Bible are represented. A thirty-two page pamphlet, giving Biblical references, has been specially written to illustrate the collection, and is supplied with each cabinet. Price 40*s*. each.

THE "STERLING" TABLET MACHINE.

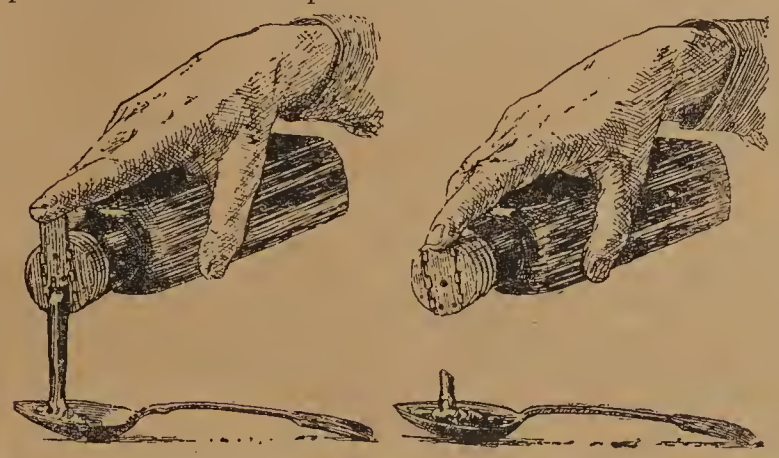
This handy little machine is designed for making compressed tablets in any quantity, and is especially adapted for use by retail chemists. It is one of the simplest machines that have yet been placed on the market; the working parts are made of steel, and the production of tablets by its aid is an extremely simple and satisfactory operation. It makes them of uniform weight and thickness, and by changing the dies the size of tablet can be altered in thirty seconds. The depth of the recess in which the tablet is compressed is regulated by means of a cam. After weighing out the powder for one tablet and adjusting the cam so the mould will contain just the amount of powder required, the tablets will



be made of uniform weight and thickness by simply filling the mould to the top. The powder is compressed by steady pressure of the handle, and the tablet is delivered automatically below the die, clear of all powder, and not on the platform covered with loose powder as in some other machines. The working parts are interchangeable, and will not break unless greatly abused. The dies and plungers being apart at all times when not in use, they cannot rust in each other, and with reasonable care the machine should last a great many years. The machine is guaranteed by the makers to do the work required, and is supplied by Marshalls', Limited, 27, Red Lion Square, London, at the low price of £2 2*s*. Each machine is supplied with two sets of dies and plungers, making tablets of 5/16th and 6/16th inches diameter respectively and of any thickness required. Other sizes can be made to order at a moderate cost.

A HANDY BOTTLE CAP.

Mr. Boisellier, of 86A, Leadenhall Street, E.C., sends a specimen of his new patent screw bottle caps for malt extract



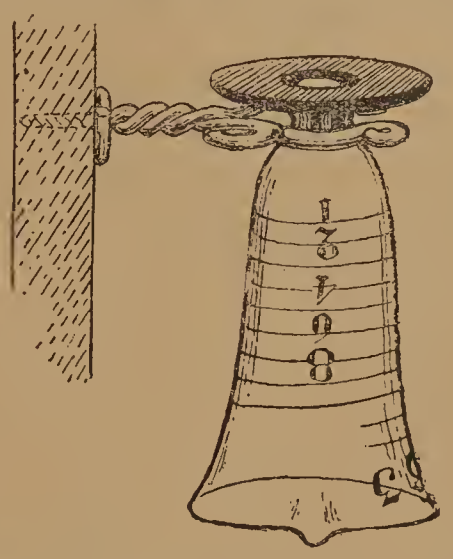
and other thick liquid preparations. The accompanying illustration shows the advantage of this ingenious contrivance and its method of working. We understand that arrangements have been made by some of the largest manufacturers of malt extract to supply the trade with their preparations in bottles fitted with this patent cap when desired.

PURE SOLUBLE COCOA.

The report of Mr. A. H. Allen shows that Van Houten's cocoa is pure soluble cocoa of the choicest quality, containing a maximum proportion of the nutritive and invigorating properties natural to the finest description of cocoa beans. It is rich in theobromine and in valuable mineral constituents. The system of manufacture adopted softens the naturally hard and tough particles of cocoa, thus developing the natural flavour, and so preparing the cocoa for use that a maximum of strength and nourishment are gained by its use.

THE "STERLING" GRADUATE AND RACK.

The "Sterling" Graduate is a glass graduated measure, accurately engraved, screwing into a base of hard rubber, unbreakable and highly polished. This base can be taken from one measure and placed on another. Hence, whilst the first cost of the Sterling Graduate is slightly higher than an ordinary glass measure, the saving in breakages will speedily cover the extra cost. The one-ounce size is supplied complete (verified) at 20*s*. per dozen, subject, or glasses only at 12*s*., and bases only at 8*s*. per dozen. Marshalls', Limited, of 27, Red Lion Square, W.C., are the European agents for the above, as well as for the "Sterling" Graduate Racks, a simple, practical, means of supporting measure glasses when not in use. These racks or clips are made of wire, heavily turned, and have no sharp edges. They are merely screwed into the wall or shelf as far apart as desired, and the measures are slipped in and kept free from risk of breakage better than by any other method. There are three sizes of the racks—small, medium, and



large—and they cost 1*s*. per set of five. They can be obtained to fit any other make of measure glass, if desired. Similar racks are made in an extra large size for supporting bicycles. One of these can easily be carried in the tool bag for use in country rides, and when screwed into a wall, fence, tree, or barn, it will hold any wheel under any circumstances, without the possibility of a slip. These larger racks cost 6*d*. each.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

August 26, 1897.

Business has been fairly active during the past week, considering that the holiday season is now in full swing, chief feature having been the continued fall in price of Silver and the firmness of Quinine. Cod-liver Oil is also the turn harder, Citric firm, Cocaine and Codeia steady, Morphia weak, Opium nominally firm. Tartaric and Cream of Tartar steady. Quicksilver and Mercurials unchanged. Shellac and Glycerin quiet. Pepper and Cloves firm and dearer; the following are the prices ruling for articles of chief interest:—

Acid Boracic—Dull and weak at 23s. to 24s. for *crystals*, and 25s. to 26s. for *powder*.

Acid Carbolic.—Market is quiet, the best make being still quoted 7d. for 35°-36° *ice crystal* in 2½-cwt. drums and overcasks, other qualities and packing in proportion. *Liquid*: 95 per cent., of pale colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

Acid Chrysophanic.—British makers are firm at 11s. 6d. to 12s. per lb., and even at this price are not anxious to commit themselves to any very large extent, in view of the scarcity and dearness of really good *Arraroba*. The foreign makers who were pressing for orders appear after all to have had very little available stock.

Acid Citric—Is very firm, and makers are still busy; price is unchanged at 1s. 2d. to 1s. 2½d. per lb.

Acid Tartaric—Continues in good demand at 1s. 2d. per lb. for *English* and 1s. 1½d. to 1s. 1¾d. per lb. for *Foreign*.

Aloes.—We hear that business has been done in *Socotrine* at 77s. 6d. per cwt. for kegs.

Ammonia Compounds.—*Sulphate*: Firm, grey prompt, 24 per cent. London, £7 12s. 6d.; Hull, £7 12s. 6d.; Leith, £7 12s. 6d.; Beckton terms, £7 8s. 9d. per ton. *Sulphocyanide*: 1s. per lb. *Oxalate*: 6½d. for crystals. *Bromide*: 2s. 1d. *Iodide*: 14s. 6d. *Chloride*: Free from metals, 98 per cent., 27s. 6d.; chemically pure, 32s. 6d. per cwt. *Sal ammoniac*: 35s. for sublimed lumps.

Bismuth.—Unchanged at 5s. for the metal and 4s. 10d. for the subnitrate in 5-cwt. lots.

Borax—Very dull and weak at 15s. for *crystals*, and 15s. 6d. for *powder*; for larger quantity even less would be accepted, but there are few buyers.

Camphor.—Quiet and unchanged, with but little doing either in *crude* or *refined*.

Castor Oil.—Market is very firm, first pressure *French* is quoted 3½d., *Madras* 3½d., and good seconds *Calcutta* at 3¾d., quantity offering being quite moderate.

Chamomiles—Are quoted 35s. for prompt shipment from the Continent.

Cloves.—Privately *Zanzibar* have been in good demand, and higher prices rule. Chief sales have been for January-March delivery at 2 13/32d. to 2 5/8d., October-December, 2 15/32d. At auction 100 bales *Zanzibar* withdrawn. A few bags *Amboyna* sold at 4d., and 4 cases *Penang*, without reserve, at 5¼d.

Coal Tar Distillation Products.—*Toluol*, pure: 3s. 3d.; *Benzole*, 50 per cent., 2s. 1d.; 90 per cent., 2s. 1d.; *Crude Naphtha*, 30 per cent. at 120° C., 1s. 2d.; *Solvent Naphtha*, 95 per cent. at 120° C., 1s. 11d. per gallon.

Cocaine.—Makers of the brands in chief demand decline to book larger contracts, although they would probably endeavour to keep their regular customers supplied. From second hand these best makes can be bought in moderate quantity at 9s. 3d. to 9s. 6d. per oz. It is still believed that any change in value of the article will be in an upward direction.

Codeia—Is steady at 12s. to 12s. 6d. per oz.; makers are still said to be behind-hand with their deliveries, while the season during which the article is in larger demand is now drawing nearer, consequently a decline in price would appear unlikely.

Cod-liver Oil.—Holders are rather firmer at 66s. to 70s. per barrel for non-freezing *Norwegian*, according to brand. It is thought that buyers will shortly come on the market when higher prices are anticipated.

Cream of Tartar—Is firmer to rather dearer, *crystals* being quoted 78s. and *powder* 80s. to 81s. per cwt.

Cutch—Steady with, however, but little doing.

Galls.—*China* quiet and unchanged; *Persian*: blues easier, greens and whites firm.

Gambier—Steady, at £13 6s. for good block for spot and to arrive.

Ginger.—*Cochin* continues very dull, 495 bags at auction being all bought in, fair washed rough at 28s., good brown rough at 33s., cut kinds mostly bought in, *A* 85s., *B* 68s., *C* 47s. 6d. A few cases good bright brown rough sold at 33s. 6d. to 34s. 6d. *Jamaica* also in slow demand; only 31 barrels sold at easy rates, middling washed 73s. to 74s., mouldy 70s. to 71s.

Glycerin.—A few cable orders have been received this week from the Cape, for use, it is said, in connection with the rinderpest scourge there. Prices remain about the same, with sellers of *English* brands at 51s. to 52s. per cwt., according to quantity, the best *German* brands being still held at more money.

Gum Asafetida.—A fair business has been done this week ex last auctions at full prices, the better qualities being for the United States and the balance for the continent.

Iodine—Remains at 7½d. per oz., *Iodines* being also unchanged.

Japan Wax—Is slow of sale at 42s. 6d. to 44s. per cwt. on the spot, and 37s. 6d for arrival *c.i.f.* terms.

Menthol—Is firm at 6s. 3d. to 6s. 6d. per lb. for good dry white *crystals* according to quantity.

Mercurials.—Makers have so far made no alteration in price, which remains 2s. 2d. for *Corrosive sublimate*, and 2s. 6d. for *Calomel* in half-ton lots.

Morphia.—Market remains weak, with but little doing, makers' price being 4s. 7d. for the *Hydrochlorate powder* for quantity and bulk packing.

Oils Essential.—*Lemon*: Reports from Messina state that stocks are reduced and with an active demand prices are firmer, 3s. 6d. is the nearest quotation on the spot. *Bergamot*: Steady at 8s. 3d. on the spot. *Orange*: Firmer at 5s. 7d. for the sweet and 7s. 3d. per lb. for the bitter. *Lavender*: French oils are dearer, Mont Blanc being quoted 6s. 6d., and spike 2s. 9d. per lb. *Peppermint*: *H.G.H.* firm at 6s. 4½d. to 6s. 6d. per lb. *Japan*: Steady at 3s. per lb. for the dementholised and 4s. per lb. for 40 per cent. *Star Aniseed*: Closes firmer at 8s. per lb. on the spot, and 7s. 9d. per lb. *c.i.f.*

Oils (Fixed and Spirits).—*Linseed*: £16 to £17. *Rape*: £28 10s. *Cotton*: £16 to £17. *Coconut*: Ceylon, £23 to £24. Cochin, £28. *Palm*: £23. *Turpentine*: 21s. 6d. per cwt. *Petroleum*: Russian, 4½d.; American, 5d.; Waterwhite, 6¼d. per gallon. *Refined Russian*, 5½d., and *American*, 6d. to 7d. per gallon, according to quality. *Petroleum spirit*: 6d.; *Deodorised*, 6½d.;

Opium.—Stocks here are said to be practically exhausted, while the arrivals of new crop have so far been comparatively quite trifling. Some is, however, expected here shortly, which, in view of the absence of stocks, will probably be held for a higher figure than the prospects of the new crop would appear to justify. At present 9s. 6d. per lb. is spoken of for fair *Druggists'*; later on, however, it is expected that same will be obtainable tangibly below this figure.

Oxalic Acid.—Steady at 3½d. to 3¾d., according to quantity, etc.

Phenacetin—Can still be purchased at 4s. to 4s. 3d. per lb., according to quantity; manufacturers state that this figure is not remunerative; an advance in price would therefore appear not improbable.

Potash Compounds. — *Chlorate*: 4½d. *Bichromate*: 4¾d. *Prussiate*: 6d. *Citrate*: 1s. 3d. *Bromide*: 1s. 8d. *Bicarbonate*: 30s. to 40s. for foreign and English respectively. *Carbonate*: 25s. to 27s. 6d., according to quality, etc. *Cyanide*: 1s. 8d. to 1s. 9d. for the P.B. quality, and 10½d. to 1s., according to quantity, for the 98 to 100 per cent. for mining purposes. *Hyposulphite*: 3s. 6d. *Iodide*: 9s. 9d. to 10s. 3d. *Permanganate*: 70s. to 75s. for small crystals.

Quicksilver—Remains at £6 17s. 6d. from first hand, there being second-hand sellers at 1s. per bottle less.

Quinine.—The market remains very firm, and while no actual advance has yet taken place, the general impression remains that we shall see a not unimportant improvement before very long. Small lots are still obtainable from second-hand at 9½d., while makers continue to supply their regular customers with quite limited quantities, only just sufficient for their immediate requirements.

Saffron—Remains very firm at 40s. to 42s. 6d. for good to best *Valentia*.

Shellac—Remains steady at 62s. *c.i.f.* for *Second Orange TN.*, Oct.-Dec. shipment, while at the auctions the prices of the previous sales were fully maintained, stadnard *TN.* selling at 53s.

Silver Nitrate—Is again lower at 1s. 4d. per oz. for crystals, a record price; the metal having receded to below 2s. per oz., a price also wholly without precedent.

Soda Compounds.—*Crystals*, 52s. 6d.; *Caustic*, 70 per cent., £8; 60 per cent., £7; *Bicarbonate*, 8s. for commercial, and 18s. for the free from monocarbonate; *Carbonate* P.B., 12s. per cwt.; *Bromide*, 2s. 1d.; *Iodides*, 11s. 4d. to 11s. 7d. per lb., according to quantity; *Hypophosphite*, 3s. 6d.; *Hyposulphite*, 6s. 6d. to 8s. 6d., according to packing; *Nitrate*, 7s. 9d. per cwt.

Spices (Various).—*Black Pepper* is firmly held, and 902 bags at auction were mostly bought in. *Penang* at 3⅜d., and *Singapore* at 3⅜d. to 3¼d.; a few bags *Wynaad* sold at 3¼d. *White Pepper* is also firm. Of *Singapore*, 18 cases superior bright, heavy bold sold at 8½d. to 8⅝d., and 25 bags fine small at 6¼d., the rest being bought in at 5⅝d. to 6½d. *Siam* bought in at 5½d. 3 bags *Ceylon* sold at 5⅝d. *Long Pepper*: 30 bags *Singapore* sold at 20s. *Chillies*: 10 cases fine bright *Japan* bought in at 50s. *Capsicums*: 5 bags mixed *Natal* sold at 61s. *Cassia Vera*; 5 bales sold at 28s. *Cassia Lignea*: Is quiet but firm at 44s. *Nutmegs*: Again rather dearer. 12 cases *Penang* sold 65's at 2s. 8½d.; 82's, 1s. 9d.; 94's 1s. 7d. 7 cases *Bombay* sold, 80's, 1s. 8½d. to 1s. 9d.; 100's 1s. 5d. to 1s. 6d. 11 cases *West India* sold, small and mixed, at 10d. to 1s. 6d. *Mace*, in better demand, fetched higher prices. *Penang*: 1s. 6d. to 1s. 8d.; one lot good bold pale, 2s. 4d. *West India*: 1s. 5d. *Pimento* continues in demand; 783 bags at auction held for a further advance, and bought in at 3d., but 200 bags since sold at 2⅞d.

Sticklac—Steady at unchanged prices.

Sulphonal.—Makers still refuse to book contracts, but there are second-hand sellers at 8s. 6d. to 9s. per lb. Large quantities would, however, hardly be procurable.

Turmeric.—Steady but quiet at 12s. to 13s. 6d. for medium to fair *Madras*.

LIVERPOOL REPORT.

August 25, 1897.

Several large sales of African Ginger have been effected in the past week at improving prices, and holders have advanced their rates accordingly. The scarcity of Linseed is still observable, but Canaryseed is easier as regards the Turkish, which has gone down to 28s. per 464 lbs. Higher prices are now asked for Linseed and Cottonseed Oils of Liverpool makes, whilst Castor and Olive Oils continue firm at the advance noted in last week's report.

Ammonium Salts.—*Carbonate* still quiet at 3d. per lb. *Sal ammoniac*, 33s. and 31s. per cwt. *Sulphate* somewhat slow of sale at £7 15s. per ton.

Beeswax.—Sales of *Chilian* are reported at £6 15s. per cwt., and of 6 blocks of *Gambia* at £6 10s. per cwt.

Canaryseed.—During the course of the week business was done in *Turkish* at 29s. to 30s. per 464 lbs., but to-day quotations are 28s.

Copper Sulphate—Has advanced to £16 and £16 5s. per ton for spot lots.

Ginger—Has been selling well, some 1000 bags of *Sierra Leone* bringing from 15s. to 16s. 6d. per cwt. Holders now ask 17s. 6d. per cwt.

Linseed.—Sales only amount to 500 bags of *Turkish* at 34s. 6d. per 416 spot, and 50 tons of *River Plate* at 33s. 6d. to arrive.

Oils (Fixed) and Spirits.—*Castor oil* is very firmly held, as recent sales have considerably reduced the stock here. Calcutta "good seconds" is quoted at 3⅝d. per lb. Madras at 3½d., and French 1st pressure at 3⅞d. to 3½d. per lb. *Olive oil* has been sold in large amounts the last few days at increasing prices, but particulars are not forthcoming. *Seville oil* has advanced 10s. to 20s. per ton. *Linseed oil* of Liverpool make packed for export has gone up to 18s. and 18s. 6d. per cwt. *Cottonseed oil*, Liverpool refined, has also advanced to 16s. 9d. and 17s. 6d. per cwt. *Spirits of turpentine* is in steady demand at 21s. 6d. per cwt.

Potash Salts.—*Cream of tartar* is slow of sale at 77s. and 80s. per cwt. according to quality. *Chlorate* cheaper, 3⅞d. to 4d. per lb. *Potashes*, unchanged at 19s. per cwt. *Pearlash* quiet at 30s. per cwt.

Soda Salts.—*Borax*: £14 10s. to £15 per ton. *Caustic*: 70 per cent. £7 5s., 60 per cent. £6 5s. per ton. *Crystals*: £2 17s. 6d. per ton. *Nitrate* is steady with better demand at 7s. 4½d. to 7s. 9d. per cwt.

NEWCASTLE CHEMICAL REPORT.

August 25, 1897.

Steadiness prevails on this market so far as prices are concerned. Shipments oversea and coastwise are seasonably good, Soda Crystals being on the heavy side for Channel ports and inland. Caustic Soda and Sulphur somewhat scarce. Prices quoted are: Soda Crystals, 37s. 6d. to 60s. according to markets. Bleaching Powder, £6 10s. to £7 10s. Caustic Soda, 70 per cent., £7 10s.; Sulphur, £4 15s.; Alkali, 52 per cent., £5; Soda Ash, 52 per cent., £4 per ton.

MANCHESTER CHEMICAL REPORT.

August 25, 1897.

The continued output in the restriction tends to keep prices firm, and Caustic Soda and Soda Crystals are in demand on home account, especially at late rates. Bleaching Powder varies from £6 5s. to £6 10s. per ton on rails, soft wood casks. Alum is easy at £4 17s. 6d. to £5 per ton loose lump on rails. Yellow Prussiate is firm at 6d., and there is every probability of an early advance. Sulphate of Copper also tends upwards, closing at £16 10s. for best brands delivered here. Brown Acetate of Lime quoted £5 to £5 2s. 6d. Benzols are about 1d. per gallon lower, but Naphthas, Solvent and Miscible, maintain last week's rates. Creosote rules low—1⅞d., and Pitch is dull at 18s. *f.a.s.*, Manchester. Sulphate of Ammonia firmer. Green Copperas quiet at 34s. to 36s. *f.a.s.*, Ship Canal. Ironfounders' Plumbago and Manganese unchanged.

NEWS IN BRIEF.

The Directors of Camwal, Messrs. Wilson, Gould, Kemp, and Goldfinch, and the London manager, Mr. F. G. Pirie, were in attendance at the Chemists' Exhibition last week, in addition to the Secretary, Mr. H. T. Butler.

The Opening of the Camwal Factory at Manchester was celebrated on Friday, August 13, by a dinner to the employés of the new branch. The chair was taken by the Manager, Mr. Groome, and an excellent musical programme helped to make the meeting a most successful one. Speeches were delivered by Messrs. Pennack, Montagu Groome, Coomber, Wright, and Brown, and telegrams of congratulation were received during the evening from Mr. Horace Davenport, the Chairman of the Board of Directors, and from Mr. Harry Kemp, of Manchester, another director.

At the Chemists' Exhibition, on Friday, last week, there was a gathering of the principals and representatives of the two firms of Evans, Sons, & Co. and Evans, Lescher, & Webb, all of whom were entertained at dinner in the evening by Messrs. Evans, Lescher, & Webb at the Café Royal, Regent Street. Those present in the afternoon and evening consisted of Messrs. F. H. Lescher, London; Edward Evans, jun., Liverpool; E. A. Webb, London; A. B. Evans, Montreal; Edward N. Evans, Herbert Evans, John N. Evans, Liverpool; T. Edward Lescher, Harold Webb, London; and the following representatives:—Liverpool: Messrs. John Blyton, Manchester, etc.; J. E. Parker, East Lancashire; A. Mills, North England, etc.; J. E. Jackson, Scotland; W. C. Brinson, Yorkshire and Midlands; George Brinson, North Wales; W. T. Willdey, Birmingham; H. C. Grimes, Ireland; John Park, Liverpool. London: Messrs. H. George, Midlands; J. T. Collis, West of England; T. H. Smith, South Coast; D. H. Davies, South Wales; A. Clark, E. J. Hill, T. Fawssett, London. Also Mr. F. A. Chadwick, Druggists' Sundries Traveller, and Mr. Tirebuck, Shop Fittings Traveller; and Mr. Nall and Mr. Rose, managers of the Druggists' Sundries and Photographic Departments in Liverpool and London.

Mr. E. A. Holloway, Torquay, writes to say that he has now taken a permanent London office at 63, Finsbury Pavement, where orders for his coca wine can be received, and samples and terms are on view. His offer to supply goods on sale or return is now discontinued.

The Exeter Association of Chemists and Druggists, in their endeavour to fulfil the objects of their organisation, appealed to the Museum Committee and the Committee of the Technical and University Extension College, about a year since, to assist them in providing means for pharmaceutical students of Exeter and neighbourhood to obtain in the city the necessary education for passing the Minor and Major examinations. Classes were formed by Mr. Claydon, principal of the College, on the lines of those carried on at Bloomsbury Square, under the tutorship of Mr. Alan

Ware, Ph.Ch. At the recent pharmaceutical examination two candidates from Exeter School presented themselves—one of whom passed—the other failing in botany. It will thus be seen that the necessary education referred to is now provided for local students, and well-equipped laboratories are placed at their service.

In Professor Schaer's address to the German Apotheker-Verein, on Wednesday, on the relations of pharmacy to the pure natural sciences, he put forward the idea that the truly scientific character of pharmacy is not shown by the numerous pharmacists who have advanced pharmacy as an art, nor even by those men who, having been at one time pharmacists first, have afterwards taken up the pursuit of chemistry, botany, etc., as academical teachers, but more especially by the men who, during their pupilage or while engaged in business as practical chemists and druggists, have found means greatly to advance the pure natural sciences. In this sense biographical sketches were given of Condenberg of Anvers, Cysat of Lucerne, Neuman of Berlin, Gmelin of Tubingen, Marggraf and Klapproth of Berlin, Willdenow of Berlin, Nees von Esenbeck of Bonn, Scheele, Desaive of Liège, Serturner, Pelletier and Caventou of Paris, Dumas of Paris, and many others belonging to the present century, as, for instance, Flückiger, Musculus (Strasburg), Jahns (Göttingen), Fresenius (Wiesbaden), Plügge (Groningen). This historical sketch was intended to show clearly the great influence that has been exercised by pharmacists on the advancement of the pure natural sciences.

Mr. Ralph Cuthbert, chemist, Westgate, Huddersfield, has, at the repeated request of many customers, added photographic apparatus and appliances to his already large stock of chemical and scientific apparatus, and for greater convenience has secured the premises next door to his old establishment, where will be found a complete stock of all requisites for chemical, photographic, and scientific research, under the management of a competent assistant. Developing, toning, printing, and mounting will be done for the trade and amateurs, and there is a dark room for the use of customers on the premises.

The Conference Photograph, taken at Arrochar, is, as stated last week (p. 175), a complete success, and Messrs. Geo. Bell & Co., 152, Sauchiehall Street, Glasgow, will be pleased to supply copies at 4*s.* each; packing and postage, 1*s.* extra.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

H. Morton, Chemist, 6, Parade Buildings, Deptford Bridge, Kent.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

William Henry Rodenhurst and James Kenworthy, trading as Rodenhurst & Co. (successors to D. A. Buchanan), Mineral Water Manufacturers, etc., Elm Road, West Derby Street, Liverpool.

Trevethick & Parkin, Photographers, 46, Pinstone Street, Sheffield. Debts will be received and paid by Edward Oswald Parkin, who will carry on the business in his own name.

William Lyon & Octavious Frederick Williams, trading as William Lyon & Co., Glass Bottle Merchants, 146, the Albany Old Hall Street, Liverpool. Debts will be received and paid by William Lyon, who will continue the business under the old title.

PUBLICATIONS RECEIVED.

Arzneimittel welche in dem Arzneibuch für das Deutsche Reich, dritte ausgabe (Pharmacopœa Germanica, editio III.). Neudruck, 1895, nicht enthalten sind. Zweite Ausgabe bearbeitet und herausgegeban von dem Deutschen Apotheker-Verein. Pp. 379. Berlin: Selbstverlag des Deutschen Apotheker-Vereins. 1897. From the Publishers.

Our Baby, for Mothers and Nurses. By Mrs. Langton Hewer. Fifth Edition, Revised. Pp. 140. Price 1*s.* 6*d.*, cloth 2*s.* 6*d.* Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. 1897. From the Publishers.

Etidorhpa, or the End of Earth. The strange history of a mysterious being and the account of a remarkable journey. Published by John Uri Lloyd and illustrated by J. Augustus Knapp. Eighth edition. Pp. 386. Cincinnati: The Robert Clarke Company. London: Potter and Clarke. 1897. From the Publishers.

Festgabe den Theilnehmern au der 26 Jahresversammlung des Deutschen Apotheker-vereins in Strassburg, am 23-27 August, 1897. Gewidmet von den Elsass-Lothringischen Apotheker-vereinen, mit 12 Lichtdruck-Tafeln. Strassburg: Elsässiche Druckerei und Verlaganstalt, vormals G. Fischbach. 1897.

LATE ADVERTISEMENTS.

Engagement Wanted.

LOCUM. Disengaged. Major. 27. West-end and Continental experience. Accustomed to management. W., care of Barray & Co., 17, Farringdon St., London.

Assistants Wanted.

An Assistant. About 22 or 23. Apply, stating experience, age, height, salary, and photo (to be returned), to J. G. Sangster, Dispensing Chemist, Southsea.

Durban, Natal.—Assistant wanted, qualified by examination, quick and accurate Dispenser. Salary £150, £165 and £180. Room supplied, but not board. 3 years' agreement to be signed. 2nd class passage paid. Apply, stating full particulars, to E. M. D., care of John Murdoch & Co., 52, Leadenhall St., E.C.

Durban, Natal.—Wholesale Assistant wanted, unqualified man who has had experience in good house. Salary £11, £12 and £13 per month. 3 years' agreement to be signed. 2nd class passage paid. Apply, stating full particulars, to T. L., care of John Murdoch & Co., 52, Leadenhall St., E.C.

Johannesburg. — Qualified Assistant wanted, 25 to 28 years of age. Salary £16 10s., £17 10s. and £18 10s. per month for first, second, and third year. 2nd class passage paid. 3 years' agreement to signed. Apply, stating full particulars, to R. H. M., care of John Murdoch & Co., 52, Leadenhall St., E.C.

NEW BOOKS AND NEW EDITIONS.

"A Course of Practical Chemistry." By M. M. Pattison Muir. Pp. 14+320. Cr. 8vo., cloth. 4s. 6d. London: Longmans. 1897.

"Nervous Affections of the Hand and Other Clinical Studies. By Dr. George Vivian Poore. Illustrated. Pp. 308. Cr. 8vo., cloth. 7s. 6d. London: Smith, Elder. 1897.

"The A B C of the X Rays." By W. H. Meadowcroft. Illustrated. By H. E. Fanshawe. Pp. 190. Cr. 8vo., cloth. 4s. London: Simpkin.

"An Attempt to Determine the Adiabatic Relations of Ethyl Oxide." By E. P. Perman, William Ramsay, and J. Rose-Innes, 'Phil. Trans., A.' Vol. clxxxix. Pp. 167–188. 1s. 6d. London: Dulau. 1897.

"Notes on Malaria in Connection with Meteorological Conditions at Sierra Leone." By Surgeon-Major E. M. Wilson. Pp. 16. Dy. 8vo., paper. 1s. London: H. K. Lewis.

EXCHANGE—OFFERS AND WANTS.

OFFERED.

Proprietary Article.

Marza Wine, 32s. 5d., carriage paid.—Sussex Drug Company (Limited), 135, Queen's Road, Brighton.

Optical and Photographic.

Photographic Mounts, cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000. Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s. 100. Samples free.—Peck, East Dereham, Norfolk.

Microscopical, 150 specimens (pathological, histological, and urine); very valuable and complete collection; cash. Offers to—Hoole, Sleaford, Lincs.

Miscellaneous.

Splendid Soda-Water Machine, "Compactum," nearly new, plant in itself, turnover and syphon-fillers attached, water and pressure-gauges, no lime, no acid, no gasometer, 350 doz. hand, 700 power, cost £50 1895, price only £35, no fault.—Norfolk Spa Co., Diss.

Apparatus.

Suppository, bougie and pessary mould, each Maw's pattern, no further use, under cost. Particulars from Warnes, Chemist, 333, Gray's Inn Road, W.C.

NEWS IN BRIEF.

Dispute as to the Sale of a Chemist's Business. — Sheriff Davidson has given judgment in an action at the instance of Robert A. Wright, sole partner of the Hamilton Apothecaries' Company, Hamilton, against Jas. Lohoar, chemist and druggist, Cadzow Street, Hamilton. The pursuer sought for payment of (1) £300 as the price of the goodwill of the business carried on by him in Cadzow Street; (2) £200 as the price of the stock and tenant's fittings of said business as fixed by valuation; (3) £50, the value of the business debts at the date of alleged sale, March 12, 1897; (4) £4 19*s.* 6*d.*, the debts which became due from the date of sale to the date of defender taking possession; and (5) £6 5*s.*, being the proportion of rent and taxes from the date of taking possession to Whit-Sunday, 1897. His lordship finds that in March last the pursuer sold his business to the defender; that the offer and acceptance included goodwill and tenant's fittings, and debts due to the business; that the contract was conditional on the defender being able to arrange that he should become tenant of the shop from and after Whit-Sunday last; that that condition had not been purified; that the defender had, however, taken possession of the stock and tenant's fittings, and that these were the property of the pursuer, and accordingly decerns against the defender for the sum of £200, and finds neither party entitled to expenses.—*North British Daily Mail.*

Mr. William Kemp, Chemist and Druggist, of Dalkeith, has purchased the business lately carried on by Mr. David Macritchie, chemist, at 3, High Street, Inverness.

Botanical Excursion. — On Tuesday, August 31, the students of the Sheffield College of Pharmacy made a very pleasant excursion by train into the country in search of botanical specimens. Permission having been previously obtained from the proprietors, a very instructive practical demonstration was given at the extensive Handsworth Nurseries on their abundant collection of exotics, etc. Among the plants specially described may be mentioned *Cobæa*, *Smilax*, *Canna*, *Nepenthe*, *Begonia*, *Ficus*, *Lapageria*, *Bonvardia*, *Anthurium*, and *Sarracenia*.

Plymouth, Devonport, Stonehouse, and District Chemists' Association.—At the monthly committee meeting held on Tuesday, August 31, the following were present:—Messrs. F. Maitland (chair), Swainson, Martin Johnson, Cantle, U'Ren, J. G. Netting, and Jas. Cocks (Hon. Sec.). The date of the annual meeting was fixed for Wednesday, October 6, at 8 p.m., and a special meeting to receive nominations for the annual election for September 30 at 9.15 a.m. A vote of condolence was unanimously passed to Mr. Hearder, expressing sympathy with his recent bereavement. A vote of thanks was unanimously passed to Mr. J. Maurice for gifts of books and magazines to the rooms. The following Committee was elected to arrange for the annual dinner, and recommended that the date for the same be either October 20 or 27:—Messrs. Martin Johnson, P. A. Kelly, C. J. Park, J. Harvey Bailey, C. T. Weary, Cantle (Junior Section), Jas. Cocks, and F. Maitland.

Mr. Ernest B. Layman (Wright, Layman, and Umney, Southwark) has contracted typhoid while on a journey, and is lying seriously ill at Southport (Lancs.).

The Newcastle New Infirmary Scheme has made a decided move forward owing to the generosity of Mr. John Hall, a well-known shipowner of the city. Through his solicitors he has intimated to the Governors of the Royal Infirmary that he is prepared, under certain conditions, to build and furnish a new infirmary at a cost of £100,000. The conditions relate to the question of a site, but there appears to be no reason to doubt that Mr. Hall's magnificent offer will be accepted, and the terms of the conditions complied with.

Telegraphing Without Wires. — A large quantity of instruments, etc., weighing in all about two tons, have arrived at Dover in connection with some experiments in telegraphing without wires to take place there. The instruments have been in Dover several days, and the arrangements include experiments from Fort Burgoyne to the north of Dover Castle, and other parts of the surrounding country, which offers every facility for work of this character on account of the prominent position it affords. One section of the experiments will be of a very important character. From the success which has attended the experiments elsewhere, it is believed the system can be successfully applied to lightships, and from the position at Dover the Goodwin light vessels will be experimented with. It is understood that the experiments will be under the supervision of Mr. W. H. Preece. The sending apparatus will be at Fort Burgoyne, and the receiving apparatus, which is of the most delicate construction, will be moved to different parts of the district.

Fire at a Southwark Street Drug Warehouse.—On Friday, August 27, about 10.30 p.m., a fire was discovered on the extensive premises of Messrs. Arthur S. Hill & Son, wholesale druggists and chemical manufacturers, 101 to 103, Southwark Street, S.E. From the nature of the material stored, the flames spread with great rapidity, the third, fourth, and fifth floors being entirely destroyed. The effect of the flames on the masses of crude and prepared chemicals and drugs was most picturesque. From one window a flash of deep red flame would appear, while from others came alternately flames of blue, pink, gold, and other colours. The brilliancy of these tongues of flame was extraordinary, and the scene was witnessed by a crowd numbering several thousands. The Salvage Corps, under Superindent Ford, were present, from five depôts, and were able to rescue a large quantity of stock from the rear of the building and the first floor. The damage is estimated to be somewhere between £30,000 and £40,000.

INCOME-TAX OVERCHARGES.

The Income-Tax Adjustment Agency write us to the effect that the interest which has been aroused in regard to Income Tax by the correspondence in the *Times*, and the articles which have appeared in a large number of other metropolitan and provincial papers, has resulted in calling attention to many grievances which taxpayers suffer, but there is one practice of the Inland Revenue authorities which is quite unjustifiable, and which seems to have been overlooked. The practice referred to is that of sending to traders and others at this period of the year a blue notice of charge, showing an assessment of profits at £160, and allowing the whole by way of abatement, no tax being demanded in respect of the business profits. Of course, where those who receive such notices have no income from any source other than their business, no injustice is done, but in the case of such as have income from other sources from which tax has already been deducted, the effect is to bar their right to claim repayment, unless the assessment of the business profits be appealed against, the full abatement having already been allowed. It is therefore of the utmost importance that those readers who are now receiving notices of charge for the year 1897-8 should, if the amount at which they are assessed is greater than the average of their profits for the three years ending April 5, 1897 (or at such prior date as they usually make up their accounts), at once give notice of appeal in accordance with the instructions on the notice of charge. Moreover, if they find that the profits of the three years named show an average profit less than the amount upon which they paid tax for 1896-7, they should give notice of appeal in respect of that year also, and claim repayment of the amount overpaid. There is no time to lose in business appeals, as this class of claim for repayment should have been made before now, while a claim to set off a loss in farming or business against income from other sources must be lodged before October 6 next. Many people are now entitled to make a claim on one ground or another for three years to April 5 last, and the tax recoverable might amount to £38. The Agency is at all times happy to advise readers whether they can make a claim, on their sending full particulars of their income and a stamped envelope for reply.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Arthur Roberts and Richard Gundry Rows, Physicians, Surgeons, and Apothecaries, and General Medical Practitioners, 76, London Street, Reading. All debts will be received and paid by Arthur Roberts, who will continue to carry on the practice.

Sydney George Phillips, Walter Case Hoskins, and Frederick Taylor Phillips (trading as Phillips, Hoskins, and Co.), Soap Manufacturers, Frome Bridge, Bristol. Debts will be received and paid by Walter Case Hoskins.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

D. Mayall, Chemical Merchant and Drysalter, Dickinson Street, Manchester.

Market Report.

(Specially Compiled for the 'Pharmaceutical Journal.')

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

SEPTEMBER 2, 1897.

Business has been quiet during past week, while the changes which have taken place in either upward or downward direction, have been of quite limited importance. Quinine remains steady at firm prices. Quicksilver and Mercurials unchanged. Opium and Morphia dull. Codeia lower. Glycerin quiet. Citric weaker. Tartaric and Cream of Tartar firm. Shellac firmer. Cod-liver Oil fairly steady, actual prices ruling being as follows :—

ACID CARBOLIC—Is quiet, best maker quoting 7d. for the 35° to 36° *ice cryetals* in quantity and bulk; other quality and packing in proportion *Crude* : Unchanged. *Liquid* : Pale in 40-gal. casks, 1s. 3d. per gallon.

ACID CITRIC—Is, if anything, rather weaker, one English maker having reduced his price from 1s. 2½d. to 1s. 2d., thus coming in line with other makes.

ACID TARTARIC—Firm. *English*, on the spot, 1s. 2d. per lb. ; *foreign*, 1s. 1½d. per lb.

AMMONIA COMPOUNDS. *Sulphate* : Very firm, grey prompt 24 per cent. London £7 15s. ; Hull prompt £7 15s. ; Leith prompt £7 16s. 3d. ; Beckton prompt £7 15s. ; Beckton terms prompt £7 12s. 6d. per ton. *Sulpho-cyanide* : 1s. *Oxalate* : 6½d. for crystals. *Bromide* : 2s. 1d. *Iodide* : 14s. 6d. per lb. *Chloride* : Free from metals 98 per cent. 27s. 6d., chemically pure 32s. 6d. *Sal Ammoniac* : 35s. 6d. for sublimed lumps.

ASAFETIDA.—A small business has been done privately this week at, it is said, full prices.

BORACIC ACID—Weak at 24s. for *crystals*. and 26s. for *powder*.

BORAX—Quiet at 14s. 6d. to 15s. 6d. for *crystals* and *powder*.

BLEACHING POWDER—Is quoted £7 on the pot.

CANTHARIDES.—*Russian* are firm at 1s. 9d. to 1s. 10d. per lb., with a moderate business passing, and *China* are quiet at 1s. 1d. to 1s. 2d. per lb.

CINNAMON.—On Monday the quarterly auctions of Ceylon took place, when 1393 bales were offered, as against 779 bales at the corresponding time last year. Demand was strong, and the bulk, or 1260 bales, were disposed of at an advance on last auction rates of ¼d. to ¾d. on ordinary to medium unworked, and 1d. to 2d. on good to superior worked qualities, and in some few cases at an even greater advance. 441 bales worked *Ceylon* all sold, first sort middling to good 11d. to 1s. 2d., finc 1s. 3d. to 1s. 4d., two lots superior 1s. 7d. to 1s. 10d. ; second sort, middling 10½d. to 11d., good and fine 1s. 1d. to 1s. 2d., superior, 1s. 5d. to 1s. 6d. ; third sort, middling to finc, 10d. to 1s. 2d., superior, 1s. 4d. to 1s. 5d. ; fourth sort, ordinary to good, 9d. to 11d., fine, 1s. Of 952 bales unworked 715 bales sold ; first sort, 10½d. to 11½d. ; second sort, 10d. to 10¼d. ; third sort, 9½d. to 10d. ; fourth, 8¼d. to 9¼d., with a few bales low from 8d. for fourth to 9½d. for first. *Ceylon chips* sold at dearer rates ; ordinary, 2 15/16d. to 3d. ; fair, 3¼d. to 3⅜d. ; quillings at 9d. to 10½d. per lb.

CLOVES.—Of 237 bales *Zanzibar* in auction 73 bales sold at 2⅜d. 20 cases fine picked *Penang* bought in at 10d. Privately the market for *Zanzibar* has exhibited increased activity, and prices rule slightly higher, spot and September to November, 2 7/16d. ; October to December, 2½d. ; January to March, 2⅝d.

COAL TAR DISTILLATION PRODUCTS—*Toluol* : Pure, 3s. 3d. *Benzole* : 50 per cent., 3s. 1d. ; 90 per cent., 2s. *Crude naphtha* : 20 per cent. at 120° C., 1s. 2d. *Solvent naphtha* : 95 per cent. at 160° C., 1s. 11d. per gallon.

COCAINE.—Demand is quiet, and it would be possible to buy in quantity at 9s. per oz.

CODEIA. — Contrary to expectation, makers reduced their price 1s. per oz. to 11s. 3d. to 11s. 6d. per oz., according to quantity.

COD-LIVER OIL.—One refiner of *Norwegian* oil has this week been offering as low as 64s. per barrel, *c.i.f.* terms, at which tempting figure we understand some business has been done, but he is now full of orders at that figure. Other makers ask 66s. to 70s. per barrel, according to brand, whilst last season's oil can be had at 62s. per barrel. *Newfoundland* oil is offered at from 2s. to 2s. 3d. per gallon.

CREAM OF TARTAR—Steady and tending firmer. First white French *crystals* on the spot, 77s. 6d. per cwt. ; *powder*, 80s. to 81s. per cwt.

GINGER.—The market for *Cochin* shows continued weakness. Rough kinds at auction mostly bought in at 26s. to 27s. for washed. A few bags sold ; small and mouldy, 23s. 6d. to 24s. ; shrivelled pickings, 15s. 6d. Of cut kinds 147 cases sold, small and ends, 27s. 6d. to 28s. ; medium and small, 33s. 6d. to 35s. ; good medium, partly cut, 42s. to 42s. 6d. ; *Japan*, bought in at 13s. 6d. to 14s. ; *Jamaica*, also bought in, small to middling, 72s. to 77s. ; good, 80s.

GLYCERIN.—Whilst the German makers have made no change in their prices for the 1·260 s.g. double distilled chemically pure article, the English manufacturers continue to compete strongly for such business as is doing, and contracts have been made at still lower prices, in some cases below £50 per ton in tins and cases.

MENTHOL—Unchanged at 6s. 3d. to 6s. 6d. per lb. for good dry white crystals.

MERCURIALS. — Makers' prices remain unchanged at 2s. 6d. for *Calomel*, and 2s. 2d. for *corrosive sublimate* in 5-cwt. lots.

MORPHIA—Is weak but without alteration in nominal price.

NITRATE OF SILVER.—Makers quote still 1s. 4d. per oz. for crystals.

OILS (ESSENTIAL).—*Star Aniseed* quiet at 7s. 10½d. per lb. on the spot, and 7s. 6d. per lb. for arrival, *c.i.f.* terms. *Cassia* has been done at 5s. 1½d. per lb. for arrival, *c.i.f.* terms, for 80 to 85 per cent. *Cinnamon* is in good demand for fine quality at 1s. 8d. per lb ; common leaf oil is neglected. *Lemon* : New crop for November-December shipment is offering at 4s. per lb., and for delivery in the New Year at 3s. 6d. per lb. ; old crop, on the spot, 3s. to 3s. 6d. per lb. *Bergamot*, 8s. 9d. per lb. on the spot. *Peppermint. American HGH*, 6s. 4½d. per lb. ; Wayne County, 4s. per lb., *c.i.f.* terms. *Japanese* unchanged at 3s. per lb. for *dementholised*, and 4s. per lb. for 40 per cent., *c.i.f.* *Lemongrass* firmer at 2 1/16d. per oz.

OILS (FIXED AND SPIRITS).—*Linseed* : The market is steadier. On the spot pipes £16 2s. 6d., barrels £16 10s. (solely from E. I. seed about 2s. 6d. per ton premium). September to December £16 17s. 6d., and January to April £17. *Rape* : Ordinary brown quiet, on the spot £26 10s., September to December samc price ; Refined on the spot £28. *Cotton* : Steady, crude London spot £14 10s ; Refined spot £16 to £17 according to make. *Cocoanut* : Ceylon on the spot, pipes £22 10s. September to November £20 15s., *c.i.f.* *Cochin* : Spot £28 September to October, £27, *c.i.f.* *Palm* : Lagos on spot, £22 15s. *Castor* : very firm ; *East Indian* firsts have been sold privately at 4d. per lb. ; *French*, first pressing, £33 per ton ; second pressing, £32 per ton, spot *Petroleum Oil* : very quiet ; *Russian* spot, 4⅜d. to 4 7/16d. per gallon ; *American* spot, 4¾d. to 4⅞d. per gallon ; *water-white*, 6d. to 6⅛d. per gallon. *Petroleum Spirit* : American, 6d. ; deodorised, 6¼d. per gallon. *Turpentine* : the market is strong and active ; American, on the spot, 21s. 3d. to 21s. 4½d. ; September to December, 21s. 6d. to 21s. 7½d. ; January to April, 22s. 1½d. per cwt.

OPIUM—Quiet and practically unchanged with but little business doing.

ORRIS ROOT.—*Florentine* is quoted in some directions at rather more money ; ordinary to fine picked, 42s. to 52s. per cwt., and ordinary to fine sorts, 39s. to 41s. per cwt., *c.i.f.* terms.

OTTO OF ROSE.—It is stated that the new prices have been fixed for the coming season on the basis of last values.

OXALIC ACID—Is quoted 3½d. to 3¾d. per lb. nett, free delivered in London.

PHENACETIN—Is slightly firmer at 4s. per lb. for quantity.

POTASH COMPOUNDS.—*Bichromate*, 4¾d. ; *Bromide*, 1s. 8d. ; *Chlorate*, 4¼d. ; *Citrate*, lower at 1s. 2d. ; *Cyanide*, 1s. 8d. for the B P. quality and 10½d. to 1s. per lb. for the 98 per cent. for mining purposes. *Bicarbonate*, 29s. 6d. to 35s., according to quantity and make. *Carbonate*, 26s. 6d. per cwt. ; *Hypophosphite*, 3s. 6d. ; *Iodide*, 10s. 3d. per lb. ; *Permanganate*, 72s. 6d. for small crystals, and 5s. per cwt. more for large crystals.

Quicksilver.—Importers' price remains £6 17s. 6d., while from second-hand 1s. per bottle less would be accepted.

Quinine—Is firm. Makers are still supplying their regular customers with moderate quantities at 9¼d. per oz., but will not sell in quantity or for distant delivery. From second hand moderate quantity could be had at 9½d. per oz., but hardly below this figure; while large orders could hardly be executed at this figure.

Senega Root—Is reported firmer from America; 1s. 1d. per lb. is, however, still the price here on the spot.

Shellac.—There is a firmer tone in all positions, with a tendency towards dearer prices. On the spot there is a steady demand, with moderate sales of *TN Orange* at 63s. cash basis fair, and *AC Garnet*, blocky to fine free, at 71s. to 73s. For arrival no business has transpired, closing buyers of *TN*, October to December steamer, at 64s. *c.i.f.* Calcutta is also firm, with prices above the London parity. For delivery business continues difficult, owing to scarcity of sellers, and only 200 cases *TN* have changed hands; September, 66s.; October, same price, closing buyers thereat for October.

Soda Compounds.—*Crystals* are quoted 52s. 6d. per ton ex-ship. *Bicarbonate*: £7 5s. per ton landed for the commercial 99 per cent., and 18s. for the free from monocarbonate. *Carbonate*: P.B., 12s. 6d. *Caustic*: 70 per cent., £7 15s. to £8; 60 per cent. £1 per ton less. *Bromide*: 2s. 1d. *Iodide*: 11s. 7d. *Hypophosphite*: 3s. 6d. per lb. *Hyposulphite*: 7s. to 8s. 6d., according to quality and packing. *Nitrate*: Ordinary, £7 7s. 6d.; refined, £7 12s. 6d. on the spot.

Spices (Various).—*Black Pepper* was held for full rates and mostly bought in. *Singapore* at 3½d. and *Penang* 3⅜d.; of *Aleppy* 100 bags sold at 3d. *White Pepper*: Only 63 bags *Penang* offered and bought in at 5d. Privately the market is very firm for both white and black pepper. *Chillies* mostly bought in, *Zanzibar*, 38s. to 42s. 6d.; *Sierra Leone*, 33s. to 36s.; fine bright *Japan*, 56s. *Capsicum*: 20 bales ordinary small off-stalk bought in at 25s., and 6 bags *Natal* at 66s. *Cassia Lignea*: 500 boxes sold privately at 44s. *Mace* is firm; 46 cases *Penang* bought in, ordinary to good, 1s. 8d. to 2s.; good bright 2s. 6d.; 1 case broken *Bombay* sold at 1s. 4d.; 24 packages *West India* sold at 1s. 4d. to 1s. 7d. *Nutmegs*: Steady. *Pimento*: 195 bags sold at 2⅛d., the larger quantity being bought in at 3d. since the auction sales have been made at 3d.

Sulphonal—Can be bought from second hand at 8s. 6d. per lb., makers stating that they will not book contracts for quantity or forward delivery.

Sulphate of Copper—Is quiet at £15 15s. to £16 5s. per ton, according to make and quantity.

The drug auctions went off somewhat slowly to-day, Cardamoms selling well at an advance of 2d. to 3d. Ipecacuanha was firm, but buyers held off. Vanilloes sold well.

Aloes.—20 boxes good bright livery *Curacao* sold at 34s. to 35s., subject to approval. 40 kegs good *Socotrine* held for 77s. 6d., 39 cases ditto for 80s. per cwt. 25 cases fair bright *Cape* taken out at 22s. 6d.

Anatto Seeds.—7 cases and 14 bags of fair quality held for 3½d. per lb.

Aniseeds.—Firmer, fair *Russian* selling

Antimony.—50 cases *Japan* crude taken out at £20 per ton.
at 17s., and 30 bags *Syrian* at 14s. 6d. per cwt., subject to approval.

Balsam Capivi.—1 case fair *Maranham* held for 2s. 1½d. per lb.

Buchu Leaves.—33 bales fair green rounds realised 3¾d., and 4 bales yellow *ditto* 2¾d. per lb.

Cactus Grandiflora.—12 bags small flowers part sold at 9d. per lb.

Camphor.—20 cases refined *Japan* in thin squares held for 1s. 3d. per lb.

Cardamoms—Sold very freely at fully late prices to 3d. dearer, fair to good bold pale *Mysore* selling at 3s. 6d. to 3s. 10d.; medium ditto at 3s. 2d. to 3s. 4d.; small at 2s. 4d. to 3s.; medium splitting at 2s. 4d. to 2s. 9d., brownish *Malabar* being held for 2s. 7d.; 1 case *Seed* sold at 3s. 1d. per lb.

Castor Oil.—50 cases *Calcutta* firsts held for 4½d. per lb.

Chiretta.—5 bales fair quality were held for 2d. per lb.

Cinchona Bark.—2 bales bright spoke shavings were taken out at 6d.; 15 bales *East Indian* at 2½d. per lb.

Coca Leaves.—Fair green *Truxillo* were held for 7d. per lb.

Colocynth.—5 cases small to medium *Turkey* sold at 1s. 2d. per lb.

Colombo Root.—30 bags fine washed were taken out at 40s., good bold bright selling at 33s., dull slightly wormy at 20s. per cwt.

Croton Seed.—7 bags sold, subject to approval, at 50s. per cwt., which shows decidedly lower value.

Cubebs.—Of 30 bags rather mouldy part sold at 18s. for *SDC3*, rest held for 22s. 6d. per cwt.

Cumin Seed.—54 bags were held for 20s. per cwt.

Cus Cus Root.—23 bales cleaned taken out at 30s. per cwt.

Cuttle Fish.—4 cases small to medium sold at 2½d. 63 mats good pale being held for 3½d., bold pale selling at 3¼d. to 5¼d. per lb.

Dragon's Blood.—12 cases dull seedy lump taken out at £7, a bid of £6 being refused. Good *reeds* held for £9 per cwt.

Ergot of Rye.—Very weevily *Spanish* was held for 4d. per lb. (only 3¼d. being bid), fair sound ditto for 9d., fair sound *Russian* for 6d. per lb.

Eucalyptus Oil.—52 cases fair commercial held for 11d. per lb., a bid of 10d. being declined. 16 cases *Globulus* and *Odorata* in 1-oz. bottles taken out at 2s. 1d.

Galangal Root.—22 bales fair bold were bought in at 25s.; 10 bales selling at 26s. per cwt.

Galls.—525 bags *Bagdad* held for 52s. 6d.; 338 bags *Turkey*, part sold at 44s. per cwt.

Gamboge.—For 5 cases of fair quality £7 15s. per cwt. was the price required.

Guarana.—15 cases good quality bought in at 1s. 6d. per lb.

Guaza.—35 packages good green, part stalky, were held for 3d. per lb.

Gum Arabic.—6 cases fair *Turkey* sorts were taken out at 87s. 6d.; good yellowish grain at £6 12s. 6d. to £7; bold white *picked* at £15; 7 bags red *Aden* sold at 21s. 6d.; rest held for 35s. to 37s. 6d. per cwt.

Gum Benjamin.—Low seconds *Sumatra* sold at 60s. to 67s. 6d., rather better held for 80s. (a bid of 75s. being refused); *ditto*, of better quality, selling up to £6 10s.; fair blocky, part free, small to bold *Siam*, for £17; good bright seedy block part free selling at £6 12s. 6d.; *ditto*, slightly darker, at £5 10s.; hard block at 90s., dark seedy hard block at 60s. to 90s. per cwt. fair.

Gum Elemi.—20 cases good pale held for 26s. per cwt.

Gum Guaiacum.—Of 25 packages part sold at 1s. 3d., balance being held at 1s. 2d. for very mixed, part good, part common and drossy.

Gum Kino.—3 cases red held for 4s. 6d. per lb.

Gum Myrrh.—6 cases fair pale small to bold Aden picked held for 85s., good pale ditto for 105s., pale seedy and dusty siftings for 45s. per cwt.

Honey.—40 barrels fair white *Chilian*, but somewhat dingy in colour, held for 25s.; 44 casks *Californian*, yellow to brownish liquid, for 32s. 6d.; 26 packages fair *Jamaican* for 24s. to 25s. per cwt.; 52 tins good white *Manitoba* for 30s. per cwt.

Ignatius Beans.—15 bags of fair quality were held for 5d. per lb.

Ipecacuanha.—Market was steady, that is, holders were firm at about late rates, say 6s. 1d. for fair to 6s. 6d. for picked *Rio*, but buyers rather held back, fair *Carthagena* being held for 4s. 10d. to 5s. per lb.

Jaborandi Leaves.—55 bales mixed, part green, part dark, were bought in, a bid of 1½d. per lb. being declined.

Kola Nuts.—7 bags dull held for 4d. per lb.

Lavender Oil.—2 Winchesters labelled *Mitcham* were bought in at 65s. per lb.

Liquorice Root.—120 bales rough *Persian* sold at 7s. per cwt.

Maracaibo Bark.—63 bales fair bold to small held for 5d., ditto *ICCD* for 4d. per lb.

Musk—Was rather easier; fair thin skin *Tonquin*, part grey, part brown, small to boldish, fairly dry, a few broken, held for 75s.; *ditto*, Pile 3, rather damp, for 50s.; old-fashioned medium to bold, fair shape, fairly dry, for 27s.; *ditto*, Pile 1, small to medium, for 55s. per oz.

Nutmeg Oil.—12 cases of fair quality were taken out at 3½d. per oz., a bid of 2½d. being refused.

Nux Vomica.—13 bags good small bright sold at 6s. 6d. per cwt.

Orange Peel.—Fair thin cut sold at 6½d. per lb.

Orchella Weed.—3 bales held for 17s. 6d. per cwt.

Orris Root.—20 bags medium to fair *Florentine* were held for 40s. to 50s. 15 cases *East Indian* for 15s. per cwt.

Patchouli Leaves.—10 bales damp and mouldy sold at 1d., subject to this price covering charges. This is a cheap price, last sales having been at 4d. per lb.

Rhubarb.—Good flat *Canton*, part grey, part pinky fracture held for 1s. 5d. to 1s. 6d., small ditto for 1s. 3d., 1 case good pickings selling at 1s.; bold round *Canton* held for 1s. 5d. to 1s. 6d. medium ditto selling at 1s 2d. to 1s. 3d.;

small part rough ditto at 1s. 5d. ; fair bold *high dried* was taken out at 1s. 1d. to 1s. 2d. ; bold *Shensi*, very wormy, at 1s. 2d.; fair ditto at 2s. 6d. ; good small ditto at 3s. 9d. per lb.

SARSAPARILLA.—Fair *Jamaica* was held for 1s. 10d., and really good for 1s. 11d. to 2s. ; 1 bale native ditto for 1s. 1d. per lb.

SENNA.—Fair green *Alexandrian* leaf held for 8d. ; *Tinnevelly* sold freely at good prices, say 1¼d. to 4½d. for brown to medium fair to good colour ; brown inferior pods realising 1¼d. per lb.

SQUILLS.—Fair seconds held for 2½d. per lb.

SOY.—50 casks fair *China* held for 11d. per gallon.

SULPHATE OF QUININE.—1000 ozs. of *Taillandier's* brand were taken out at 10d. per oz., 9¼d. being price which would be accepted.

TAMARINDS.—47 casks black *E. I.* held for 9s. 6d. per cwt., 7 packages *W. I.* for 8s.

TONQUIN BEANS.—20 cases good black *Para*, part crystallised, sold cheaply at 11d. per lb.

VANILLOES—Sold well at full prices, up to 1s. per lb. dearer for the lower qualities.

WAX.—4 cases good *South African* sold at £7 5s. ; fair *Zanzibar* at £5 12s. 6d. ; fair *Madagascar* being held for £6 5s. ; fair to good *Italian* for £7 to £7 10s. ; 19 bags *Mogador* for 90s. ; good *French* for £9 ; white *Calcutta* for £5 5s. ; good *Jamaica* sold at £7 10s. ; *Australian* at £6. 50 cases good *Japan* held for 42s. per cwt.

MANCHESTER CHEMICAL REPORT.

SEPTEMBER 1, 1897.

In heavy chemicals a firm tone continues to prevail, and producers still adhere to list prices for home consumption, although they are very variable for shipment. Second-hand parcels of Bleaching Powder are reported as having been offered at lower figures, but Caustic Soda and Soda Crystals are unchanged. Sulphate of Copper continues to advance, and £17 for best brands delivered Manchester is quoted. Brown Acetate is somewhat scarce, but sales of best American have been effected at £5 *c.i.f.* Manchester. Industrial Bicarbonate of Soda, £4 5s. per ton, bags, and £5 5s. per ton, kegs, both on rails at works, Northwich. Naphthas generally higher, Miscible being quoted 4s. Benzols rule low, 50's to 90's, 1s. 10d. to 1s. 11d. Pitch firmer at 18s. per ton *f.a.s.*, Manchester. Recovered Sulphur firm at £4 15s. to £5 per ton, on rails. In Yellow Prussiate, Lancashire makers are well sold for prompt delivery, and the article is firm at 6d. Green Copperas easier. Alum unchanged.

NEWCASTLE CHEMICAL REPORT.

SEPTEMBER 1, 1897.

This market remains very steady in tone, with a good general demand for all makes. Soda Crystals are really scarce, long turns being experienced with large shipping orders. Caustic Soda is also a commodity not plentiful. Alkali is firmer, and Sulphur likewise. Prices are: Bleaching Powder, according to market, £6 10s. to £7 10s. Soda Crystals, 37s. 6d. to 57s. 6d. Caustic Soda, 70 per cent., £7 to £7 10s. Soda Ash : 52 per cent., £4. Alkali : 52 per cent., £5. Sulphur : £5 per ton.

LIVERPOOL REPORT.

SEPTEMBER 1, 1897.

Alterations in the prices of Linseed, Canaryseed, Castor Oil, Linseed Oil, Cottonseed Oil, and Cream of Tartar have taken place during the week, higher quotations being the rule, though but little business in the articles mentioned has actually taken place with the exception of Calcutta Castor Oil, which has sold well. Among the miscellaneous drugs, sales of Bombay Ginger, Peruvian Honey, and Beeswax have been effected at satisfactory prices. The trade done in chemicals has been rather quiet, and no material alteration in prices has taken place.

AMMONIUM SALTS.—Sulphate is firmer at £7 17s. 6d. per ton. Other ammonium salts are unaltered in price since last week's report.

BEESWAX.—Peruvian wax, 3 cases, sold for £6 15s. per cwt.

CANARYSEED.—Notwithstanding sales of *Turkish* seed early in the week at 28s. and 28s. 6d. per 464 lbs., the closing quotation was 30s., at which price the sale of 100 bags is reported.

COPPERAS—Continues very firm at 38s. per ton for *Lancashire*, and 36s. for *Welsh*.

GINGER.—Some 40 bags of *Bombay* found buyers at 27s. per cwt.

HONEY.—100 barrels of *Peruvian* were disposed of at 20s. per cwt.

LINSEED—Is still very firm, and 6d. to 9d. per 416 lbs. dearer than last week. Sales of *Larnaca* have been effected at 40s. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor oils* have sold well, and prices continue to be well sustained. Calcutta "good seconds" has gone up to 3⅝d. and 3⅝d. per lb. ; Madras, 3½d. ; and first pressure French, 3½d. per lb. *Olive oils* are moving off well, and stocks are much reduced. Buyers lately have chiefly favoured Seville oil, for which higher prices are being asked. *Linseed oil* is quieter, but the price remains at 18s. and 18s. 6d. per cwt. for Liverpool pressed oils. *Cottonseed oil* is very firm at the recent advance, 16s. 9d. and 17s. 6d. per cwt. *Spirits of turpentine* is held for 21s. 9d. per cwt., with a fairly good demand existing.

POTASH SALTS.—*Cream of Tartar* has risen to 78s. and 81s. per cwt., but buyers are not much in evidence. *Chlorate*, *Potashes*, and *Pearlash* are unaltered. *Saltpetre* : 21s. 6d. per cwt. *Prussiate* : 6d. per lb.

SODA SALTS.—*Caustic Soda* is likely to be dearer. *Borax* : 15s. per cwt. *Nitrate* and other salts unaltered.

MARRIAGE.

HEAP—RICHARDSON.—On the 25th at Stoke Parish Church, by the Rev. W. A. Parker, Isaac Henry Heap, Pharmaceutical Chemist, Hanley, to Eveline Richardson, of Wall Cottage, Basford.

LATE ADVERTISEMENT.

Assistant Wanted.

QUALIFIED ASSISTANT Wanted, London Suburb, for Middle of September. Accustomed to good class business. State experience, age, height, and salary required, enclosing photo if convenient, to J. T. BOWEN, 238, Belsize Rd., Kilburn, N.W.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Formulæ.

Book of 130 well-tried recipes for Chemists ; general, remedial, veterinary, toilet ; post free, 1s. 6d. —Tully, Chemist, Hastings.

Proprietary Article.

Marza Wine, 32s. 5d., carriage paid.—Sussex Drug Company (Limited), 135, Queen's Road, Brighton.

Miscellaneous.

Splendid Soda-Water Machine, "Compactum," nearly new, plant in itself, turnover and syphon-fillers attached, water and pressure-gauges, no lime, no acid, no gasometer, 350 doz. hand, 700 power, cost £50 1895, price only £35, no fault.—Norfolk Spa Co., Diss.

Douglas-Wooldridge compound ophthalmic refractometer, optometer, and astigmatism test, with charts and book of observations on its use ; practically new ; cost £12 10s., half-price or best offer.—Bennett, Chemist, Stockport.

Soda-water Trolley ; a boy of eight can easily convey 3 dozen syphons and cases any distance ; 35s., carriage paid.—Arthur and Co., Cambridge.

Overstocked.—5 dozen enemas, seamless, new (Ingram's expired patent), highly enamelled black, oval hinged boxes, vagina pipes, leather shields, 30s. per dozen ; sample posted, 2s 9d., cash.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

Books.

Thirty-nine Volumes 'Pharmaceutical Journal,' 1852 to 1891, bound half-calf, perfect ; offers or exchange.—MacRossen, Forfar.

NEWS IN BRIEF.

Sheffield Pharmaceutical and Chemical Society.—The annual dinner of this Society will be held in the Masonic Hall on Thursday, October 14, when Mr. Walter Hills, President of the Pharmaceutical Society, is expected to be present. The inaugural meeting of the School of Pharmacy will be held the same evening, when Mr. Walter Hills will give the inaugural address to the students.

The Chemists' Assistants' Association has removed from the temporary rooms at 9, Queen's Square, W.C., and is now established at 73, Newman Street, W.

Dr. Hermann Hager's memory has been honoured by his fellow apothekers by the erection of a monument over his grave at Neu-Ruppin. The monument will be unveiled on September 28, and invitations to be present at the ceremony are being issued by the Committee, consisting of Professor Geissler, of Dresden; Dr. Jacobsen, of Berlin; Professor Thoms, of Berlin; Dr. Heger, of Vienna, Editor of the *Pharmaceutische Post*, and Apotheker Kober, of Stuttgart, Editor of the South German *Apotheker Zeitung*. At the conclusion of the ceremony a dinner will be held at the Hotel Ackermann, Neu-Ruppin.

Mr. Councillor F. Bird, chemist, Coventry, Chairman of the Coventry School Board, has been elected by that body as a Governor of Mason's University College, Birmingham. It may be known to our readers that by a recent Act of Parliament, 1897, governors are to be elected by certain counties, county boroughs, and by public bodies, principally in the Midland counties.

The Edinburgh Pharmacy Golf Club has arranged to hold its annual autumn competition at Dunbar, on Monday, September 20. The club has been presented with four special prizes, which will be played for on that occasion, and a good turn-out is expected. Those intending to go might communicate with the Secretary before Friday, the 17th inst.

Edinburgh District Chemists' Golf Club.—The fourth competition for the season took place on the Braid Hills Course last week with the following result:—A. M. Stewart, 90; W. Swan, 96; and J. C. Laird and J. Stott tied for third place with the scratch score of 98. The golfing season is to conclude with a prize competition at Musselburgh on Monday, September 20, which is the Edinburgh autumn holiday.

Recent Accidental Poisoning Cases include several in which carbolic acid was the agent. At Canterbury, a woman named Minnie Golder drank a fatal dose of carbolic acid from a bottle in mistake for ale. Albert Ernest Greenbury (28), jet ornament maker, of Whitby, "had a habit of going about tasting things," one morning he sampled some carbolic acid and shortly afterwards expired. An earthenware ginger-beer bottle on a table caught the eye of George James Chard (7), son of an Islington jeweller, and being thirsty he drank of its contents, which happened to be carbolic acid. The bottle was not labelled, and at the inquest the Coroner remarked that the case conveyed its own lesson as to the extreme care that should be taken to use only properly labelled bottles of an unmistakable kind for liquid poisons. Caroline Lee (50), caretaker, of Nottingham, kept both beer and carbolic acid in adjoining bottles in the same cupboard. She was found in her room dead, with a cup close at hand which had contained some of the poison. An open verdict was returned by the jury.

Several Poisoning Cases occurred in which poison other than carbolic acid was the cause of death. Arthur Darcy Nixon, a miner, of Cleator Moor, Manchester, drank a quantity of spirit of salt in mistake for porter. Another case at Manchester was that of Amelia Redican, domestic servant, who was found dead in her bedroom, poisoned by laudanum, with no evidence to show how or why it had been taken. Mr. W. J. Wild, of Stockport, who suffered from sleeplessness, resorted to chlorodyne, with the result that he took an overdose and died. Charles Moulder (50), at Birmingham, drank a poisonous liquid in mistake for whisky, and succumbed to the effects of the draught. An overdose of laudanum caused the death of Mrs. Annie Burch (60) at Leigh; she had suffered from neuralgia. At Aberdeen a small boy about three years of age was found with a bottle of embrocation in his hand, some of which he had evidently consumed. He died later in the day; morphine is said to have been a component of the liniment. A solution of atropine for application to the eye was prescribed for Elizabeth Lowes, of Hartlepool, and she subsequently died showing symptoms of atropine poisoning, having apparently partaken of the poison in mistake for a sedative medicine; a verdict of accidental death was returned.

Parsnip Wine taken from a barrel, which had previously been used either for sheep wash or weed-killing mixture, made several persons seriously ill at Acton Beauchamp, and Edward Bowkett (50) labourer, died from arsenical poisoning. Four doses of a sleeping draught of bromide of potassium and chloral were purchased by Thomas W. Macnamara (30), painter, of Holywell. At an inquest held shortly afterwards with respect to his decease, the jury found that an overdose of chloral, taken by misadventure, was the cause of death, and suggested that greater restriction should be placed on the sale of poisons. Henry Jones (51), of Bethnal Green, a nitric acid maker, while at work broke the tap of a reservoir of acid, which poured all over him, and in spite of speedy attention he died in hospital. A shade of mystery surrounds the death of George Thomas (50), at Bognor. He was found on the esplanade in great pain crying out for help. At the police station he stated that he had taken twenty drops of chlorodyne to relieve pain, but at the inquest a verdict was returned on the medical evidence that death was due to sulphuric acid poisoning, but how or by what means administered there was no evidence to show.

The Danger of Using Petroleum Wash for the hair has again been illustrated by a sad accident at Dagenham. It appears that a young lady named Miss Nellie Day, of Coalies Road, Dagenham, had used the petroleum wash for her hair, and stooped down to blow out the candle, when her hair immediately caught fire and she was most seriously injured.

England's Navy will shortly boast a diary specially devoted to its needs. Messrs. Witherby & Co. announce that they will issue in October next a new work, entitled 'The Royal Navy List Diary and Naval Handbook.' The book will contain upwards of 500 pages, and, independently of the diary portion, which is ruled and headed in the necessary manner, there is a mass of matter touching upon all subjects of interest to naval men, and specially designed for the use of the Service afloat and ashore.

Market Report.

[Specially Compiled for the 'Pharmaceutic Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

September 9, 1897.

Business in general has somewhat improved during the past few days, and while there have been no special changes of importance in the value of any article of interest, at the same time a more hopeful feeling appears to be gaining ground as regards prospects for the future. Citric is rather weaker. Tartaric and Cream of Tartar the turn harder. Quinine firm, an advance in price being confidently expected shortly. Cocaine quiet. Phenacetin and Sulphonal unchanged. Quicksilver and Mercurials steady. Cod-liver oil tending upwards. Glycerin slightly better. Borax and Acid Boracic quiet and weak. Iodine and Iodides unchanged. Bismuth Salts in good demand. Cascara Sagrada very cheap and worth buying. Carbolic rather easier, Opium and Morphia weak, Codeia steady. Nitrate of silver dearer, in sympathy with the advance in the metal. Camphor very quiet. Star Aniseed Oil in active demand

and decidedly higher. Shellac firm. The following are the prices actually ruling for articles of chief interest :—

ACID BORACIC—Very quiet at 24s. to 26s. per cwt. for *crystals* and *powder* respectively.

ACID CARBOLIC—Is rather weaker, one maker quoting 6¾d. for 35 to 36° *ice crystal* in quantity, bulk packing ; *liquid*, of pale colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC—Is quiet at 1s. 2d. per lb. for the P.B. quality, the demand having somewhat slackened off with the advent of cooler weather.

ACID LACTIC.—One of the makers who lately reduced his price to 2s. per lb. for cwt. lots, is stated to be very anxious to secure orders at even below this figure if necessary ; a course of action which, in view of the fact that the demand for the article is only quite limited, can hardly prove conducive to the interests either of the makers of acid lactic, or even, in the long run, of buyers of same, which latter will naturally hold their hand as much as possible in buying the article, so long as such reckless and unnecessary cutting of price goes on.

ACID OXALIC—Is quoted at 3¾d. per lb. for quantity and in bulk.

ACID TARTARIC—Is firm at 1s. 2d. to 1s. 2½d. per lb. on the spot for *English* and 1s. 1½d. per lb. for *foreign*. It is said that higher prices may be looked for.

AMMONIA COMPOUNDS.—*Sulphate* : Steady ; gray prompt 24 per cent. London, £7 15s. ; Hull prompt, £7 15s. ; *Carbonate* : 3d. to 3¼d. *Sal ammoniac* : Sublimed firsts and seconds, 33s. and 31s. per cwt. respectively ; crushed for batteries, 35s. and 33s. ; powdered, 36s. and 34s. *Bromide* : 2s. 1d. per lb. *Iodide* : 14s. 6d. per lb. *Chloride* : Free from metals 98 per cent., 27s. 6d. per cwt. *Sulphocyanide* : 1s. 2d. per lb. for the best brands.

ATROPINE—Is in good demand at steady prices, a further advance appearing not improbable in view of the continued scarcity and high price of really good root. Price of the *sulphate* remains at 9s. 6d. per ounce for quantity, and 2s. 6d. per ounce more for the *pure*

BARKS.—*Barberry* : *Stem* 25s. 6d. ; *root* 43s. per cwt. *Mezereon* : *Stem* 32s. 6d. ; *root* 52s. 6d. *Rhamnus Frangula* : 22s. 6d. per cwt. *Simaruba* : 10d. to 1s. per lb.

BISMUTH.—Demand for the *salts* continues good at unchanged prices, viz., 4s. 10d. for the *subnitrate* in 10-cwt. lots, the price of the *metal* also being unchanged at 5s. per lb.

BLEACHING POWDER—Is quoted £7 to £7 10s. per ton, according to quantity.

BORAX—Is quoted 14s. 6d. for *crystals*, and 15s. 6d. for *powder*.

CAMPHOR.—The market for *crude* continues inactive, and for arrival prices are nominal. *China* quoted 87s. 6d. and *Japan* 106s. per cwt. *c.i.f.* On the spot holders are firm, but we hear of no business passing. *Refined* is also quiet at unchanged rates.

CASCARA SAGRADA.—Offers have been made this week as low as 9s. 9d. per cwt. *c.i.f.* terms by sailing vessel, at which low price it is said a fairly large business has been done.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* : Pure, 3s. 3d. *Benzole* : 50 per cent., 2s. 1d. ; 90 per cent., 2s. *Solvent Naphtha* : 95 per cent. at 160° C., 1s. 11d. per gallon.

COCAINE.—One of the makers is quoting 8s. 6d. per oz. for 100-oz. lots ; this is, however, for a brand which is comparatively in little demand, while for the best brands 9s. to 9s. 3d. per oz. would have to be paid.

COCOA BUTTER.—In the London auctions 300 cases (30 tons) *Cadbury's* sold at 11¾d. to 11⅞d. per lb., the average being about 11 13/16d. against 10⅞d. per lb. in August, and 11⅛d. per lb. in July. 150 cases *Dutch* withdrawn.

CODEIA—1s steady at 11s. 3d. to 11s. 6d. per oz. for quantity.

COD-LIVER OIL.—The position of the article appears to be improving. At the same time, however, any advance in value is still only a future possibility, there being offers from the other side at 65s. to 67s. 6d., according to quantity and brand.

CREAM OF TARTAR.—First white French *crystals* are very firm at 77s. 6d. per cwt. on the spot ; *powder*, 80s. to 81s. per cwt.

FLOWERS.—*Arnica* : With calix 29s. 6d. ; without calix 44s. to 49s. per cwt. *Borage* : 1s. 3d. per lb. *Chamomiles* : White new crop 35s. ; old crop 30s. per cwt. *Coltsfoot* : 52s. per cwt. *Elder* : 40s. to 48s. per cwt. ; rubbed 45s. to 60s. per cwt. *Lavender* : 30s. to 40s. per cwt. *Marshmallow* : 54s. per cwt. *Marigold* : 125s. per cwt. *Mullein* : 1s. 3d. to 1s. 9d. per lb. *Poppy* : 1s. 6d. to 1s. 8d. per lb.

GLYCERIN—In more demand, and the general opinion is that prices are at about their lowest. A certain amount of business has been done this week at 49s. to 50s. for English brands of 1260° s.g. chemically pure B.P. quality. German brands are quoted up to 65s. per cwt. in tins and cases.

HERBS.—*Aconite* : 27s. 6d. to 42s. per cwt., according to quality. *Arnica* : 22s. 3d. to 26s. per cwt. *Belladonna* : 48s. to 56s. per cwt. *Centaury* : In bunches, 39s. ; cut, 50s. per cwt. *Hemlock* : 26s. per cwt. *Henbane* : 28s. to 38s. per cwt. *Hyssop* : 18s. 6d. per cwt. for bunches. *Mellilot* : 22s. 6d. per cwt. for the cut herb with flowers. *Peppermint* : Cut, 45s. to 50s. per cwt. *Pulsatilla* : 31s. per cwt. *Rue* : 33s. per cwt. in bunches. *Spearmint* : Cut, 38s. to 45s. per cwt. *Stramonium* : 32s. to 42s. for ordinary, and 40s. to 48s. for rubbed. *Tarragon* : 35s. per cwt. in bunches.

LEAVES.—*Bay* : 21s. to 24s. per cwt. *Bearberry* : 21s. per cwt. for ordinary, and 35s. for picked. *Belladonna* : Good picked, 65s. per cwt. *Bilberry* : 31s. per cwt. *Coltsfoot* : 26s. to 32s. per cwt. *Comfrey* : 30s. 6d. per cwt. *Foxglove* : 31s. 6d. to 35s. per cwt. *Henbane* : 8d. to 9d. per lb. *Hyssop* : 32s. per cwt. *Marshmallow* : 20s. 6d. per cwt. *Mullein* : 23s. per cwt. *Peppermint* leaves and tops : 65s. to 80s. per cwt. *Rose, French* : 1s. 4½d. per lb. *Dutch* : 1s. 2½d. per lb. *Pale* : 35s. per cwt. *Spearmint* leaves and tops : 65s. per cwt. *Tarragon* : 65s. per cwt. *Walnut* : 26s. per cwt.

LITHIA.—The *carbonate* is steady at 9s. 6d. to 9s. 9d. per lb.

MENTHOL.—Spot holders ask 6s. 6d. to 6s. 7½d. per lb. for the best brands of dry white crystal.

MERCURIALS—Unchanged at late prices.

MORPHIA—Remains weak. Makers, however, still quote 4s. 6d. for the *Hydrochlorate salt* in *powder* for quantity and bulk packing.

NITRATE OF SILVER.—In face of the advance in the value of the *metal*, makers have advanced their prices to 1s. 5d. for the *nitrate* crystals, doubts are however freely expressed as to the stability of the advance.

OILS ESSENTIAL.—*Star aniseed* has been this week in active request, and the article closes decidedly dearer at 8s. 6d. per lb. on the spot, and 8s. 3d. per lb. *c.i.f.* *Cassia* too, dearer at 7s. per lb. ; for 80-85 per cent. *Cloves* : Dearer at 2s. 3d. per lb. *Lavender, English* oil is lower at 6s. 6d. per lb. *Peppermint, English* : Lower at 22s. 6d. per lb. *HGH.* : Firm at 6s. 3d. per lb. Wayne County : 4s. 3d. per lb. *Amygd. dulc.* : Dearer at 1s. 1d. per lb. *Pallid* : 1s. 3d. per lb.

OILS (FIXED AND SPIRITS).—*Linneed* is quiet and lower, pipes landed £15 17s. 6d., barrels £16 2s. 6d. to £16 5s. *Rape* : Ordinary brown quiet and a shade easier at £26 5s. to £26 10s., refined on spot £28. *Cotton* : Firm and rather dearer at £16 10s. to £17 10s. according to make. *Cocoant* ; Ceylon on the spot slightly dearer at £22 15s. *Cochin* : Decidedly dearer at £29 to £30. *Palm* : Dearer at £23. on the spot. *Castor* : Very firm, good seed being scarce. *Turpentine* : The market is quiet and easier after touching higher figures than those reported last week ; American on the spot, 21s. 7½d. per cwt., October-December, 21s. 10½d., and January-April 22s. 7½d. *Petroleum oil* : Dull and lower ; Russian on the spot, 4¼d. per gallon ; American on the spot, 4⅝d. ; water-white, 5⅞d. *Petroleum spirit* · American, 6d. per gallon ; deodorised, 6¼d. per gallon.

OPIUM.—Price is nominally unchanged on the spot, with, however, but little business doing, while to arrive new crop is quoted 7s. 3d. to 7s. 6d. for *tale quale*.

ORRIS ROOT.—Really fine picked could hardly be bought below 55s. per cwt., while medium to ordinary is quoted in proportion.

PHENACETIN.—Except for really large quantity it would be difficult to buy below 4s. to 4s. 3d. per lb.

POTASH COMPOUNDS. — *Chlorate*, unchanged at 4d. per lb. ; *Cyanide* is quiet at 10¾d. to 1s. per lb. for 98-100 per cent. for gold-mining purposes. *Bichromate*, steady at 4⅝d. per lb. ; *Prussiate*, slow of sale at 5¾d. per lb. for yellow and 1s. 2d. for red. *Bromide*, unchanged at 1s. 8d. per lb. *Iodide*, in good demand at 9s. 9d. to 10s. 3d. per lb. according to quantity. *Permanganate*, steady at 72s. 6d. per cwt. for small crystals, and 77s. 6d. per cwt. for large crystals. *Hypophosphite*, 3s. 6d. per lb.

QUICKSILVER—Very steady at £6 17s. 6d. from first hands, and £6 16s. 6d. from second hands, holders showing no anxiety to press sales.

QUININE.—There is a very strong desire to buy at 9½d per oz. on the part of speculators, but they can find no sellers, makers being desirous of keeping stocks out of speculators' hands ; whilst to druggists, some of them are willing to sell small lots at 9¼d. per oz.

ROOTS.—*Aconite* : Good German, 37s. per cwt. *Alkanet* : Natural, 24s. 6d., picked, 37s. per cwt. *Angelica* : Loose 22s., twisted 29s. 6d. per cwt. *Arnica* : Ordinary 54s.,

picked 63s. per cwt. *Belladonna*: Continues scarce and dear; genuine Atropa is quoted 45s. per cwt. *Colchicum*: Sliced, 35s. per cwt. *Dandelion*: Is scarce, and prices are quite nominal. *Enula*: 28s. 6d. per cwt. *Hellebore*: White with fibre, 23s. 6d.; without fibre, 34s. 6d.; black with fibre, 22s.; green, 47s. per cwt. *Mezereon*: 26s. 6d. per cwt. *Sumbul*: 9d. per lb. *Zedoary*: 25s. 6d. per cwt.

Seeds.—*Caraway*: *German* 36s. per cwt.; *Dutch* 36s. 6d. per cwt. *Celery*: 35s. per cwt. *Fennel*: 21s. 6d. to 30s. per cwt. for *German*. *Hemlock*: 23s. 6d. per cwt. *Henbane*: 34s. to 40s. per cwt. *Parsley*: 21s. per cwt. *Stavesacre*: 39s. per cwt: *Stramonium*: 21s. 6d. per cwt. *Wormseed*. 30s. to 34s. per cwt.

Shellac.—A firm tone continues to prevail in all positions. On the spot business since the auctions has been moderate at full rates; for arrival 200 cases *TN orange* have been sold, October to December steamer, at 65s. to 65s. 6d., *c.i.f.* The speculative market has been more active, resulting in sales of 700 cases *TN* at dearer rates, comprising September delivery at 67s., October at 68s. to 68s. 6d., November at 69s. to 69s. 6d., and December at 69s. Small supplies were catalogued for the periodical auctions to-day. A good demand prevailed and about two-thirds sold at a further advance of 2s. to 3s. on last sales' prices for *Second Orange*, making basis *TN* now 65s. to 66s. Common *Garnet* was also dearer, and *Button* sold with active competition at 4s. to 5s. advance, particularly for the better qualities. A total of 579 cases offered and 365 cases sold. *Fine Orange*: Of 21 cases 6 sold, good pale *A,SSL* at 79s.; the remainder, fine *KBL*, was bought in at 85s. *Second Orange*: Of 426 cases 252 sold, good bright flat *TN* at 66s., ditto strong curly cakey at 65s. to 66s., fair strong bright red rather mixed at 63s. to 64s., fair bright part blocky at 63s., good bright blocky part shivered at 60s. to 61s., ordinary red at 59s. to 61s., dark claret curly and cakey at 60s. *Garnet*: Of 63 cases 38 sold, without reserve, common block "Snake" at 55s. to 56s., *JB,G.* flint block at 52s. *Button*: 69 cases offered and sold, good strong horny firsts at 76s. to 78s., good pale colory and blocky at 69s., good horny seconds at 67s. to 69s., circle 2's at 62s., thirds at 56s., and fourths at 52s, with common dark at 37s. to 48s.

Soda Compounds.—*Crystals*: Are unchanged at 52s. 6d. per ton ex-ship terms. *Bicarbonate*: £7 10s. per ton for the commercial 99 per cent., and 18s. per cwt. for the free from monocarbonate quality. *Bromide*: Steady at 2s. 1d. per lb. *Iodide*: Unchanged at 11s. 7d. per lb. *Hyposulphite*: Quiet at £6 10s. to £8 per ton according to make and package. *Hypophosphite*: 3s. 6d. per lb. *Caustic*: White 70 to 72 per cent. £7 10s. per ton.

Sulphate of Copper—Quiet at £16 per ton.

Sulphonal—Can still be bought in moderate quantity at 8s. 6d. per lb.

Turmeric—Remains very firm, but closes quiet. In auction 77 bags *Madras* were offered, but the whole was bought in; dull to good bright finger, 17s. to 19s. per cwt.

MONTHLY STATEMENT OF DRUGS, ETC., WAREHOUSED IN LONDON.

September 1, 1897.

		August.		Stocks, Aug. 31.	
		Arrivals.	Deliveries.	1897.	1896.
Aloes (all kinds)	packages	108	408	5,706	6,437
Balsams ,,	,,	20	4	438	756
Bark, Cinchona	,,	930	883	20,619	24,711
Quinine Sulphate	ounces	42,976	65,312	1,368,956	1,585,568
Beeswax	packages	641	403	3,088	1,960
Camphor	,,	315	587	11,609	14,731
Cardamoms	,,	160	303	862	426
Cochineal	,,	140	185	2,179	1,612
Colombo Root	,,	14	44	145	301
Cubebs	,,	217	93	478	320
Dragon's Blood	,,	29	9	104	134
Galls (all kinds)	,,	616	377	4,973	9,766
Gum, Ammoniacum	,,	2	—	33	47
Arabic, all kinds	,,	2,486	2,145	13,811	15,451
Asafœtida	,,	305	95	501	512
Benjamin	,,	745	379	3,524	2,724
Galbanum	,,	—	—	—	1
Gamboge	,,	11	11	315	175
Guaiacum	,,	39	2	107	58
Kino	,,	—	3	21	21
Mastic	,,	—	—	8	12
Myrrh	,,	5	16	516	687
Olibanum	,,	9	336	1,842	3,901
Tragacanth	,,	1,091	629	3,842	4,440
Ipecacuanha	,,	102	152	1,571	2,036
Jalap	,,	—	42	334	378
Nux Vomica	,,	139	6	271	725
Oils, Castor	,,	60	48	394	1,161
Olive	,,	243	235	866	1,209
Aniseed	,,	—	11	85	58
Cassia	,,	—	11	106	20
Rhubarb	,,	371	80	655	395
Saltpetre	tons	329	1,381	5,183	4,791
Sarsaparilla	packages	47	104	260	296
Senna	,,	341	263	1,066	1,168
Shellac	,,	7,472	3,953	53,648	43,824
Terra Japonica, Gambier	tons	1,234	1,059	1,393	863
Cutch	,,	47	65	1,561	1,969
Turmeric	,,	3	39	646	1,136

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns

NEWCASTLE CHEMICAL REPORT.

September 8, 1897.

A good steady market continues The main feature of the week is the advance of Caustic Soda by 5s. per ton for export. Other chemicals are practically unchanged. Quotations according to markets are: Bleaching Powder, £6 10s. to £7 10s. Soda Crystals, 37s. 6d. to 55s. Caustic Soda, 70 per cent., £7 5s. to £7 15s. Soda Ash: 52 per cent., £4. Alkali: 52 per cent., £5. Sulphur: £4 15s. to £5 per ton.

LIVERPOOL REPORT.

September 8, 1897.

In Castor Oil an active market has been the rule lately, and prices have risen appreciably since last report. The foregoing remarks apply also to Olive Oils of all kinds, which have risen from 10s. to 20s. per tun in price since Monday last in consequence of the small supplies obtainable here. Linseed and Cottonseed Oils have become easier in price, but Spirits of Turpentine has risen 9d. per cwt. A hardening tendency is observable in Cream of Tartar, but high prices are somewhat improbable, at any rate in the near future. There has not been much business transacted in Linseed, owing to the almost prohibitive prices asked for that on the spot and to the small shipments from South America, Turkish and Cyprus seed forming the bulk of the sales. The other sales to report consist of Buenos Ayres Honey, Chilian Beeswax, and Cochineal. In chemicals a rise in price has taken place in the case of both Caustic Soda and Ammonium Sulphate.

Ammonium Salts.—*Carbonate* quiet at 3d. per lb. *Sal ammoniac*: 33s. per cwt. *Sulphate*: £7 18s. 9d. per ton, Liverpool.

Beeswax.—4 sacks of Chilian bought at £6 15s. per cwt.

Canaryseed.—Prices for Turkish seed lie between 29s. and 30s. per cwt., but business is *nil*.

Cochineal.—Teneriffe black grain: 10 bags have been sold on private terms.

Copperas—Firm at 36s. to 38s. per ton.

Copper Sulphate.—£16 to £16 5s. per ton.

Honey.—Sales of Buenos Ayres are reported at 21s. to 22s. per cwt.

Linseed—Is quiet. Sales of 150 bags of Larnaca *ex* quay on private terms; also small sales of Turkish from store at 35s. per 416 lbs., and 3000 bags of River Plate at 33s. 6d. per 416 lbs. are reported.

Oils (Fixed) and Spirits.—*Castor oils* have moved up in price, and after selling well all week, close in continued good demand. Calcutta "good seconds" is held for 3⅞d. per lb.; Madras, 3½d. to 3⅝d., and French for 3⅜d. *Olive oils* are in fair demand, but holders have increased their prices to £31 per tun for Seville, Zante, or Candia oils. *Linseed oil* is easier in price, Liverpool pressed oil now being quoted at 17s. 6d. and 18s. 6d. per cwt., and selling well. *Cottonseed oil* has also eased in price to 16s. 6d. and 17s. 3d. per cwt. *Spirits of*

turpentine is in good demand at the increased rate of 22s. 6d. per cwt.

POTASH SALTS.—*Potashes* are only nominal at the lower price of 18s. 6d. per cwt. *Pearlashes* at 30s. per cwt. *Cream of Tartar* shows an attempt to improve, prices 78s. to 82s. being asked, but demand is slack. *Prussiate*: 6d. per lb. *Chlorate*: 3¾d. to 4d. per lb. *Saltpetre*: 21s. 6d. per cwt.

SODA SALTS.—*Borax*: Firmer at 15s. per cwt. *Bicarbonate*: £6 15s. per ton. *Crystals*: £2 17s. 6d. per ton. *Caustic*: 70 per cent., £7 10s.; 60 per cent., £6 10s. per ton. *Nitrate* is steady and in moderate demand at 7s. 4½d. to 7s. 9d. per cwt.

MANCHESTER CHEMICAL REPORT.

SEPTEMBER 8, 1897.

There is continued firmness in heavy chemicals, and Caustic Soda is in demand, while Bicarbonate is steady. Sulphate of Copper is higher, and varies from £17 5s. to £17 10s. for best brands, delivered Manchester. Brown Acetate of Lime is unchanged, and with rather slow demand at £5 2s. 6d. to £5 5s. for Welsh at station, Manchester, and £5 for best American, *c.i.f.* Saltcake is firmer at 22s. per ton in bulk on rails. Miscible Naphtha has had another advance, and to-day 4s. 3d. per gallon is quoted. Pitch, dull at 18s. per ton, *f.a.s.*, Manchester Ship Canal. Green Copperas decidedly easier, and for quantity makers concede a shilling per ton on last week's rates. Yellow Prussiate for Lancashire make is firm at 6d. Chlorate of Potash varies from 4⅛d. to 4¼d., and Bichromate is in fair request at 4¾d Alum and Sulphate of Alumina, quiet. Ironfounder's Plumbago, £13 7s. 6d. to £13 12s. 6d. delivered Manchester, according to quality. Peroxide of Manganese, £12 15s. to £13 10s., and Battery Manganese, £9 5s. to £9 12s. 6d.. Aniline Oil and Salt, dull. Sulphate of Ammonia has an upward tendency.

PUBLICATIONS RECEIVED.

CALENDAR OF THE GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE. Session 1897-98. Pp. 335. Price 1*s*. Glasgow: Robert Anderson, 22, Ann Street. 1897. From the Governors.

ANALYST'S LABORATORY COMPANION. By ALFRED E. JOHNSON. Second edition, enlarged and improved. Pp. 98. Price 5*s*. London: J. & A. Churchill, 7, Great Marlborough Street, W. 1897. From the Publishers.

PARTNERSHIP DISSOLVED.

(From the London Gazette.)

Smith and Tunnicliff, Soap Manufacturers, Livingstone Street, Birkenhead. Debts will be received and paid by William Tunnicliff.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Herbert Sara, Chemist and Druggist, 1, Arwenack Street, and 1, Bar Terrace, Falmouth.

NEW BOOKS AND NEW EDITIONS.

"Favourite Flowers of Garden and Greenhouse." By Edward Step. Vol. III. Illustrated. Pp. 270. Med. 8vo., cloth 15s. London: Warne. 1897.

"Hypnotism and its Application to Practical Medicine." By Dr. Otto Georg Wetterstrand, being the authorised translation from the German edition of Dr. Hendrik G. Peterson, togcther with medical letters on hypno-suggestion, etc., by H. G. Peterson. Pp. 18+172. Dy. 8vo, cloth. 10s. London: Putnam. 1897.

"The Medical Treatment of the Drink Habit." By A. Stoddart Kennedy. Pp. 30. Long 12mo., sewed. 6s London: Simpkin. 1897.

"Genito-urinar Surgery and Venereal Diseases." By Dr. J. William White, and Dr. Edward Martin. Illustrated. Pp. 1061. 8vo., cloth. 21s. net. London: Lippincott. 1897.

"Annals of Botany." Edited by Isaac Bayley Balfour, Sydney H. Vines, D. H. Scott, and W. G. Farlow, assisted by other botanists. No. 42 of Vol. XI. Illustrated. Pp. 344. Royal 8vo., paper. 14s. London: Clarendon Press. 1897.

"A Handbook of Diseases of the Nose and Pharynx." By Dr. James B. Ball. Third edition. Pp. 404. Cr. 8vo., cloth. 7s. 6d. London: Baillière. 1897.

"Personal Hygiene." By Mrs. Ada S. Ballin. Pp. 240. Cr. 8vo. 2s. 6d. London: Ballin. 1897.

"The Cæcal Folds and Fossæ, and the topographical anatomy of the vermiform appendix." By Dr. Richard J. A. Berry. Illustrated. Pp. 76, 8vo. 6s. net. London: Simpkin. 1897.

"Matriculation and Intermediate Greek:" A Guide to the Greek of the Matriculation and Intermediate Arts Examinations of the University of London. By B. J. Hayes and W. F. Mason. Pp. viii.+90. Cr. 8vo., cloth. 2s. 6d. London: W. B. Clive. 1897.

"Atlas of Clinical Medicine." By Dr. B. Bramwell, vol. iii. Plates and Pp. 150, imp. 4to. 42s. net. London: T. and A. Constable. 1897.

"A Text-Book of Materia Medica, Therapeuties." By G F. Butler. Pp. 858. Roy. 8vo., cloth. 22s. 6d. London: Rebman Publishing Company. 1897.

"Clinical Manual of Mental Diseases for Practitioners and Students." By Dr A. Cambell Clark. Illustrated. Pp. 484. 8vo., cloth. 10s. 6d. London: Baillière. 1897.

"Some Aspects of Infantile Syphilis," being the Hunterian Lectures, 1896. By J. A. Coutts. Cr. 8vo. 3s. 6d. London: Rivington. 1897.

"The Wild Flowers of Scotland." By J. H Crawford. Illustrated. Pp. 288. La. cr. cloth, 8vo. 6s. net. London: Macqueen. 1897.

"Theory of Electricity and Magnetism." By Charles Emerson Curry. Pp. 16+444. Cr. 8vo., cloth. 8s. 6d net. London: Macmillan. 1897.

"Ferneries and Aquaria." By George Eggett, sen. Pp. 48. Cr. 8vo., sewed. 6d. (Dean's Practical Guide Books). London: Dean. 1897.

'American Green Book of Medicine and Surgery." By G. M. Gould. Illustrated. Pp. 1257. 8vo., cloth. 38s. London: Rebman. 1897.

"Physiology of Pregnancy and Child-birth Anatomically Represented.' By A. E. Giles. 4to., boards. 3s. net. London: Baillière. 1897.

"Anomalies and Curiosities of Medicine," being an encyclopædic collection of rare and extraordinary cases, etc. By G. M. Gould and W. L. Pyle. Illustrated. Pp. 968. Imp. 8vo., cloth. 34s. London: Rebman. 1897.

"Pittonia:" Series of Botanical Papers. By E. L. Greene. Parts XV. and XVI., plates. Pp. 59+47. 8vo., sewed. 2s. each, net. London: Wesley. 1897.

LATE ADVERTISEMENTS.

Assistants Wanted.

AT once, a steady trustworthy ASSISTANT wanted, able to prescribe well and extract teeth, and to take charge in a small Business. State age, salary, experience, and when disengaged to CHEMIST, 36, Church St., Woolwich, S.E.

IMMEDIATELY, Junior ASSISTANT for first-class Business. Apply personally after 5 p.m., or send carte, which will be returned. Also references and salary required. Write personally. Hours reasonable. COSWAY & RUTTER, 109, Kilburn High Rd., N.W.

BY a large Wholesale Firm, a first-rate CLERK and CASHIER, with some knowledge of the drug trade. Reply, giving full particulars of age, experience, and salary required to A. F. R., care of T. Dixon's Advt. Offices, 16, Great Marlborough St, W.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Specie Jars.—Set of four, height 19 inches, labelled inside, black and gold metal covers, condition equal to new; offers or exchange. Wanted.—Sponge Case, Small Trolley, Plate Glass Window Shelves, etc.—Gare, Chemist, Lymington, Hants.

Splendid Soda-Water Machine, "Compactum," nearly new, plant in itself, turnover and syphon-fillers attached, water and pressure-gauges, no lime, no acid, no gasometer, 350 doz. hand, 700 power, cost £50 1895, price only £35, no fault. Also about 12 yards Steam Shafting with Pulleys, Brackets, etc., all complete and never used. Cost over £20, price only £12.—Norfolk Spa Co., Diss.

OFFERED—(*continued*).

Eight pairs Savar's Tooth Forceps with Lancet, good condition, free 20s. Box Artist's Water Colours and Sable Brushes, cost over £2, post free 15s.—Hornby, 13, Willis Road, Hillsboro, Sheffield.

Overstocked.—5 dozen enemas, seamless, new (Ingram's expired patent), enamelled black, hinged boxes, vagina pipes, leather shields, 30s. dozen; sample posted, 2s 9d., cash.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

What offers?—2 6s. size Carlsbad Salts, 1 oz. Antikamnia, 1 oz. Cocaine Hydrochlorate, ¼ doz. Himrod's Asthma Cure, 4s.—Argol, 156, Green Lanes, N.

OFFERED—(*continued*).

3 cwt. Thyme, uncut at present; offers.—Green, Christchurch.

Proprietary Article.

Marza Wine, 32s. 5d., carriage paid.—Sussex Drug Company (Limited), 135, Queen's Road, Brighton.

WANTED.

Wanted.—Attfield's 'Chemistry' and Bernthsen's 'Organic Chemistry,' second hand. Price to "Vaseline," 5, Serle Street, W.C.

NEWS IN BRIEF.

A Memorial of Scheele appears in the front of the "Lowen-Apothcke" in Upsala, where the local scientific society has put up a memorial tablet, with the inscription: "Carl Wilhelm Scheele lived in this house 1770–1775. Here he discovered oxygen and other elementary substances."

The German Men of Science and Physicians will hold their sixty-ninth meeting at Brunswick from September 20 to 25. On Sunday, September 19, there will be a display of popular and juvenile games on the Bernhard Platz in the afternoon, and in the evening the first general reception will take place. There will be two general meetings, on September 20 and 24 respectively, at 9 a.m. Prof. Richard Meyer (Brunswick) will give a paper on the relations between chemical research and chemical technology, and Prof. Waldeyer (Berlin), on impregnation and heredity, on the Monday. At Friday's meeting, September 24, there will be a lecture by Dr. Orth (Göttingen) on medical instruction and practice; and by Dr. H. Meyer (Leipzig) on the sources of the Xingu River, Central Brazil. The sections will begin to meet on Monday afternoon, September 20, but on Wednesday there will be a joint meeting of the sections on the subject of scientific photography, for which some highly interesting papers are promised by Prof. H. W. Vogel, René du Bois-Reymond, Lassar, Selenka, and others. The evenings throughout the week will be enlivened by operas, concerts, and balls, and excursions are arranged to Wolfenbüttel, Königslutter, and other attractive places in the neighbourhood.

Professor Karl Friedrich Rammelsberg, of Berlin, has, within the last few weeks, celebrated the sixtieth anniversary of his graduation as doctor of philosophy. Like many other chemists of the past, Rammelsberg was originally an apothecary, having served his apprenticeship of four years in the "roten Apotheke," and meanwhile attended the chemical lectures of Rose at the University. Then he was, for a time, assistant to an apothecary in the country town of Dardesheim, and on returning to Berlin took up the special study of natural science in order to take his degree.

Petroleum Hair Wash Cases. — At Marlborough Street Police Court, on Wednesday, September 15, three hairdressers were prosecuted by the London County Council for keeping a quantity of petroleum without having a licence, contrary to the provisions of the Petroleum Acts, 1871. Mr. Godfrey, for the prosecution, said that the proceedings were being taken in consequence of the explosion which took place in July while a lady was having her hair dressed with petroleum. In the case of Leon Copin, 151, Regent Street, W., an inspector of the County Council found on his premises half a gallon of spirit labelled "Antiseptic Shampoo," which flashed at 69°. Mr. Copin informed the inspector that he had only used the stuff since the accident occurred. Mr. de Rutzen said the County Council was only doing what was right in protecting the public, and imposed a fine of £3, with two guineas costs.—Adulphe Luys, 279, Regent Street, W., was fined a similar amount, as was also Auguste Bonjean, 5, West Chapel Street, Mayfair, who told the inspector that since the accident the number of his customers using the stuff had increased.

Messrs. Jewsbury & Brown, Manchester, entertained their employés to a picnic at Cleethorpes, on Saturday last. Upwards of 200 sat down to dinner at the Royal Hotel, Grimsby. Mr. John Bardsley presided, and a vote of thanks to the partners (Mr. W. Stones and Mr. R. Bardsley) was cordially proposed by Mr. Hayes and Mr. Pickstone. Tea was partaken of at Cleethorpes. An extremely pleasant and happy day was enjoyed by every one.

Medicine Stamp Duty realised £254,726 in Great Britain during the year ending March 31 last, an increase of £15,780 over 1895-96, the total amount received from the tax being the highest on record for the period of twelve months. The number of licences to sell stamped medicines issued during the year 1896-97 was 32,473, as compared with 31,592 for the year 1895-96.

The Society of Chemical Industry.—At a meeting of the Nottingham City Council on Monday, a letter was read from the general secretary of the Society of Chemical Industry, in reply to a communication on behalf of the Council, stating that the Society most heartily accepted the Council's invitation to visit Nottingham next year.

Midland Chemists' Assistants' Association.—At a committee meeting of this Association the following officers were elected:—President, H. Jessop; Vice-Presidents, T. J. Walton and F. Casson; Treasurer, J. Selby; Secretaries, E. Osborne and F. Foster. The first two sessions of the Association having proved so successful, the Committee is confidently expecting that the coming session will prove even more successful than the others.

Experiments in Wireless Telegraphy commenced at Dover on Tuesday. The utmost secrecy is being maintained, and during the operations the fort is closed, no access being allowed without special permission of the authorities. The experiments are being conducted in the interest of the General Post Office.

Chemistry Teacher for Hove.—The Technical Instruction Committee of Hove requires a teacher of theoretical and practical chemistry. Applications should be sent at once to Mr. Dancy, Organising Secretary, Connaught Road.

MARRIAGE.

James—Hopwood.—On August 17 at the Church of St. Mary Magdalene, Elmstone, near Cheltenham, by the Rev. George Bayfield Roberts, M.A., Clarence Hilyer, A.P.S., second son of Mr. Joseph James, of 5, Promenade, Cheltenham, to Ella Mabel, only daughter of Mr. William Hopwood, late of Cheltenham.

PARTNERSHIP DISSOLVED.

(From the London Gazette.)

George Way, 173, High Street, Putney, S.W., has retired from the partnership business carried on at 68A, Battersea Rise, Clapham Junction, S.W., under the styles of the Omaha Disinfectant Co., and the Omaha Co. The business will in future be carried on under the style of the Omaha Co., and all debts will be received and paid by George Way aforesaid.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

William James Leggett, Chemist, 86, Bradshawgate, Leigh, Lancs.

Walter Lionel Baylass, Dealer in Drugs, 3, Church Street, Stoke-upon-Trent.

NEWCASTLE CHEMICAL REPORT.

September 15, 1897.

Business continues very steady at late prices. Soda Crystals are so scarce that a fortnight's notice has to be given for supplies against shipping orders. Much the same applies to Caustic Soda. The feature of the week is the barring of Germany, Austria, France, and Belgium for British make. It is stated that this arrangement has been made by the United Alkali Association to suit the trade of foreign makers to lessen general competition. Bleaching Powder is slow of sale. Prices are:—Bleaching Powder, £6 10s. to £7 10s. Soda Crystals, 37s. 6d. to 57s. 6d., according to market. Caustic Soda, 70 per cent., £7 10s. to £7 15s. Soda Ash, 52 per cent., £4. Alkali, 52 per cent., £5. Sulphur, £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

September 15, 1897.

In this market a very quiet tone prevails in the drysaltery department, and only a very hand to mouth business is passing. In heavy chemicals some few contracts are being placed for next year, but there is some difficulty in obtaining exact figures, though in face of the fair export returns and diminished production in the great centres, there is no doubt that full prices are being insisted upon by makers. Caustic Soda, especially high strength, is firm at £9 to £9 5s. for 78-79 per cent., while seventies varies from £7 2s. 6d. to £7 7s. 6d. Salt Cake is rather lower, 19s. to 20s. in bulk on rails. Soda Crystals continue scarce, and £2 17s. 6d. per ton, in bags, rails, remains current quotation. Naphthas still tend upwards, and sales of miscible are being made at 4s. 3d. per gallon, with every prospect of even a higher figure being reached. Coal tar products generally are dull. Sulphate of Ammonia, however, is well maintained, and £7 18s. 9d. to £8 is quoted Liverpool, and £7 10s. to £7 12s. 6d., on rails, Lancashire. Alum still dull at £4 15s. to £5 per ton on rails for loose lump, and Sulphate of Alumina, £4 12s. 6d. to £4 17s. 6d. per ton, casks, *ex* warehouse. Recovered Sulphur firm. Aniline Oil, 7¼d.; Salt, 7½d. Green Copperas is more abundant, and local make is easier. Yellow Prussiate still firm at 6d. for best Lancashire.

Market Report.

[Specially Compiled for the 'Pharmaceutic Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

September 16, 1897.

Business has been somewhat quiet dur- the past few days, quieter, in fact, than had been anticipated or hoped. Changes in value have been comparatively unimportant, chief feature being the continued firmness of Quinine, which looks like going much dearer. Quicksilver is lower. Mercurials unchanged. Opium rather firmer. Morphia weak and unchanged. Codeia steady. Cod-liver Oil dearer. Glycerin, Citric, and Tartaric steady. Cream of Tartar firm. Cascara dearer, and confidently expected to advance further. Ergot of Rye is also dearer. Belladonna Root very scarce. Borax and Boracic Acid very quiet. Cinchona Bark distinctly dearer. Shellac steady. Iodide in good demand at unchanged prices. Carbolic quiet and rather weak. Cocaine tending upwards. Nitrate of Silver dearer. The following are some of the prices actually ruling:—

Acid Boracic—Quiet at 24s. per cwt. for *crystals*, and 26s. per cwt. for *powder*.

Acid Carbolic.—Best makers still quote 7d. per lb. for *ice crystal*, 35° to 36° acid, in drums and overcasks. Pale *liquid*, 95 per cent., 1s. 3d. per gallon.

Acid Chrysophanic is offering at 10s. 6d. to 11s. per lb., notwithstanding the firmness of the crude article. In a letter just received from Brazil it is stated that any small parcels of Arraroba coming on the market are at once bought up at rising prices, and agents here are instructed to hold consignments for firm rates.

Acid Citric—Is quiet although firm at 1s. 2d. per lb. on the spot.

Acid Tartaric.—Steady at 1s. 2d. per lb. for *English* and 1s. 1½d. per lb. for *foreign*.

Ammonia Compounds.—*Sulphate*: Firm. Gray prompt, 24 per cent., London, £8 2s. 6d.; Hull, £8; Leith, £8 2s. 6d.; Beckton, £7 17s. 6d. *Carbonate*: 3d. to 3½d. *Sal Ammoniac*, sublimed: firsts, 33s. 6d.; seconds, 31s. 6d.; crushed for batteries, 35s., and 33s.; powder, 36d. and 34s. *Iodide*: 14s. 6d. *Chloride*: Free from metals, 98 per cent., 28s. Sulphocyanide, 1s. 3d. per lb. for best quality.

Atropine—By a slip price was erroneously reported last week at 9s. 6d. for the *sulphate*. This should have been 12s. 6d. per oz. and 2s. 6d. per oz. more for the *pure* for quantity and in bulk packing.

Belladonna Root—Is very scarce on the spot, and 42s. 6d. per cwt. London terms for arrival shortly is the nearest quotation.

Bismuth.—*Subnitrate* is in good demand at 4s. 10d. per lb. for half-ton lots, the *metal* remaining unchanged at 5s. per lb.

Bleaching Powder - Steady at 7s. 6d. per cwt. on the spot.

Borax—Is quiet and unchanged at 14s. 6d. per cwt. for *crystals* and 15s. per lb. for *powder*.

Camomiles—Are freely offered at 26s. to 35s. per cwt. as to quality.

Camphor.—The crude market remains steady, with, however, but little business doing. German *refined* 1s. 2¾d. per lb. in 5-cwt. casks.

Cascara Sagrada.—There are anxious buyers at late low rates, but owing to the difficulty of obtaining freights all offers have been withdrawn, and the lowest quotations on the spot are at the moment from 13s. 6d. to 14s. per cwt. We fully expect to see a decided advance in this article, as for some time to come the freights are bound to remain high in consequence of the rise in wheat and the large shipments from the United States.

Cinchona Bark.—The supplies at the auctions to-day were again on a small scale, although larger than at the previous sale, amounting to 1378 packages of all descriptions, as against 856 packages in August last. A strong demand prevailed throughout, and the larger proportion was disposed of at an important advance, the average unit obtained being fully 15-16d. per lb., in some instances the unit exceeding 1d., against a full ¾d. at the preceding sales. *Ceylon*: 139 bales offered and 81 bales sold, according to analysis. Succirubra, stem, chips, and shavings at 1⅜d. to 2d.; Ledger, natural ditto, good at 4d., good Ledger branch at 3⅜d.; Ledger, renewed stem chips, at 4½d.; Hybrid, part renewed, at 3⅛d. *East Indian*: 540 bales offered, and 352 bales sold: Red stem chips, ordinary to fair, at 1¼d. to 2¾d.; good root, 3¾d.; Officinalis ditto, fair to good, at 2¼d. to 3⅞d.; renewed chips and shavings, fair to good rich, at 2¾d. to 5½d.; Ledger branch, good, at 3½d.; Ledger, renewed stem chips, good, at 4½d.; ditto root at 5¼d. *Java*: 123 bales and 91 bags offered and sold: Good to fine rich Ledger stem chips at 4⅝d. to 7¼d. *South American*: 50 bales flat Cuprea, of old import, offered and withdrawn. *African*: 435 bales offered and 200 bales sold: Good Quill and Quillings at 4⅛d. ot 5⅛d.

Cloves.—Demand for *Zanzibar* continues; higher rates have ruled, and market closes strong. October-December delivery 2¾d., January-March 2⅞d. to 3d. At auction 5 cases fine bright picked *Penang* sold at 9d., and 15 bales fine bright *Zanzibar* at 3½d.

Coal Tar Distillation Products.—*Toluol*: Pure, 3s. 3d. *Benzole*: 50 per cent., 2s. 1d.; 90 per cent., 2s. *Solvent Naphtha*: 95 per cent. at 160° C., 2s. per gallon.

Cocaine—Is reported to be decidedly firmer in consequence of the increased firmness in price of the *leaves* and of the *crude* article, and in view of the low price still actually ruling, any move of importance can hardly fail to be in the upward direction. Makers of the best brands are still unwilling to book large contracts, price being nominally, 9s. 3d. to 9s. 6d. per oz.

Codeia—Is steady at 11s. 3d. to 11s. 6d. per oz. for quantity.

Cod-liver Oil—Is stronger this week owing to more inquiry, and some brands have been advanced. *Norwegian* is quoted at 67s. 6d. to 70s. per barrel for quantity *c.i.f.* terms. *Newfoundland* is steady at 2s. to 2s. 3d. per gallon.

Cream of Tartar—Is very steady; first white *crystals* on the spot are quoted 77s. 6d. per cwt., with 99 per cent. at 85s. per cwt., *powder* in both cases 2s. per cwt. more.

Ergot of Rye—Has been in good demand this week, with increased firmness on the part of holders. *Russian*, of good quality, is quoted 6¼d. to 6½d. per lb. The article seems in a good position for an important rise as soon as demand increases.

Gentian Root—Is offered on the spot at 23s. 6d. to 24s. 6d. per cwt.

Ginger.—The market for *Cochin* has a rather better tone. Of 1149 bags rough kinds 230 bags sold at slightly higher prices; medium and small washed at 24s. 6d. to 27s. 90 cases cut kinds sold, also at a slight advance; medium bright cut, 55s. to 55s. 6d.; limed bold, *A* cut, 80s.; fine selected bold, 95s.; limed native half-cut, small and ends, 28s.; medium and small, 34s.; good bright bold and medium, 44s. to 45s. 40 cases limed *Japan* sold at 14s. *Jamaica* remains dull, and 54 barrels middling were bought in at 74s. to 78s.

Glycerin.—Steady at about previous prices, say 52s. 6d. to 57s. 6d., for the white chemically pure double distilled 1·260; quality in tins and cases of German make; English being quoted rather below these figures.

Iodides.—In good demand at unchanged prices, say 10s. 3d. for *Pot. Iodide* and 13s. 7d. for *Iodoform*, *Iodine* being also unaltered in value at 7½d. per oz.

Japan Wax—Is quiet on the spot at 41s. per cwt., but for arrival prices come dearer at 38s. 6d., *c.i.f.*, for October to November shipment.

Mercurials.—Makers have so far made no alteration in prices, which remain 2s. 6d. for *calomel*, and 2s. 2d. for *corrosive sublimate* in 5-cwt. lots.

Morphia—Very quiet, makers' price being still nominally 4s. 7d. per oz. for the *Hydrochlorate Salt* in quantity and in bulk.

Nitrate of Silver—Is firmer, in sympathy with the higher value of the metal, price of *crystals* being 1s. 5d. to 1s. 5½d. per oz., according to quantity.

Oils (Essential).—*Star Aniseed* has continued a strong market, and the price is now 8s. 3d. per lb., both for spot and for arrival. It would appear that some speculators in "forward" have been caught. *Cassia*: This article has been dealt in privately at dearer rates, but particulars have not transpired. *Russian Aniseed* firm at 6s. 9d. to 7s. per lb. *Lemon*: It is anticipated that prices will continue at a low level. New crop of fine is quoted 4s. per lb. for November, 3s. 9d. for December, and 3s. 6d. per lb. for January to August, 1898, shipment. *Orange*: The position of this is said to be rather critical, crop in some districts being good but failing in

others, so that considerable fluctuations are to be expected. On the spot sweet orange is quoted 6s. 6d. per lb. *Peppermint*: English is offering freely at about 21s. to 22s. per lb. *H.G.H.*: Firm at 6s. 3d. to 6s. 6d. per lb.; ordinary American, 4s. 9d. to 5s. per lb. *Cajeput*: Very scarce at 3s. 3d. to 3s. 6d. per bottle. *Neroli*: 7s. 6d. per oz.

Oils (Fixed) and Spirits.—*Linseed* dull and lower, on the spot pipes landed, £15 12s. 6d.; barrels, £16 (solely from E.I. seed, 2s. 6d. per ton premium). *Rape*: Ordinary brown lower at £25 15s.; refined also lower at £27 5s. *Cotton*: Refined on the spot firm at £16 10s. to £17s. 10s. according to make. *Coconut*: Ceylon on the spot lower at £22 10s. *Cochin*: Very firm at £29 to £30. on the spot. *Palm*: Firm at the advance of last week to £23. *Castor*: Firm, *French* and *Belgian* first pressing £33, second pressing £32. *Turpentine*: Firm, *American* on the spot 21s. 9d. *Petroleum Oil*: Continues dull. *Russian*: Spot 4¼d. to 4⅝d. *American*: Same position 4½d. to 4⅝d. per gallon; *water white*, 5¾d. to 5⅞d. per gallon. *Petroleum Spirit*: American 6d. per gallon; deodorised 6¼d. per gallon.

Opium—There has been a fair amount of business doing at rather firmer values. It is stated that the quality of the new crop opium now coming to hand leaves much to be desired, especially as regards *druggists'* kinds.

Potash Compounds.—*Chlorate*: Quiet at 4d. per lb. *Cyanide* is unchanged at 10¾d. to 1s. for 98-100 per cent. *Bromide*: Firm at 1s. 8d. per lb. *Bichromate*: Unchanged at 4⅝d. per lb. *Prussiate*: Slow of sale at 5¾d. per lb. for *yellow*, and 1s. 2d. per lb. for *red*. *Iodide* is in good demand at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate*: Quiet and in better supply at 70s. per cwt. for *small*, and 75s. per cwt. for *large* crystals. *Hypophosphite*: Unchanged at 3s. 6d. per lb.

Quicksilver—Has been reduced in price by the importers to £6 15s. Second-hand holders offering at £6 14s. 6d. per bottle.

Quinine.—The further important rise in the price of cinchona barks at this week's auctions has caused a strong demand for this alkaloid, but speculators, although willing to pay 10d. per oz.—an advance of ½d. in their views—can obtain no supplies from manufacturers, who, however, are willing to supply druggists with little lots to keep them going at rather lower prices than speculators offer. The French make is offered at 9¼d. per oz., but finds few buyers, the great majority preferring the better known brands. Should the majority of the makers find a way out of the present state of affairs a decided advance in the official price will, without doubt, be made.

Shellac.—The market is very quiet, but holders are firm. A moderate demand prevails on the spot, *TN* selling at 66s. per cwt., basis fair. For arrival sellers are firm, but buyers hold off. October to December steamer closes nominally at 66s., *c.i.f.* For delivery there is some inquiry for September, but no business has so far resulted. 100 cases November have been sold at 68s. 6d. per cwt.

Soda Compounds.—*Crystals* steady at 52s. 6d. per ton, *ex* ship terms. *Bicarbonate*: £7 10s. per ton for commercial, 18s. per cwt. for the *free from monocarbonate* quality. *Bromide*: 2s. 1d., and *Iodide*: 11s. 7d. per lb. *Caustic*: 70 per cent., £8; 60 per cent., £7. *Hyposulphite*: 6s. to 8s. per cwt., according to brand and packing.

Spices (Various).—*Black Pepper* at auction all bought in, Penang 3¼d.; Tellicherry 3½d.; fine Wynaad 3¼d. *White Pepper*: 52 bags Singapore sold at 6d.; fine bright bought in at 7½d. Privately higher rates rule with a strong tone for both black and white pepper. *Pimento* is dearer, 140 bags sold at auction at 3½d., and since at same price. *Chillies*: 40s. paid for Zanzibar, Japan bought in at 52s. and Sierra Leone at 45s. *Cassia Lignea*: 45s. paid for sound quill, broken bought in at 38s. *Nutmegs*: firm. *Mace* is steady; 23 packages West Indian sold readily at 1s. 5d. to 1s. 8d.

Sulphate of Copper—Firm at £15 10s. to £17 per ton on the spot.

To-day's drug sales went off fairly well on the whole, although some articles were somewhat slow of sale. Cardamoms and Buchu Leaves were decidedly dearer. Ipecacuanha hardly maintained its value, while Jamaica Sarsaparilla was distinctly lower. Of Ergot all the parcels catalogued appeared to have been disposed of prior to the sales. Values of articles of chief interest ruled as per particulars below:—

Aloes.—Fair hard bright Cape fetched 21s. to 22s., drossy selling at 18s. 6d. to 19s. 6d., good livery *Curaçoa* in boxes being held for 35s. to 40s., fair ditto for 25s., good livery ditto in small to medium sized gourds fetching 26s. to 33s., good *Socotrine* in cases and kegs being held for 75s. to 80s. per cwt.

Aniseeds.—40 bags held for 28s. per cwt.

Antimony.—50 cases *Japan* crude were held for £20 per ton.

Asafetida.—170 cases were offered mainly of old arrivals, but the whole was bought in. Good fair grey and pinky block part broken and rather stoney at 70s., middling brown loose and broken block rather heavy and sandy at 60s., and low dark heavy at 50s. per cwt.

Balsam Capivi.—5 cases *Para* sold at 1s. 6d. to 1s. 7d. per lb., a decline of about 2d. per lb. on last sale's rates.

Bark.—31 bales *Carthagena* held for 7d. per lb. for 1*CCD*.

Buchu Leaves. 11 bales, part fine, green rounds, part rather yellowish, sold with strong competition at 5¼d. per lb., a rise of 1½d. per lb. on last sales. Higher prices appear probable.

Cardamoms.—The offerings were small—125 cases—which sold at again higher prices. We make the rise from 4d. to 5d. per lb. Fine bold pale *Mysore* sold at 4s. 1d. per lb.; medium ditto, 3s. 9d. per lb.; and small ditto, 3s. 6d. per lb. Brownish *Malabar* held for 3s. per lb. Decorticated sold 3s. 4d. per lb.

Cascara Sagrada.—70 bags fair quality held for 13s. per cwt.

Cassia Fistula.—37 bags good bold West Indian, part mouldy, sold cheaply at 7s. 6d. per cwt.

Castille Soap.—9 cases water damaged sold at 9s. 6d. to 10s. per cwt.

Castor Oil.—40 cases good *Calcutta* firsts were bought in at 4½d. 5 cases fair *Italian* at 5d. per lb., 2 cases *French* selling for 31s. per cwt.

Cayenne Pepper.—1 case sold without reserve at 8½d. per lb.

Chiretta.—9 bales sold at 1d. per lb., subject to same being sufficient to cover charges.

Cod-liver Oil.—7 barrels tin-lined, old *Norwegian*, realised 45s. to 50s. per barrel.

Colocynth.—12 cases small to boldish Turkey slightly discoloured sold cheaply subject to approval at 1s. 0½d. to 1s. 1d. 14 boxes *Spanish* pulp held for 5s. per lb.

Colombo Root.—19 bags fair washed held for 30s. per cwt.

Croton Oil.—1 case of *Herring's* make was bought in at 3d., a bid of 2d. per oz. being declined.

Croton Seeds.—10 bags fair small taken out at 50s.; a bid of 40s. per cwt. being refused.

Cubebs.—20 bags of fair quality taken out at 26s. per cwt.

Cummin Seeds.—44 bags fair Malta held for 32s. per cwt.

Cuscus Root.—24 bales fair cleaned were held for 30s. per cwt.

Cuttle Fish.—63 mats clean boldish were bought in at 3½d. per lb.

Dragon's Blood.—42 cases in all were offered, the main interest being shown in a new parcel of 20 cases good Zanzibar drop, which quality has been scarce for some time, and for which it is said there are several orders on the market. Holders, however, ask £6 10s. for the first pile, which was quite beyond buyers' ideas, and the whole was bought in. We hear, however, that since the sale a few cases have been taken at this figure. The balance of the offerings consisting of low to medium, quantities of seedy lump, and ordinary saucers of dull colour were bought in at nominal prices.

Dill Seed.—45 bags of fair quality sold at 14s. per cwt.

Ergot of Rye.—10 bags good sound *Russian* were taken out at 7½d. per lb., which shows a distinctly firmer position on part of holders.

Galls.—525 bags *Bagdad* were taken out at 52s. 6d. per cwt. for blues, 47s. 6d. for greens, and 42s. 6d. for whites.

Gamboge—Was represented by 60 cases, but demand was slow and only 9 cases fair bright rather softish pipe sold at £8; 1 case at £8 5s. per cwt.

Guarana.—1 case of fair quality held for 1s. 6d. per lb.

Guaza.—68 packages partly good green on stalk were bought in at 3½d. per lb.

Gum Ammoniacum.—3 cases drop and blocky held for 60s. per cwt.

Gum Animi.—1 bag fair quality sold at 70s. per cwt.

Gum Arabic.—Fair grain held for £6, bold picked white for £15, good soft sorts for 85s., hard ditto for 65s., common E.I. siftings for 30s. per cwt.

Gum Benjamin—Low *Sumatra* sold at 75s. to 82s. 6d. per cwt., medium seconds ditto at £5 to £5 2s. 6d., fairly good ditto at £6 12s. 6d., somewhat inferior *Penang* at 85s., subject to approval, 1 case small to bold free *Siam* realising £22. Low *Palembang* held for 20s. per cwt.

Gum Chicle.—10 bags taken out at 1s. 3d. per lb.

GUM COPAL.—1 bag was bought in at 55s. per cwt.

GUM GUAIACUM.—19 bags low sold at 3d. down to 1¾d. per lb. for very inferior quality.

GUM KINO.—1 case red was held for 4s. 6d. per lb.

GUM MYRRH.—5 bales dusty siftings held for 35s., 1 case picked, rather dark, for 60s., fair Aden sorts for 85s. per cwt.

GUM TRAGACANTH.—13 cases low quality were held for 80s. to 90s. per cwt.

HONEY.—31 packages medium to fair Jamaica sold 22s. to 27s., 5 cases Queensland held at 26s.

IGNATIUS BEANS.—20 bags held for 6d. per lb.

IPECACUANHA.—Of *Rio* about 50 bales were offered and part sold at rather easier prices at 6s. to 6s. 2d. per pound for fair to good thin. The *Carthagena* variety was only represented by a few bales, which were bought in at 5s. per lb.

KOLA NUTS.—10 bags medium to fairly bold dry held for 6d. per lb., a bid of 3¼d. for 18 bags fair small being declined.

MUSK.—10 tins were held for 45s. to 72s. per oz., quality leaving much to be desired even at the higher price.

OILS (ESSENTIAL).—*Eucalyptus* was in good supply, but demand was very slow, and the whole bought in at 1s. to 2s. 3d. per lb., according to quality. *Lemon*: 10 coppers of low quality sold at 1s. 11d. per lb., and 50 coppers fair at 3s. per lb. *Bergamot*: 7 coppers sold at 1s. 4d. per lb., price showing quality. *Peppermint*: 9 cases *Japanese* dementholised held for 3s. per lb., and 5 cases Dodge and Olcott's in bottles sold at 4s. 5d. per lb. The same firm's wintergreen oil was bought in at 5s. 6d. per lb. *Lavender*: The two Winchesters of "Mitcham," which have been so frequently offered before were again bought in at 65s. per lb. *Cassia*: 6 cases analysing 84 to 87 per cent. aldehyde are held for 7s. per lb., one case having been sold privately at this figure. *Ylang-ylang*: 7 bottles "Cananga" held for 3s. to 3s. 6d. per lb.

ORANGE PEEL.—Medium thick cut was held for 6d.; ditto thin cut for 8d. to 9d., and ringlets for 6d. per lb.

ORRIS ROOT.—Of 24 bags part sold at 29s. to 33s. per cwt. for inferior old *Florentine*.

QUINCE SEEDS.—Fair red Cape sold privately at 1s. per lb.

RHUBARB.—Fine bold round *Shensi* held at 3s. 6d. to 3s. 9d.; flat ditto at 2s. 9d. to 3s. 6d.; good pickings at 1s. 3d.; small trimmings, fine colour, fetching 3s. per lb.; fine flat *Canton*, but wormy, held for 1s. 6d.; good round, part rough selling subject to approval at 1s. 2d. Rough *high-dried* fetched 9¼d., ditto bold dull-coated half-grey half-dark fracture 9d., good medium ditto being held for 1s. 1d. per lb.

SARSAPARILLA.—Fair *Jamaica* realised at commencement 1s. 10d., but later on holders decided to meet the market, which resulted in sales being made down to 1s. 7d. per lb., 8 bales *native* being bought in at 1s. 2d. Fair *Lima* realised 1s. 4d. for 1CCD, and 1s. 3d. for 2CCD.

SCAMMONY ROOT.—71 bags of fair quality were held for 32s. 6d. per cwt.

SENNA.—Of 49 bales *Alexandrian* 9 packages of stalky siftings sold at 2½d. per lb., 6 cases good green leaf at 7½d. per lb., the balance being bought in. *Pods* sold cheaply at 5d. per lb. *Tinnevelly*: About 150 bales offered, mainly of the lower grades, which sold at dearer rates with good competition. Small leaf, spotty and discoloured, sold at 1½d. to 1¾d. per lb., small greenish 2d. to 2¼d., and a few bold leaves of poor colour up to 3d. per lb.

SQUILLS.—16 bags fair pale held for 2½d. per lb.

STAR ANISEED.—20 cases China bought in at 87s. 6d. per cwt.

THYME SEED.—26 bags *Bombay* held for 15s. per cwt.

TONQUIN BEANS.—2 packages old and foxy sold without reserve at 7d. to 8d. per lb.

WAX.—Fair to good *Jamaica* sold freely at £7 10s. to £7 12s. 6d. 5 cases *Bombay* were bought in at £5 10s., fair *French* being held for £7 2s. 6d., *Spanish* for £6 12s. 6d. to £7 5s., *Zanzibar* for £5 15s. to £6 5s., *Italian* for £6 10s., *Japan* for 40s. per cwt.

LIVERPOOL REPORT.

SEPTEMBER 15, 1897.

The good prices obtainable for most Oils last week still continue. Castor Oils particularly being very firm. In Seeds business has been practically *nil*, Linseed only offering in small amount at full rates, and Canaryseed being extremely dull. Good sales of Chillies (Sierra Leone) and Chilian Becswax are reported at satisfactory rates, whilst Chilian Quillaya Bark has been bringing £25 per ton.

AMMONIUM SALTS—Are as given last week, with the exception of Sulphate, which is now priced here at £8 per ton, an advance of 1s. 3d.

BEESWAX.—6 bags Chilian sold at £6 15s. per cwt.

CANARYSEED—Is very dull, and prices are practically nominal, owing to its neglected position. Buyers can obtain Turkish seed well under last week's rates.

COPPERAS—Is firm at the recent rates of 36s. to 38s. per ton.

COPPER SULPHATE—Continues very steady at £16 5s. per ton.

LINSEED—Is lifeless, and no business has been transacted with the exception of 850 bags of Turkish at 34s. 6d. to 35s. per 416 lbs. *ex* store.

OILS (FIXED) AND SPIRITS.—*Castor oils* are firm with good sales at steady prices. Calcutta good seconds 3⅞d. per lb., Madras 3⅞d. per lb., French 1st pressure 3⅞d. to 3⅝d. per lb. *Olive oils* are selling slowly, but at fully recent rates. *Linseed oil* is in good demand at 17s. 6d. to 18s. per cwt. for Liverpool oil. *Cottonseed oil* is firmly held for 16s. 6d. to 17s. 3d. per cwt. for Liverpool refined. *Spirits of turpentine* is in fair demand at 22s. 6d. per cwt., with a movement towards higher rates.

POTASH SALTS—Are unchanged from last week.

SODA SALTS—Are also unchanged.

LATE ADVERTISEMENTS.

Business for Disposal.

I HAVE a BUSINESS for Disposal (at valuation or offer), situated in a Lancashire watering place, only requires a good counterman to largely increase turn-over Any such, with £500, looking out for a business can have particulars by writing to me and enclosing reference. TENAX, Office "Pharm. Journal," 5, Serle St.

Assistant Wanted.

WHOLESALE. — Wanted, a Junior ASSISTANT for the dry counter (surgeon's wholesale). Must have had good experience. Reply by letter, stating previous engagements, age, and salary required to HOME, Chemist and Druggist, 42, Cannon St., E.C.

Engagements Wanted.

A YOUNG man, Clergyman's son, is willing to give his services, in return for board and lodging, for a time, as an IMPROVER. Fair Dispenser. Not much experience at counter. B., 28, Tredegar Rd., Bow, E.

THE Daughter of a Pharmacist who was an old member of the Society, seeks RE-ENGAGEMENT as Housekeeper or Cook in family where girl is kept. Highest references from chemists and others. Address, Miss S. WELLS, 6, Newton Avenue, S. Acton.

EXCHANGE—OFFERS AND WANTS.

OFFERED.

Books.

Books for the Minor, list on application. Also £4 4s. Materia Medica Cabinet, very useful and cheap; price on application.—Hare, c/o Foggitt, Thirsk.

Buffon: 'Histoire Naturelle,' original edition, complete 48 vols., 1250 plates, large octavo, richly bound, whole calf, unique library set, £12 10s.—K. Hebbeler, 121, Oxford Street, 1st fl., London, W.

Drugs and Chemicals.

Offers Wanted.—Two 25-oz. bottles Macfarlane's morph. hydrochlor.—Grimble and Kent, Boston.

OFFERED—(*continued*).

What offers?—2 6s. size Carlsbad Salts, 1 oz. Antikamnia, 1 oz. Cocaine Hydrochlorate, ¼ doz. Himrod's Asthma Cure, 4s.—Argol, 156, Green Lanes, N.

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d.—Tully, Chemist, Hastings.

Optical and Photographic.

Microscope, by Crouch, with 1-in. and ⅛-in. objectives. Also Vine's 'Botany' and Maisch's

OFFERED—(*continued*).

'Materia Medica,' latest editions. Address—W. E. M., Wadham House, Commercial Street, E.

Miscellaneous.

Dental Chair in thorough condition, 50s.; Dental Engine, 30s.; both bargains, but must sell on account of room.—C. T. Steel, Chemist, Bitterne Pharmacy, Southampton.

Pure New English Honey, splendid quality, 7s. for 12 lbs.; pure beeswax, 1s. 8d. per lb., carriage forward, packages free, cash.—Brampton, Sudbury, Suffolk.

NEWS IN BRIEF.

Preventive Medicine in the Victorian Era is the subject of a series of Gresham Lectures, to be delivered by Dr. E. Symes Thompson on October 5 to 8. The first lecture will deal with the Rise and Progress of Hygiene, commencing with the condition of preventive medicine sixty years ago. Epidemic and Endemic Diseases of our Era will next be considered, typhus fever, typhoid or enteric fever, scarlatina, diphtheria, cholera, and phthisis being discussed. The third lecture will be on Alcoholics and Anæsthetics, commencing with a consideration of temperance in Egypt 4000 years ago. Abstinence and ancient religions, temperance organisations in the United States in the first quarter of eighteenth century, and the similar British movement in 1829, will be discussed, in addition to the scientific study of inebriety, the introduction of ether and chloroform, the influence of anæsthetics in surgery, and the use and abuse of chloral, bromides, opiates, cocaine, antipyrine, etc. The last lecture will treat of Hospitals and Nurses, and the Evolution of Hospitals in the Reign of Her Majesty. The lectures will be illustrated by diagrams; they are free to the public, and commence each evening at six o'clock.

The Business of the Sun Camera Co., Ltd., Leeds, has been purchased by, and is now incorporated with the business of Messrs. Lonsdale Bros., 22, Goswell Road, London, E.C., to whom all communications should be addressed. A representative of the firm, Mr. A. Lonsdale, left London on the 9th inst. for a tour round the world, *vid* San Francisco, British Columbia, China, and Japan on the way to Australia and New Zealand, where he will make a lengthened stay, returning in about twelve months by way of Ceylon and the Northern Provinces of India.

The Edinburgh Pharmacy Golf Club decided its autumn competition on Monday last, which was the Edinburgh half-yearly holiday. There were four prizes offered for competition, presented by members of the club, and the Dick Challenge Medal was also down for decision. Dunbar Links was the golf course selected, and there was a good turn out of members. When the scoring cards had been handed in it was found that the result had been a close one. Mr. John J. Sutherland was first in the handicap, and also secured possession of the Dick Challenge Medal; second, D. S. Murray; third and fourth, W. M. Mausom and T. Welsh (tie). A sumptuous repast followed in the Royal Hotel, presided over by Mr. J. A. Forret. As time did not permit of a second round being entered upon, a walk along the cliffs was substituted. Subsequently the members departed by train and cycle for Edinburgh, the outing having been thoroughly enjoyed by all.

Ulster Pharmaceutical Association.—At a special meeting of the Committee of the Association, held in the I.O.F. Chambers, 5, Royal Avenue, Belfast, on Saturday, the 18th inst., at 11 o'clock a.m.—Mr. P. J. Lyons occupying the chair—it was proposed by Mr. J. Guiler, and seconded by Mr. D. W. Elliott, that Mr. J. Montgomery and the hon. secretary (Mr. R. W. M'Knight), on behalf of the Association, write a letter of condolence to Mrs. Prott, expressing sorrow in the loss she and the Association have sustained in the death of Mr. William Prott, President of the Association. Mr. J. Tate and Mr. Waugh supported the motion, which was unanimously agreed to. The chemists of Belfast have reason to regret the death of Mr. Prott, as they had in him a true friend, who was ever ready to oblige in business matters and give good, sound advice when sought for. His retiring disposition prevented him being known publicly as well as he deserved, but those who had the honour of his acquaintance acknowledged his sterling worth, both socially and in business. His extensive knowledge of pharmacy well fitted him for the presidency of the Ulster Pharmaceutical Association, where his kind and genial presence will long be remembered by the members, all of whom revered and respected him.

Meat and Malt Wine.—The action of Coleman & Co., Ltd. *v.* Sussex Co-operative Drug Stores, Ltd., which was brought for an injunction to restrain the sale of meat and malt wine was in the list for hearing by Mr. Justice Ridley, on Wednesday last, but by consent stood over for a week, it being stated that in all probability the parties would come to terms. The defendants agreed to give an undertaking in the terms of the notice of motion without prejudice to any question.

The Sale of Poisons.—There is good reason to believe that the Government will introduce a Bill next session dealing with the sale of poisons. It has long been evident that further legislative restrictions are necessary, for rarely a week passes without a coroner's jury making formal complaint of the evils resulting from the present loose system which enables anyone to buy deadly poisons, such as strychnine, arsenic, and laudanum. The measure making it more difficult for the public to purchase these deadly drugs would pass through the House of Commons without opposition. Outside Parliament it would have the support of every medical practitioner in the kingdom.—*Manchester Evening Mail.*

Accidental Poisoning Cases have occurred at Bletchley, Nottingham, Chelmsford, Yardley, Blackheath, and New Brighton. At the first-mentioned place a young gentleman put up at the "Eight Bells" Hotel, and next morning was found in his room dead, from the effects of an overdose of chloral. At Nottingham, Charles James Bloom (63) had been confined to his bed suffering from atrophy, and was in the habit of taking chloral to induce sleep, but on Thursday, September 9, he took an overdose and died. Another case in which chloral was the cause of death occurred at Chelmsford, where Leonard Galward, a draughtsman, after a drinking bout, took an overdose. He had on a previous occasion been medically treated for an overdose of sulphonal, and was known to be an habitual taker of both chloral and sulphonal for insomnia. Horace Southall (7), of Blackheath, near Oldbury, drank a quantity of carbolic acid in mistake for ginger-beer. An inquest was subsequently held, and a verdict of "death from misadventure" was returned, the jury adding that greater care should be exercised in the sale and use of such deadly poison. At Rotherham a young woman, aged 21, died from poisoning by carbolic acid, supposed to have been self-administered.

A Dose of Morphine (about 8 grains) is alleged to have been administered in beer by Andrew Garrod, employed at a veterinary surgeon's, to his brother, who was drunk and noisy, in order to make him sleep. The draught was too powerful, however, for in spite of every effort to counteract the effects of the poison the man died, and Garrod has been arrested on a charge of causing his brother's death.

Chloroform killed a youth named Norris Wilmott Kenyon (17), of Yardley, who had frequently used it when suffering from neuralgia, and on Friday, September 10, he was found lying dead in bed with a handkerchief which had been soaked in chloroform, placed over his nose and mouth. The medical evidence at the inquest showed that death was due to the inhalation of chloroform, although it was quite possible that the actual cause of death was suffocation by vomited matter in the mouth rather than poisoning by chloroform. A verdict of death from "misadventure" was returned. Another victim of neuralgia, John W. Thulus (21), clerk, of Atherton, while staying at New Brighton took landanum to relieve pain, and on Wednesday, September 8, died from the effects of an overdose. The same verdict was returned as in the Yardley case. Spirit of salt was purposely taken to cause death by John Kerfoot (56), at Wolverhampton, and at the inquest the jury, in returning a verdict of "suicide," added a rider to the effect that greater restriction should be adopted in regard to the sale of poisons.

Citrate of Iron and Quinine with Strychnine caused the death of a newsagent named Betts, of Heigham Street, Norwich, on Tuesday, September 14. A prescription for medicine containing the above ingredient was presented by the man to Edgar Burdett, Chemist and Druggist, manager at Messrs. Boots, Limited, Norwich, who without hesitation dispensed it as he had done on several previous occasions. Instead of taking it according to the directions on the label the man drank the whole at once, and returning to the shop, he informed the dispenser of the fact. An emetic was at once administered and a doctor sent for, but death occurred in about fifteen minutes. It transpired at the inquest that the bottle, although bearing a red label, was not marked "Poison," also that the poison register, while containing a copy of the prescription, had not appended to it the name and address of the purchaser. The Coroner remarked that the book was not in conformity with the Pharmacy Act Amendment Act of 1869, which enforced the entry of the name and address of the purchaser, in addition to the name and address of the vendor. This had not

been complied with, and he trusted that in the future it would be done. The jury also expressed the opinion that in the case of any mixture containing poisonous drugs a label specifying its nature should be affixed to the bottle or packet. The Foreman further remarked that if any fine could be inflicted upon Messrs. Boots, Limited, he thought it should be done.

ADULTERATED SPIRIT OF NITRE.—At Bingham Petty Sessions, on Thursday, September 7, William Case, East Bridgford, grocer, was summoned at the instance of Colonel Story, inspector of drugs for the county, for selling adulterated spirit of nitre. Colonel Story produced an analyst's certificate, which showed that the spirit contained 42 per cent. of water. The magistrates imposed a penalty of £3.

COLLEGE LIFE IN LONDON.—College life, after the fashion of that of Oxford and Cambridge, has been shown to be practicable in London by the experiment of Wadham and Balliol Houses, in connection with Toynbee Hall, Whitechapel. Business men have been found to value opportunities for study, the social life of fellow residents, the independence and restraint of an ordered community. Others will probably be opened, and residential houses will be ready for the new London University.

MESSRS BOOTS PURE DRUG COMPANY, LIMITED, at the Wednesbury Borough Police Court on Friday, September 17, was charged with having unlawfully set up and maintained a certain lottery at its shop in the Market Place, Wednesbury, not authorised by Parliament, to wit, the distribution by chance amongst purchasers of a bottle of Gratton's Embrocation, of prizes. William Harpur, the manager of the shop, was charged with aiding and abetting in the commission of the offence. Evidence was given by several police constables to the effect that they had each purchased a bottle of the embrocation, receiving at the same time a receipt for the money, and also a coupon for a cricket competition. One of the constables having filled up the coupon with the names of fourteen cricket teams in the order in which he expected them to stand at the end of the season, and sent it to Boots Limited at Nottingham, had received in return a prize of a sovereign. The magistrates decided that the police did quite right in taking the proceedings, and that the competition was not a legitimate method of doing business. Still, there was so much mystery about the matter that they dismissed the case.

MARRIAGES.

HAVARD—JONES.—On September 8, at St. James's Church, Walter Road, Swansea, by the Rev. H. A. Harris, H. L. Havard, Swansea, to Annie, second daughter of the late Mr. Richard Jones, late of Pontypool.

SMITH—GILCHRIST.—On September 15, 1897, at Bray Presbyterian Church, by Rev. H. P. Glenn, B.A., assisted by Rev. James Snowdon, B.A., and Rev. A. Gilchrist, B.A. (brother of the bride), John Smith, M.P.S.I., Pharmaceutical Chemist, Rathgar, Dublin, to Bella, daughter of Andrew Gilchrist, Esq., Grovedale, Goldenball, Co. Dublin.

Market Report.

(Specially Compiled for the 'Pharmaceutical Journal.')

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

SEPTEMBER 23, 1897.

The principal article of interest this week has been quinine, which has risen considerably, and from all appearances a still further advance will have to take place. Camomiles are rather firmer. Saffron will not be cheaper, according to reports from Spain. Ergot is dearer, and really sound Russian seems difficult to obtain. Citrate of Iron and Quinine has been advanced, and will probably go dearer in sympathy with Quinine. Opium is cabled dearer from Smyrna, and the American markets are firmer. Shellac is barely steady. Fixed Oils are generally lower. Belladonna Root continues very scarce and dear, as is Dandelion Root. Nitrate Silver is very firm, and Senega Root is cabled dearer from America. Spices are generally dearer.

ACID BORACIC.—Ordinary makes are quoted 24s. per cwt. for *crystals* and 26s. per cwt. for *powder*.

ACID CARBOLIC.—Some makers quote lower prices, 34° to 35°C. *ice crystals* in 2½ cwt drums 6½d. to 6¾d. per lb., 39 to 40° 7⅛d. to 7¼d. per lb. *Crude*: 60° 1s. 9d., 75° 2s. 2d. per gallon.

ACID CITRIC—Is steady, although quiet, and 1s. 2d. per lb. is the lowest quotation.

ACID OXALIC.—Steady at 3½d. to 3¾d. per lb. for *crystals* in small lots up to 5-ton lots in 6-cwt. casks. *Powder*: 4d. to 4¼d. per lb.

ACID TARTARIC—Remains firm at 1s. 2d. per lb. for *English* on the spot, *foreign* being obtainable at ½d. per lb. below this figure.

AMMONIA COMPOUNDS. — *Sulphate* very firm, but unchanged at £8 2s. 6d. per ton for grey, prompt, 24 per cent., *London*. *Hull* same price, *Beckton* terms, prompt, £7 17s. 6d. per ton. *Carbonate*: 3d. to 3½d. per lb., according to package. *Sal ammoniac*: Sublimed firsts, 33s. 6d. per cwt.; seconds, 31s. 6d. per cwt.; *crushed*, for batteries, 33s. and 35s. per cwt.; *powder*, 34s. and 36s. per cwt. *Iodide*: 14s. 6d. per lb. *Chloride*: 98 per cent., free from metals, 27s. 6d. per cwt.

BELLADONNA ROOT — Continues very scarce, and good root readily realises 45s. per cwt.

BENZOLE—Strong and active; 50 per cent., prompt, 2s. 1d.; 90 per cent., September to October, a large business done at 1s. 11d. to 1s. 11½d.; 2s. is asked for November to December.

BLEACHING POWDER.—Steady at £7 to £7 10s. per ton according to quantity.

BORAX—Is a dull market, but prices are unchanged at 14s. 6d. per cwt. for *crystals* and 15s. per cwt. for *powder*.

CAMOMILES—Are reported firmer. Good white *Belgian* No. 1 are offered at 32s. per cwt., No. 2 at 27s. 6d., and No. 3 at 17s. per cwt. gross for net ex wharf.

CASCARA SAGRADA.—No offers are being made for arrival, owing probably to the difficulty of obtaining freights. On the spot there is but little inquiry, and quotations remain unchanged at 13s. to 14s. 6d. per cwt., according to condition.

CASTOR OIL—Continues very firm, and *Calcutta* is in small supply at 5d. per lb. for *firsts* and 4d. per lb. for good *seconds*.

CINCHONIDINE SULPHAS—Is quoted by Zimmer of Frankfurt at 6d. per oz. in bulk.

CINCHONINE.—*Sulphate* in large crystals, 5s. 9d. per lb. in bulk; *hydrochlorate*, 6s. 3d. per lb.

CITRATE OF IRON AND QUININE—Has been advanced ½d. per oz. this week owing to the advance in quinine, price being now 4¾d. to 5d. per oz. according to quantity in bulk packing.

CLOVES. — Privately *Zanzibar* remain quiet, and but little business has been done, including October-December delivery at 2¾d. per lb. In auction only 109 bales *Zanzibar* were offered, and 50 bales good bright sold at 3½d. per lb.; 21 cases picked *Penang* bought in at 8d. to 9d. per lb.

CODEIA—Remains unchanged at 11s. 3d. to 11s. 6d. per oz. for quantity and bulk packing.

COD-LIVER OIL—Is very firm, the better-known brands of non-freezing *Norwegian* being quoted 70s. per barrel, at which price it is said a small business has been done. In *Newfoundland* very little is doing, and 2s. to 2s. 6d. per gallon are the nominal quotations.

CREAM OF TARTAR.—Steady. First white crystals spot 80s., powder about 3s. per cwt. dearer.

CUTCH.—At auction the good supply of 1643 boxes were offered, of which practically the whole sold at firm prices.

DANDELION ROOT—Is very scarce, 32s. 6d. being quoted for *whole* and 39s. for *cut*.

DIGITALIS LEAVES—Are scarce, and 33s. to 35s. is asked for *foreign*.

ERGOT—Is very firm, and higher prices are asked. For sound *Spanish* 10d. per lb. is named, and for sound *Russian* 7d. to 8d. per lb. is the quotation, although really sound seems extremely scarce, and actual business at these figures would probably be difficult.

GINGER. — At auction on Wednesday *Cochin* met a fair demand, but of 1639 bags rough, only 310 bags found buyers at 26s. per cwt. for fair washed; 28s. to 28s. 6d. per cwt. for bold and medium limed rough; of 292 cases *Native* limed 120 cases sold; ends partly cut, 26s. to 27s. 6d. per cwt.; small ditto, 31s.; medium and small, 36s. 6d. to 37s.; ordinary, 34s.; medium, 40s. per cwt.

GLYCERIN.—There is a rather better feeling in the white, chemically pure double distilled 1·260 sp. gr. quality, although English brands are still quoted at about

50s. per cwt. in tins and cases for contracts, German brands being held for higher prices.

Henbane Leaves.—*Foreign* of new crop are quoted 40s. per cwt.

Isinglass.—At the periodical auctions on Tuesday supplies were on a smaller scale, the total not exceeding 426 packages, as compared with 645 packages in August and 632 packages in July. The demand, however, showed a remarkable falling off, and most descriptions were slow of sale at a decided decline in value. *Bombay* and *Kurrachee* formed the only exception, meeting a good steady demand, a good part finding buyers; leaf at steady to slightly higher prices, tongue mostly rather dearer, *Bladderpipe* higher; *Cake* at full rates to some advance for good to fine. *Penang* sold at a decline of 2d. to 3d. for both leaf and tongue. *Saigon* leaf went off quietly at a further reduction of 2d. to 3d. *Brazil* met a slow demand, and prices of both *Para* and *Maranham* lump gave way to the extent of 4d. to 6d., tongue selling irregularly. *West India* declined 3d. to 5d. per lb.

Kola Nuts.—At the spice auctions 1 barrel slightly mouldy *Granada* bought in at 8d. per lb.

Lime Juice.—The parcel of *New Zealand* offered in last auctions has been sold privately at 6½d. per gallon, and importers are now asking rather more money.

Menthol—Has been quiet. Some shippers ask as much as 7s. per lb., but there are still sellers of fine dry crystals at 6s. 3d. per lb. on the spot and 6s. *c.i.f.* terms.

Morphia.—Powdered salts are still nominally quoted 4s. 7d. per oz. in bulk, but for large orders makers seem willing to meet outside competition.

Nitrate of Silver—Is very firm, and 1s. 5½d. to 1s. 5¾d. per oz. is the present quotation for *crystals* in quantity, with ¼d. to ½d. more for sticks.

Nitrate of Soda—Is in moderate demand at 7s. 6d. to 7s. 9d. per cwt. according to quantity and quality.

Oils (Essential).—*Star Aniseed* is firm at 8s. 3d. per lb. on the spot; second hands offer 8s., *c.i.f.* terms, but direct China quotations come at 8s. 6d., *c.i.f.* This article looks well for a further advance. *Cassia*: 80 to 85 per cent. is held for 6s. 9d. per lb. on the spot, whilst for arrival 6s. 5d. is the *c.i.f.* quotation. *Peppermint*: *H.G.H.* is firm at 6s. 3d. per lb. on the spot. *English*: 21s. per lb. *Wayne County*: Steady at 4s. 3d. per lb., *c.i.f.* *Citronella*: Firm at 1s. 1½d. per lb. in drums. *Lemongrass*: 2¾d. per oz. *Cloves*: Very firm at the late rise. *Lavender*: English oil is rather easier at 60s. per lb. *Cajeputa*: Firm at 3s. 3d. to 3s. 6d. per bottle. *Santal Flav.*: English is quiet at 11s. 6d. to 12s. per lb.

Oils (Fixed) and Spirits.—*Linseed* is again lower. On the spot pipes landed £15, barrels £15 10s. *Rape* is also decidedly lower at £25 for ordinary brown on the spot; refined on the spot £26 5s. *Cotton*: Quiet and lower; refined on the spot £16 to £17, according to make. *Olive*: Spanish, £28 to £30; Mogador, £28; Levant, £30 to £31. *Cocoanut*: steady at £22 10s. for *Ceylon* on the spot; *Cochin*, same position, a shade easier at £29. *Palm*: firm at £23 on the spot. *Turpentine* has further advanced, and with an active demand closes very firm at 22s. 3d. per cwt. for *American* on the spot, with forward deliveries at 3d. to 10½d. per cwt. more money. *Petroleum Oil* is quiet but steady: *Russian*, 4¼d. to 4⅝d. on the spot; *American*, 4½d to 4⅞d.; water-white, 5¾d. to 5⅞d. *Petroleum Spirit*: American, 6d., deodorised, 6¼d. per gallon.

Opium.—Several lots of druggists' qualities of new crop have been bought up by manufacturers, and at the moment very little is now to be had, except at an advance on last prices paid. Telegrams from Smyrna report an advance of 3d. per lb. on that market, with good sales and an advancing market.

Podophyllin.—Notwithstanding the lower prices for mandrake root, the resin continues firm, fully B.P. quality being quoted 12s. 6d. to 15s. per lb., according to quantity.

Poppy Heads.—Large *Belgian* are offered at 12s. per mille, medium size at 8s.

Potash Compounds.—*Chlorate* fairly steady at 4d. per lb. on the spot. *Prussiate*: Beckton, 5½d. per lb. net; other English makes, 5¾d. to 6d. per lb. *Cyanide*: A good business is reported for gold mining purposes at about 10½d. per lb. for the 98 to 100 per cent. *Bromide* is steady at 1s. 8d. per lb. *Bichromate* unchanged at 4⅝d. per lb. *Iodide* continues in good demand at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate*: Demand fallen off, but prices are steady at 70s. per cwt. for *small*, and 75s. per cwt. for *large crystals*. *Hypophosphite* steady at 3s. 6d. per lb. *Bicarbonate* firm at 30s. per cwt.

Quicksilver—Is quiet, with a hand-to-mouth business, at £6 15s. per bottle from importers, and 6d. less from second hands.

Quinine.—This has been the most exciting article during the week, prices having risen each day, and demand being far larger than the supply. At the close nothing appears obtainable below 1s. per oz. in large bulk, a rise of 2d. per oz. on the week. German brands are only obtainable from second hands, and Howards will only take orders for small quantities at an advance of 2d. per oz. on their list prices. The next Amsterdam sales of bark are awaited with much interest, and it is generally thought that should a further advance be established, makers of the alkaloid and its salts will then fix higher prices. The stocks of bark in Amsterdam have been largely reduced, owing to large deliveries.

Saffron—Is exceedingly firm, and advices from Spain point to higher prices being likely to rule. Quotations for genuine *Valencia* range from 38s. 6d. to 42s. 6d. per lb. in quantity.

Scammony.—Demand for *Virgin* has fallen off, and it is some time since last sales were made. Holders, however, are not prepared to give way in prices, which are still quoted 30s. per lb. for "firsts," and 24s. for "seconds." *Resin* is steady at 7s. to 7s. 6d. per lb., according to quantity. *Roots* are quiet, but supplies are only moderate at 32s. 6d. per cwt.

Senna.—*Alexandrian*: Supply is fairly heavy, especially of lower grades, and holders are anxious to make progress. *Tinnevelly*: The manifest of the "Rome," due here next week, shows over 700 bales on board. It is said that quality to be offered in next week's auctions will be of better colour than we have seen so far this season. There is a fair demand privately for the lower grades.

Shellac.—At the fortnightly auctions on Tuesday moderate supplies were catalogued, but a slow demand prevailed, and only a small proportion found buyers at barely steady last auction rates for *Second orange*; fair *TN* quoted basis 65s. *Garnet* was steady, but *Button*, blocky descriptions, sold at easier rates. A total of 1087 cases were offered and 206 cases sold. Fine *second orange*: Of 109 cases 11 sold, fine pale lemony *MR* in double-triangle at 78s., the remainder bought in, *BM* in double-triangle and *SM* in circle at 74s., and *AA* in circle blocky part flint at 72s.; *TN* descriptions, 652 cases offered and 127 sold, free sickly palish at 64s., ordinary red at 64s., fair bright blocky at 60s., palish flint block at 59s. to 60s. *Garnet*: Of 63 cases 37 sold, blocky *AC* at 72s., other marks bought in at 58s. to 63s. *Button*: Of 263 cases 31 sold, all more or less blocky, in small lots, from 53s. to 65s., according to quality.

Soda Compounds.—*Crystals*: Are firm at 52s. 6d. per ton ex ship terms. *Bicarbonate*: Steady at £7 10s. per ton for the commercial in 1-cwt. kegs.; large casks and bags lower in proportion; *free from monocarbonate*, steady at 18s. per cwt. *Bromide*: Firm at 2s. 1d. per lb. *Iodide*: Quiet at 11s. 7d. per lb. *Carbonate*, B.P.: 12s. 6d. per cwt. *Hypophosphite* firm at 3s. 6d. per lb. *Hyposulphite*: Quiet at 6s. 6d. to 8s. per cwt. according to quality.

Spices (Various).—*Pepper*: Of 1690 bags offered in auction the greater part sold at higher prices. A quantity of old import was cleared at satisfactory prices. Fair Aleppy sold at 3½d., and good fair Tellicherry at 3½d. to 3⅝d. per lb. Privately the market for Singapore is quiet but firm, prices for arrival closing slightly higher. *White pepper*: Is in strong demand, and a further important advance has been paid, a fair business has been done in Penang, fully 150 tons at 5⅞d. per lb., spot basis fair. In Singapore business is extremely difficult, owing to scarcity of offers, and for arrival few sales have taken place, including October to December steamer at 6⅞d. On the spot 1000 bags have been sold at 6⅞d. to 7d. per lb. for fair to good fair. *Chillies* are dearer, 40s. per cwt. having been paid for Zanzibar on the spot. *Pimento* continues strong and dearer at 3¾d. per lb. *Capsicums*: Bombay small round red and brown bought in at 27s. to 28s. per cwt. *Nutmegs* met with a good demand at auction, and Penang sold at again firmer rates at 1s. 10d. to 1s. 10½d. for 80's and 81's. West Indian sold readily at full rates, fair to good shape and colour, 76's at 1s. 11d., 83's and 85's at 1s. 9d., 100's to 103's at 1s. 3d. *Mace* is in good inquiry, leading to higher prices, good bold bright pale and red, partly wormy, 2s. 3d. per lb.

Sulphate of Copper—Is very firm up to £17 10s. per ton for best brands.

Turmeric—Remains firm. At auction 11s. 6d. per cwt. was paid for Bengal.

Valerian Root.—*Belgian* can be had at 20s.

MANCHESTER CHEMICAL REPORT.

SEPTEMBER 22, 1897.

The chief feature of the market here is the attention which is being given to contracts over next year. In this department the greatest uncertainty prevails, and it is said the matter has resolved itself, so far as heavy chemicals are concerned, into a fight between the two largest producers in the trade. There is every reason to think this is the case, but whether the low prices predicted in consequence will be reached is very much open to doubt. At present Bleaching Powder is being largely placed over next year at £6 to £6 2s. 6d., and white Caustic Soda at about 5s. under current rates. Alkali, 58 per cent., is quoted about 10s. per ton under for forward. In miscellaneous articles there is not much change, although generally there is an upward tendency. There is a better demand for textile industries. Brown Acetate may be quoted at £5 5s. per ton net, ex warehouse. Sulphate of Copper is firm at £17 10s. for best brands, delivered Manchester. Green Copperas has had a sudden demand locally, and best Lancashire is exceedingly firm at 35s. per ton, *f.a.s.* ship canal, and 40s. to 42s. *f.o.b.* Liverpool, and 34s. to 36s. Welsh, same port. Yellow Prussiate has an upward tendency, though makers here still ask 6d. Naphthas are very scarce, and in some instances producers are fully sold to end of year. Saltcake: 18s. to 20s. Aniline Oil and Salt: 6¾d. and 7d. Recovered Sulphur: £4 15s. to £5. Manganese and Plumbago about the same as last week.

LIVERPOOL REPORT.

SEPTEMBER 22, 1897.

Business during the week has been somewhat slack, but prices have been well maintained. Slightly easier rates are asked for Linseed Oil, but other oils are unchanged from last week. An advance has taken place in Spirits of Turpentine, which closes very firm. Linseed and Canaryseed are moving off very slowly, the latter at lower prices for the Turkish variety. In chemicals Sulphate of Copper continues very firm, with indications of a further advance shortly, whilst Sulphate of Ammonia has experienced a good rise in price since last report.

AMMONIUM SALTS.—*Carbonate* is quiet at 3d. per lb. *Sal ammoniac*: Steady at 31s. to 33s., according to quality.

SULPHATE OF AMMONIUM—Has risen to £8 7s. 6d. per ton in Liverpool.

BLEACHING POWDER—Is somewhat quiet at £6 12s. 6d. per ton for hard *f.o.b.*

CANARYSEED—Is very low in price; for Turkish seed 26s. per 464 lbs. is quoted, but buyers are wanting.

CHILLIES.—20 bags of medium quality Sierra Leone fruit were bought at auction for 33s. 6d. to 34s. 6d. per cwt.

COPPERAS—Still quoted at 36s. per ton for Welsh, and 38s. per ton Lancashire.

COPPER SULPHATE—Is very firm at £16 5s. to £16 10s. per ton spot, and £17 to £17 10s. for spring shipment.

LINSEED—Is absolutely dead; there are neither sales nor imports to chronicle.

OILS (FIXED) AND SPIRITS.—*Castor Oils* are selling well at last week's rates, with but little offering. *Olive Oils* are unchanged in price, but are in good demand, though sales are restricted by the short stocks held here. Seville has been most in demand at recent full rates. *Linseed Oil* has gone down slightly in price, and the demand is quieter; 16s. 9d. to 18s. per cwt. for Liverpool pressed oil is now asked. *Cottonseed Oil* has a good demand at 16s. 9d. to 17s. 6d. per cwt. *Spirits of Turpentine* has gone up to 23s. per cwt., and is in good and active demand at that.

POTASH SALTS.—*Chlorate* is quiet at 3¾d. to 4d. per lb. *Cream of Tartar* is rather scarce here just now, and is quoted at 79s. to 82s. per cwt. for finest white cream. *Potashes* are in moderate demand at 19s. 6d. per cwt., and *Pearlashes* at 29s. to 30s. per cwt. *Saltpetre* is selling at 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate* sells at £6 15s. per ton. *Borax* is firmer at 14s. 10d. to 15s. per cwt. *Soda Crystals*: £2 17s. 6d. per ton. *Caustic Soda*: 70 per cent., £7 10s.; 60 per cent., £6 10s. per ton. *Nitrate* is in fair demand here at 7s. 4½d. to 7s. 9d. per cwt.

NEWCASTLE CHEMICAL REPORT.

SEPTEMBER 22, 1897.

Shipment to the Baltic high ports are still heavy of most makes of chemicals this way. Coasting continues to draw likewise heavily of Soda Crystals, causing a scarcity, Caustic Soda going well. Prices are not materially changed, and are quoted thus:—Bleaching Powder, according to markets, £6 10s. to £7 10s. Soda Crystals, according to markets, 37s. 6d. to 57s. 6d. Caustic Soda, 70 per cent., £7 10s. to £7 15s. Soda Ash, 52 per cent., £4. Alkali, 52 per cent., £5. Sulphur, £5 per ton.

PARTNERSHIP DISSOLVED.

(From the London Gazette.)

Stott, Spreat & Ferguson, Physicians and Surgeons, of New Southgate, Friern Barnet and Finchley, so far as regards Hugh Stott.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

George John Wilson, Surgeon, 14, St Giles's, Oxford.

John Lawrence Pitchfort Hollingworth, Chemist and Druggist, carrying on business at 21, New Street, Barnsley, Cudworth, and South Kirkly.

James Edward Gabb, Physician and Surgeon, 11, College Hill, Shrewsbury, lately residing at 25, Claremont Hill, Shrewsbury.

PUBLICATIONS RECEIVED.

MERCK'S INDEX, 1897. VERZEICHNISS SÄMMTLICHER PRÄPARATE, DROGEN UND MINERALEIN MIT ERLÄUTERUNGEN. 306 Pp. Darmstadt: 1897. From the Author.

REPORT OF THE PROCEEDINGS OF THE SEVENTH INTERNATIONAL PHARMACEUTICAL CONGRESS, HELD AT CHICAGO, AUGUST 1893. xxx. + 101 Pp. Chicago: R. R. Donnelly & Sons, for the American Pharmaceutical Association. From the Publishers.

LATE ADVERTISEMENTS.

Assistants Wanted.

W. W. BRUNTON requires a qualified ASSISTANT, accustomed to high-class business. Age about 25. Apply, with full particulars, 160, Earl's Court Rd., Kensington, London, S.W.

ROME.—ASSISTANT. Qualified. Gentlemanly, and with dispensing experience, for winter season. Hours, 8 to 9, with three hours for meals, and part day weekly off. Sunday duty divided. Apply, with full particulars, to H. B. MORGAN, M.P.S., The Claughton Pharmacy, Birkenhead.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partak of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books.

Buffon: 'Histoire Naturelle,' original edition, complete 48 vols., 1250 plates, large octavo, richly bound, whole calf, unique library set, £12 10s.—K. Hebbeler, 121, Oxford Street, 1st fl., London, W.

'Pharmaceutical Journal,' posted Saturdays; what offers?—Brackenbury, 69, Churchfield Road, Acton, W.

Attfield's 'Chemistry' and other Minor and Major books, also chemical apparatus.—Hornby, 13, Willis Road, Hillsboro', Sheffield.

OFFERED—(*continued*).

Miscellaneous.

Pure New English Honey, splendid quality, 7s. for 12 lbs.; pure beeswax, 1s. 8d. per lb., carriage forward, packages free, cash.—Brampton, Sudbury, Suffolk.

Handsome Rosewood Guitar, beautifully inlaid pearl rosette, with machine head. Perfect condition. Great bargain.—Allen, Chemist, Plymouth.

OFFERED—(*continued*).

Overstocked Patents, clean, 1 doz. Carters L.L. Pills, 10s. 3d.; 1 doz. Towle's Pills, 8s. 6d.; 3 ozs. Antipyrin, 8s.; 1 doz. 1s. 1½d. Steedman's Powders, 8s. 3d.; ½ doz. 2s. 9d. do, 10s. 6d., post free.—Burge, Chemist, Fernhead Road, Paddington.

Show Jars, pair Maws, patterns 1 and 20, 24-in., complete, cost, £9 9s.; offers.—Baker, 215, Lewisham High Road, S.E.

NEWS IN BRIEF.

The University of Dorpat so long known as a seat of German learning, will from next year be entirely Russianised, according to the *Athenæum*. The institution will be placed under Government control, and will contain orthodox priests and students only.

Messrs. Hatrick & Co., Limited, have removed from 31, Snow Hill, London, E.C., to 82, Turnmill Street, London, E.C., close to Farringdon Street Station.

Mr. S. Harvey, of Denman Street, the proprietor of Dr. Mackenzie's Arsenical Soap, is forming his business into a limited company with a capital of £10,000 in £1 shares, on which he guarantees for three years a minimum dividend of 10 per cent. Most of the shares are taken by directors and friends, but a few will be allotted to the trade. Application should be made for these to the Secretary, 5, Denman Street, London Bridge. Mr. Harvey will be the managing director. The gross profits on the returns are certified to be 60 per cent.

Messrs. Condy & Mitchell, Ltd., the proprietors of Condy's fluid, announce their removal to larger premises at 65, Goswell Road, London, E.C.

Messrs. Marshalls', Limited, 27, Red Lion Square, London, W.C., have received a medal at the Quebec Exhibition for the patent "reel" fly catchers and various preparations in their well-known artistic enamelled tubes.

Mr. Percy J. Ashfield, chemist and druggist, Crewe, has sold his Crewe businesses—the County Drug Stores, 3, Earle Street and the Cattle Market, together with his depôt at Sandbach, to Mr. W. Kilvert, of Shrewsbury.

Mr. Henry Wheeler, who has been for many years the market representative of Messrs. Corbyn, Stacey & Co., has, we learn, entered into partnership with Mr. A. Finsler, 8, St. Mary-at-Hill, London, E.C., and the business will henceforth be carried on under the style of Finsler & Wheeler. Those who know Mr. Wheeler will join us in wishing him all success in his new undertaking.

The Newcastle-upon-Tyne and District Chemists' Association will hold its annual meeting at the Métropole Hotel, Clayton Street West, Newcastle, on Wednesday, Oct. 13, at 8 p.m. The Treasurer's and Secretary's reports will be presented, and followed by the election of office-bearers, etc.

Leicester Chemists' Social Union.—On Thursday, October 21, in the Dover Street Schoolroom, Leicester, at 8.30 p.m., a limelight lecture on "Australia" will be given by Mr. A. Bray (A. De St. Dalmas & Co.'s representative), music and refreshments being also provided. Chemists and their assistants and lady friends are cordially invited to attend; also any chemists from the surrounding country districts.

A Botany Class, at a nominal fee, is to be held this session under the auspices of the Borough of Derby Technical College. The teacher will be Mr. Harold Hoare, and the class will be specially useful to pharmaceutical students.

Dumfries and Maxwelltown Chemists' Association.—A full meeting of this Association took place upon the evening of Friday, September 24, with Mr. Allan, President, in the chair. Upon the motion of Mr. Johnston, seconded by Mr. Turner, Mr. Reid was appointed Secretary in place of Mr. Sutherland, who has left the district.

At the Working Men's College, 46, Great Ormond Street, Bloomsbury, W.C., which was founded in 1854 by the late Frederick Denison Maurice, evening classes for students of all grades of proficiency are held in electricity, botany, biology, hygiene, and other subjects of interest to pharmaceutical students. The fees are very low, being 2*s.* 6*d.* for one class per term, including use of common room, library, and museum, and 1*s.* for each class in addition per term. A detailed prospectus and full information can be obtained on application to C. C. Ord, M.A., the Secretary of the College.

Plymouth, Devonport, Stonehouse and District Chemists' Association. — The concluding botanical ramble of the Junior Section took place on Wednesday, September 22. The class journeyed by train to Yelverton, and from thence walked over the moors to a farm named Greenwell, where, owing to the kindness of Mr. O. A. Reade, assisted by Miss Leonard, a sumptuous high tea was provided, which was done full justice to by a crowd of "hungry ramblers." Mr. Reade having been heartily thanked for his hospitality in responding, remarked that as it was the last ramble, he wished to say that, if spared next summer, he would be pleased to conduct the class again, when he hoped that the numbers would increase. He had that day made arrangements whereby an examination would be held shortly in order to test the progress of the class in botany. Some of the plants picked that day were then examined, shortly after which the party left for the station, and reached Plymouth safely about 9.30 p.m., after a most enjoyable outing.

The Plymouth, Devonport, Stonehouse and District Chemists' Association will hold its annual dinner at the Freemasons' Hall, Plymouth, on Wednesday, October 20. Tickets, 5*s.* each.

The Edinburgh District Chemists' Golf Club held its last competition for the season at Musselburgh, on Monday, 20th ult. (Edinburgh Autumn Holiday), when the Gibson Handicap Medal and Club Prizes were played for during the forenoon with the following results:—First prize and Gibson medal, Mr. Wm. Swan, 104—5=99; second prize, Mr. W. H. Wheelans, 110—10=100; third prize, Mr. James Stott, 104, scratch. After lunch, there was a hole and hole competition between teams selected by the Captain (Mr. Geo. Lunan), and Vice-Captain (Mr. H. D. Alexander), which resulted in favour of the latter by 1 hole. There was a good turn out, and the weather conditions were most favourable, Mr. A. M. Stewart having the lowest aggregate (289) for three scores out of the five competitions for the medal during the season, becomes the holder for the year, and will be presented with a gold charm.

'The Principles of Chemistry,' by D. Mendeléeff, has just been published in a new edition. It is translated from the Russian (6th edition) by Geo. Kamensky, A.R.S.M. of the Imperial Mint, St. Petersburg, edited by T. A. Lawne, B.Sc., Ph.D., F.I.C., and published by Longmans & Co., London, with 96 diagrams and other illustrations, at 36*s.*

The Midland Chemists' Assistants' Association holds its inaugural meeting on Oct. 6, when the President's address will be delivered.

The British Association (Date of the Bristol Meeting). — Arrangements are already in progress for the Bristol meeting of the British Association next year. A meeting of the local executive was held last week at the Literary and Philosophic Club, when Professor Lloyd Morgan reported that he had personally conveyed the invitation of Bristol to the Canadians and to members of the American Association. He hoped as a result that a considerable number of Transatlantic visitors would come to Bristol next year. Various suggestions were considered with regard to the date which should be recommended as that on which the Bristol meeting should be held. Eventually it was decided that the meeting should take place on Wednesday, Sept. 7, and the following days. It was pointed out that the date of the meeting would be finally fixed by the General Committee of the Association at a meeting to be held in London on Nov. 5, when the President for the ensuing year would be elected. It was decided to call together the members of the Local General Committee, numbering about 500 members, at a conversazione to be held in the Victoria Rooms, on Thursday, Jan. 20, when it was hoped that the plans of the Executive would be laid before the larger body.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Roberts & Barton, Surgeons and Medical Practitioners, 30, Kensington Square, and 35, Cheniston Gardens, Kensington, London. Debts will be received and paid by Arthur Roberts, at 30, Kensington Square.

Beresford & Eldred, Surgeons and Medical Practitioners, 105, Wood Street, Walthamstow, and the Bucklands, Grove Road, Walthamstow.

Peter Kershaw & Samuel Tetley (trading as D. S. Masterton & Co.), Dry Soap Manufacturers, Hall Lane, Bradford. Debts will be received and paid by Samuel Tetley.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

George Horatio Jones, Dental Surgeon, 57, Great Russell Street, London, and Kenilworth, Eaton Road, Hove, Sussex.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

September 30, 1897.

Chief event of past week has been the excitement in quinine, which is tangibly dearer from seeond-hand ; makers now declining to book orders. It is anticipated that we may see a further distinct advance on the result of to-day's Amsterdam Bark sales becoming known after which makers will no doubt fix their pricc accordingly. Buchu Leaves are also dearer, as is Ergot of Rye. Cardamoms firm, and cxpeeted to further advance. Cream of Tartar and Acid Tartaric steady, Citric slightly easier. Carbolic weak. Star Aniseed Oil firm and rather dearer. Opium reported better. Morphia and Codeia unchanged, as are also Mereurials and Quicksilver. Shellac steady. Camphor quiet and easier. Silver, and consequently the Nitrate also, unsettled. Prices of articles of chief interest rule as follow :—

Acid Boracic.—Market rather quiet at 24s. for ordinary *crystals* and 2s. more for the *powder*.

Acid Carbolic—Is dull, and the article can be had at 6½d. to 6¾d. per lb. for B.P. in *ice crystals*, and 7⅛d. to 7¼d. per lb. for the 39° to 40° C. *ice crystals*, both in bulk packing of 2½-cwt. drums.

Acid Citric—Is lower at 1s. 1¾d. per lb. on the spot.

Acid Oxalic.—A fair business doing for export at unchanged rates, 3½d. to 3¾d. per lb. net, according to quantity.

Acid Tartaric.—*English* is unchanged at 1s. 2d. per lb. on the spot, but *foreign* is lower at 1s. 1d. per lb., same position.

Ammonia Compounds.—*Sulphate* : steady but unchanged at £8 2s. 6d. per ton for gray prompt, 24 per cent., London. Leith, £8 3s. 9d. Beckton terms : prompt, £7 18s. 9d. per ton. *Carbonate* : 3d. to 3½d. per lb. according to package. *Sal ammoniac* : sublimed firsts, 33s. 6d. per cwt. ; seconds, 31s. 6d. per cwt. ; crushed, for batteries, 33s. and 35s. per cwt. ; powder, 34s. and 36s. per cwt. *Iodide*, 14s. 6d. per lb. *Chloride*, 98 per cent., free from metals, 27s. 6d. per cwt.

Asafetida—Is quiet for all descriptions, but holders are very firm, and buyers will have to pay prices asked if business is to be done.

Bleaching Powder—Is unchanged at £7 to £7 10s. per ton according to quantity.

Borax—Continues dull and quiet at 14s. 6d. per cwt. for *crystals*, and 15s. per ewt. for *powder*.

Buchu Leaves.—A good demand is experienced for round leaves, which are scarce, both here and at the port of shipment. 8d. per lb. is now said to be the value of fair green, whilst some holders hold off in expectation of 1s. being realised later on.

Camphor.—The market for crude remains very quiet, and business done is but small. *China* is quoted 91s. and *Japan* 102s. *c.i.f.* On the spot *China* has been done in small lots at 92s. 6d. per cwt.

Cardamoms.—Privately a large business, said to amount to about 200 cases, has been done this week at higher rates, and the small supply in sale will probably result in higher prices being established.

Cloves.—Of 191 bales *Zanzibar* offered at auction, 43 bales, fair, sold at 2¾d. *Amboyna* bought in at 4¾d., of *Penang*, 6 cases unpicked sold (subject) at 5¾d. Privately the market for *Zanzibar* is firm, and demand continues. Sales comprise October to December delivery at 2¾d. November to January, 2 13/16d., and January to March, 2 15/16d.

Cocaine.—The course of this article has proved somewhat disappointing to buyers, many of whom were very sanguine that a tangible advance in value was practically certain to take place. Some of the makers are now sellers to a limited extent at 8s. 6d. per oz. for 100-oz. lots, which means a return to lowest figure which the article had previously touched.

Codeia—Remains very steady at 11s. 6d. per oz.

Cream of Tartar—Steady at 77s. 6d. per cwt. for first white French *crystals*, *powder* 80s. to 81s. per cwt.

Ergot—Has continued to advanee, and *Russian* is now quoted at 9d. to 9½d., and *Spanish* 11d. to 1s. per lb., for sound quality.

Ginger. — In slow demand. Rough *Cochin* is again easier, only 92 bags sold at auction, ordinary to fair washed, 24s. to 28s. ; mouldy, 22s. 6d. to 23s. Of cut kinds 76 cases Native sold, ordinary dull limed small and ends partly cut, 26s. 6d. to 28s. ; medium and small partly cut, 35s. to 39s. 10 bags *Japan* sold at 12s. 6d. Of *Jamaica* 24 barrels sold, eommon rough, 67s. to 68s. ; good common, 70s. to 71s. ; middling washed, 80s.

Guarana.—The low price of this article, viz., 2s. to 2s. 6d. per lb., according to quantity, should tempt buyers to lay in a stock, the more so in that it would appear certain that the low figure will tend to sensibly reduce the supply coming forward.

Menthol—Still quoted 6s. 3d. per lb. on on the spot and 6s. per lb. *c.i.f.* to arrive for good dry crystals.

Morphia.—Market remains very quiet, and makers' prices remain nominally unchanged at 4s. 7d. per oz. for the *Hydrochlorate* powder in quantity and bulk packing.

Oils (Essential).—*Star Aniseed* is in demand for arrival, with fair sales in second-hands ; August-October and September-October steamers at 8s., but cabled quotations come higher at 8s. 7½d., *c.i.f.* ; September-November steamer, on the spot 8s. 3d. has been paid, and further buyers thereat. *Cassia* strong, with a fair inquiry for spot parcels ; 85 to 90 per cent., September-October steamer, quoted 7s. per lb., *c.i.f.* *Peppermint* : *HGH* has been dealt in at previous quotations, 6s. 3d. per lb. on the spot. *Japan* quiet and unchanged at 3s. per lb. for dementholised, and 4s. per lb. for 40 per cent. *Citronelle* steady but quiet at 1s. 1½d. for drums, and 1s. 2d. for tins. *Lemongrass* steady at 2¼d. per oz.

Oils (Fixed) and Spirits.—*Linseed* : Prices continue their downward course, and pipes on the spot are now to be had at £14 10s. to £14 12s. 6d., and barrels £15. *Rape* also lower at £24 10s. to £24 15s. for ordinary brown ; refined, on the spot, £26. *Cotton* the shade easier and very quiet at £16 to £16 10s. on the spot, according to make. *Olive* : Unchanged, Spanish, £28 to £30 ; Mogador, £28 ; Levant, £30 to £31. *Palm* : Lagos unchanged at £23 on the spot. *Turpentine* : Again dearer but closing quiet with less disposition to operate. *American* on the spot, 23s. 3d. to 23s. 4½d., with forward also lower at the close. *Petroleum Oil* : Unchanged ; *Russian* : 4¼d. to 4⅝d. per gallon on the spot ; *American* : 4½d. to 4 7/16d. per gallon ; water-white, 5¾d. per gallon. *Petroleum Spirit* : American, 6d., deodorised, 6¼d. per gallon.

Opium.—Market is steady at rather higher prices, say from 8s. 6d. to 11s. 6d. per lb., according to quality and quantity. *Persian* is scarce and dearer at 9s. 6d. to 10s. 6d. per lb.

Potash Compounds.—*Chlorate* quiet at 4d. per lb. spot, London. *Bromide* unchanged at 1s. 8d. per lb. *Iodide* in good demand at 9s. 9d. to 10s. 3d. per lb. for quantity. *Bicarbonate* steady at 30s. per cwt. for powder. *Permanganate* quiet at 70s. to 75s. per cwt. for small and large crystals respectively. *Bichromate* unchanged at 4⅝d. per lb. *Prussiate* : Beckton 5½d. per lb. ; other English makes, 5¾d. to 6d. per lb. *Hypophosphite* steady at 3s. 6d. per lb. *Cyanide* unchanged at 10½d. per lb. for 98-100 per cent.

Quicksilver—Unchanged at £6 15s. in first hands, and about 1s. less from second-hand holders.

Quinine.—The market has been excited, and 1s. 1d. has been paid from second hand for best brands. The result of to-day's Amsterdam bark sales is now awaited with interest, it being thought probable that prices will rule high and that makers will then tangibly advance their price for quinine in accordance therewith ; meanwhile makers decline to book orders.

Shellac.—There is rather more demand on the spot, with sales of a fair quantity *orange* at steady rates, including fair to superior *TN*, at 64s. to 67s., and reddish curly at 81s. per cwt. for cash. For arrival the market is dull, with sellers of *second orange*, October-December steamer, at 62s. *c.i.f.*

Soda Compounds.—*Crystals* : Firm at 52s. 6d. per ton ex ship terms. *Caustic* : 70 per cent. white, £7 15s. per ton ; 60 per cent., £6 15s. per ton. *Nitrate* : Ordinary on the spot, £7 7s. 6d. ; refined, £7 12s. 6d. per ton. *Bicarbonate* : Commercial 99 per cent. is still quoted £7 10s. per ton on the spot ; free from monocarbonate ; 18s. per cwt. *Bromide* : Very firm at 2s. 1d. per lb. *Iodide* : Quiet and unchanged at 11s. 7d. per lb. *Carbonate* : The

B.P. quality is to be had at 12s. 6d. per cwt. in quantity. *Hypophosphite*: Unchanged at 3s. 6d. per lb. *Hyposulphite*: Unchanged, but quiet at 6s. 6d. to 8s. per cwt., according to quantity and quality.

Spices (Various).—*Black pepper*: 1215 bags at auction firmly held, and all bought in; Penang, 3¼d. to 3⅝d.; Singapore, 3⅞d.; good heavy Wynaad, 4d. to 4½d. *White Pepper*: 77 bags Penang sold at 5⅞d., one lot 6d.; Palembang bought in at 5⅞d., and fine bold Singapore at 8½d. *Long pepper*: 40 bags bought in at 24s. *Chillies*: 165 bales Zanzibar bought in at 39s. to 42s. 6d., also 10 cases fine bright Japan at 56s. *Pimento*: 80 bags, 1894 import, sold without reserve at 3½d., the bulk being bought in at 3⅞d. to 4d. *Cassia Lignea*: 400 cases, old import, bought in at 47s. to 47s. 6d., also 80 boxes Quang Si at 60s., and 352 bales broken at 27s. 6d. to 37s. *Cinnamon*: 34 bags broken sold at 9¼d. *Nutmegs*: firm. *Mace*: quiet but firm; Penang bought in at 1s. 6d. to 1s. 9d., Singapore bought in at 1s. 8d., 24 packages West India sold at 1s. 5d. to 1s. 9d.

Sulphate of Copper—Is unchanged at £16 10s. to £17 10s. on the spot, according to quality.

Turmeric—Is dull, and business is unimportant. *Bengal* quoted 11s. 6d. per cwt., and *Madras* at 13s. 6d. to 18s. per cwt. according to quality.

To-day's drug auctions went off quietly without any very striking changes to report, the following being particulars as far as time would permit of same being given:

Aconite Roots.—3 bags *Japan* bought in at 27s. 6d.

Aloes.—Fair livery *Curaçoa* at 55s.; fair hard *Cape* at 22s. to 22s. 6d. per cwt.

Ambergris.—1 tin fair grey held for 75s. per oz.

Aniseeds.—40 bags fair *Spanish* held for 21s. per cwt.

Annatto Paste.—10 cases of fine quality sold cheaply without reserve at 1¼d. per lb.

Annatto Seed.—5 bags fair sold at 3½d.

Antimony.—50 cases *crude* Japan bought in at £21.

Argol.—Fair *Cape* sold at 40s. to 51s.

Arraroba.—4 barrels very woody and of doubtful quality taken out at 3s. per lb.

Asphalt.—60 cases *Syrian* bought in at 20s. to 32s. 6d. per cwt.

Balsam Copaiba.—15 tins part pale to yellow part dark fetched 1s. 7d. per lb.

Buchu Leaves.—Some 15 bales round leaves were offered and sold fairly cheap considering the prices paid privately. 5 bales good green to slightly yellowish sold at 6½d. to 6¾d., 5 bales yellowish-green at 5¾d., the remaining 5 bales being taken out, the holder anticipating much higher prices. There will be no further arrivals, it is reported, for some months yet.

Cactus Flowers.—12 bags *Grandiflora* bought in at 9d. per lb.

Calumba Root.—19 bags fair washed taken out at 35s. per cwt.

Camphor.—50 cases *refined* Japan in squares sold at 1s. 1d., which shows lower value.

Camphor.—8 cases *Crude China* sold at 90s.

Cardamoms—Were in small supply, only some 80 cases being offered. These sold with good competition at a further advance of from 2d. to 4d. per lb., whilst good decorticated realised 3s. 9d. per lb., being an advance of 9d. per lb. on last sale's rates. Fine bold bleached Mysores sold at 4s. 4d. per lb.; second size ditto, 4s. per lb.; smaller, 3s. 9d. to 3s. 11d. per lb. The appearances are in favour of still dearer rates.

Cascara Sagrada.—50 bales of fair quality were held for 13s. 6d. per cwt.

Cascarilla Bark.—30 bales fair bold, but very dusty, part thin, held for 40s.

Cassia Fistula.—38 bags sold subject to approval at 7s. per cwt.

Cassia Oil.—2 cases yielding, according to Mr. Umney's analysis, 84 to 87 per cent. cinnamic aldehyde, held for 6s. 10d. per lb.

Castor Oil.—30 cases *Calcutta* firsts were held for 4½d. per lb.

Cedarwood Oil.—5 cases held for 1s. per lb.

Cinnamon Oil.—1 case genuine sold at 1s. 8d. per oz.

Citronella Oil.—34 boxes of good quality held for 1s. 10d. per lb.

Coca Leaves.—14 bales good green *Truxillo* held for 8d., while for medium ditto 5d. per lb. would have been accepted.

Colocynth.—2 cases *Turkey*, part fair pale colour, part dark, sold cheaply at 6d. to 6½d.; 6 cases fair quality *ditto* being held for 1s. 2d. per lb.

Condurango Bark.—11 bales of fair quality sold very cheap at 1¼d. to 1½d. lb.

Croton Seeds.—5 bags bought in, a bid of 30s. being declined.

Cubebs.—32 bags part sold subject to approval at 27s. per cwt.

Cummin Seeds.—71 bags fair *Malta* taken out at 33s. per cwt.

Dragon's Blood—Was in fairly large supply, but the bulk was of inferior grades and was bought in. For 1 case fine bright reboiled lump, which quality has been scarce for a long time, the competition was exceedingly keen, resulting in £13 10s. per cwt. being realised, an advance of 10s. per cwt. on last price paid for similar quality. 2 cases fair bright lump sold at £7 2s. 6d. per cwt.

Ergot of Rye.—All lots were bought in at long prices, it being generally anticipated that the article will be very scarce this year. From 10d. to 11d. is spoken of as the price for *Russian*, and 1s. for *Spanish*

Essence of Lemon.—14 coppers of rather doubtful quality sold without reserve at 1s. 9d. to 1s. 10d. per lb.

Essence of Orange.—9 coppers sweet sold without reserve at 2s. 2d., and 9 coppers bitter at 2s. 8d., quality being doubtful.

Galangal Root.—19 bales part sold at 21s., rest bought in at 25s. Of 83 bales better quality part sold at 25s. per cwt.

Gamboge.—Fair to good pickings sold at £6 15s. to £7 7s. 6d.; low ditto at £4 15s. 6d.; fair to good bright pipe being held for £7 15s. to £9 per cwt.

Gum Arabic.—5 bales fair *Turkey* sorts sold at 85s., white grain being held for £6 17s. 6d., and white picked for £14 10s.

Gum Benjamin.—Low to fair *Sumatra* seconds realised £3 15s. to £5 15s.; medium *Penang*, 75s.; *Palembang* bought in at 25s. per cwt.

Gum Galbanum.—12 packages were held for 9d. to 1s. per lb. for good blocky to rather dark.

Gum Myrrh.—5 bales pale siftings taken out at 45s., a bid of 30s. being refused. Good pale but very dusty sorts for 57s. 6d., 1 case good sifted sorts selling prior to auction at 60s. per cwt.

Honey.—Good dark *Jamaica* fetched 21s., fair yellow ditto being held for 25s.; and brown ditto for about same figure, fair *Chilian* for 25s.

Ipecacuanha—Was in fairly large supply but only a few bales of *Rio* quality sold at unchanged rates, 6s. to 6s. 2d. per lb. For *Carthagena* there is no demand.

Jalap.—20 bales small to medium unworked held for 6½d. per lb.

Kola Nuts.—1 bale good bright bold washed taken out at 9d. 6 packages dull dry part mouldy selling at 4¾d. to 6d.

Lime Juice.—Good *New Zealand* bought in at 9½d., 12 casks ditto selling cheaply without reserve at 5½d. per gallon.

Liquorice Root.—20 bales rough *Persian* held for 9s. per cwt.

Musk.—1 tin grain of poor quality held for 22s. per oz. 6 tins *Tonquin pods* bought in at 30s. for black and damp, up to 75s. for thin skin brown and blue part broken.

Nutmeg Oil.—4 cases fair quality bought in at 3d. per oz.

Nux Vomica.—190 bags small dark *Madras* bought in at 6s. 6d.

Oil of Limes.—3 cases distilled *West Indian* sold at 3s. 1d. per lb.

Opium.—8 cases low *Egyptian* were held for 7s. 6d. per lb.

Orange Peel.—14 packages part sold at 6d. per lb. for brown thin cut.

Orris Root.—10 bags fair pale to darkish *Verona* sold cheaply without reserve at 22s. 6d. to 23s. per cwt.

Patchouli Leaves.—27 bales bought in at 6d. per lb.

Pumice Stone.—Fair bold lumps held for £10 down to £3 for fine powder.

Rhubarb—Good bold flat *Shensi*, part rough, fair colour held for 1s. 10d; ditto 2nd, soft, for 1s. 3d.; ditto mixed flat and round for 1s. 5d.; good bold round *Canton* for 1s. 5d. good medium flat ditto selling at 1s. 3d.; dull coated *high dried* bought in at 1s. 2d. 3 cases good trimming root round *Shenshi*, ⅞ fine colour, ⅛ dark sold previous to auction at 2s. 9d. Very rough flat *Canton* sold without reserve at 1s. 2d. to 1s. 5d. per lb.

Sarsaparilla.—Good *Jamaica* held for 1s. 9d., 2 bales of inferior quality selling at 1s. 2d.

Scammony.—11 cases all bought in at 8s. to 29s. per lb., according to quality.

Scammony Root.—62 bales bought in at 35s. per cwt.

Senna.—*Tinnevilly* descriptions were represented by about 450 bales, and practically the whole sold with strong competition, the lower grades especially realising a big advance. Medium grades were full up to ½d. per lb. dearer, whilst for the few bales of boldish leaf of fair colour, long prices were paid. *Alexandrian* leaves are in over supply, some 130 bales being offered, but not a single bale sold; good green leaf is held for 7½d. to 8d. per lb. Pods, 5d. per lb.

Squills.—18 bags rather darkish in

colour sold cheaply without reserve at 1¾d., good fair pale being held for 3d. per lb.

Star Aniseeds.—20 cases *China* held for 90s.

Star Aniseed Oil.—4 cases held for 8s. 3d. per lb.

Tartar.—7 casks *Greek* bought in at 66s. per cwt.

Vanilloes.—About 200 tins were offered and sold with good competition at fully steady to rather higher rates.

Wax.—22 cases bleached *East Indian* held for £6 to £6 15s.; fine *Jamaican* fetched £7 5s. to £7 10s.; fair *Madagascar* being bought in at £6 5s.; fair *Australian* realised £6 2s. 6d. to £6 10s.; fair *Zanzibar*, £5 15s. 62 cases *Japan* held for 40s. per cwt.

NEWCASTLE CHEMICAL REPORT.

September 29, 1897.

On the whole this market shows a fair amount of business passing. Soda Crystals keep scarce, causing a further advance in export prices. Caustic Soda and Soda Ash are still in good demand. Prices are:—Bleaching Powder, £6 10s. to £7 10s. according to markets. Caustic Soda, 70 per cent., £7 10s. to £7 15s. Soda Crystals, 37s. 6d. to 60s. Soda Ash, 52 per cent., £4. Alkali, 52 per cent., £5. Sulphur, £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

September 29, 1897.

There is a steady feeling all round, and few changes on last week. The shipments of Sulphate of Ammonia continue to increase, and inquiries here are numerous, with the result that the price continues to advance steadily. A few contracts in heavy chemicals continue to be negotiated for next year, but the figures militate rather against business. Producers are firm at nearly old rates. Brown Acetate of Lime is steady, with sellers at £5 5s. nett, ex warehouse here. Alum is dull at £4 15s. to £5 for loose lump, and £5 12s. 6d. ground in bags, on rails. Large sales of Sulphate of Copper are reported, and a figure equal to £17 10s. per ton here is being asked for forward delivery. Glauber and Epsom Salts are unchanged. Yellow Prussiate, of best local make, varies from 6d. to 6⅛d. per lb. according to quantity. Makers of Naphthas and Benzols are well sold, and in consequence the last-named article has an upward tendency.

LIVERPOOL REPORT.

September 29, 1897.

A livelier tone has prevailed here than has been the rule of late. Sales have been fairly numerous and at good figures, whilst a greater variety of articles has figured in the auction reports, including Quillaya Bark at full rates, Beeswax, both Chilian and African making good prices, Peruvian Honey, and crude Spermaceti. The easier rates for Linseed Oil noticed last week continue, with a promise of a further slight decline. The same may be said of Cottonseed Oil. Spirits of Turpentine has risen gradually to 1s. 3d. per cwt. over last week's rates. The good prices and business in Castor Oils noticed of late are still the rule, whilst Olive Oil is maintaining its high rates, thanks to the shortness of supplies, which appears to have become chronic. Alkalies generally and Sulphates of Copper and Ammonia are very firm in price, and are the chemicals which seem to be absorbing most of the attention at present in this market, the other articles being steady and quiet.

Ammonium Salts—Are unchanged from last week, except the Sulphate, which varies in price here between £8 7s. 6d. and £8 10s. per ton.

Beeswax.—56 ballots of Gambia wax sold at £6 5s. to £6 7s. 6d. per cwt., and 10 sacks of Chilian at £6 12s. 6d. per cwt.

Bleaching Powder—Is unchanged from last week, £6 12s. 6d. per ton.

Canaryseed—Continues quiet and priced nominally at 26s. per 464 lbs. for Turkish.

Copper Sulphate—Is very firm and strong at £16 12s. 6d. to £16 15s. per ton.

Copperas—Sells well at 38s. per ton for Lancashire and 36s. for Welsh.

Honey.—62 barrels of Peruvian made 21s. to 22s. 6d. per cwt.

Linseed—Is very quiet, the sales being confined to 250 bags of Chilian at 33s. 6d. per 416 lbs. ex-quay.

Oils (Fixed) and Spirits.—*Castor oils* are still commanding good prices and enjoying a brisk demand. All the Madras oil offering has been bought up at 3⅝d. per lb. Calcutta is selling at 3⅞d. per lb., and French first pressure at 3⅞d. to 3⅝d. per lb. *Olive oils* are high in price as usual, but have been passing off latterly rather better. Seville oils are selling at £30 to £31, and Candia at £31 to £31 5s. per tun. *Linseed oil* is not in such good demand as of late, and has taken a turn in buyers' favour, Liverpool pressed oils being offered at 16s. 3d. to 18s. per cwt. *Cottonseed oil* is quiet at 16s. 6d. to 17s. 6d. per cwt. *Spirits of Turpentine* is very firm at the advance of 1s. 3d. per cwt., and is selling at 24s. 3d. per cwt., at which price it enjoys a good demand.

Potash Salts—Are unchanged from last week.

Quillaya Bark.—Chilian has been selling at £25 per cwt.

Sodium Salts.—*Caustic* is very firm at £7 10s. per ton for 70 per cent., and £6 10s. for 60 per cent. *Nitrate* is in good demand at 7s. 4½d. to 7s. 9d. per cwt. Other sodium salts offer nothing of interest; recent prices still holding.

Spermaceti.—47 bags of crude sold at auction for 72s. per cwt.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Monday, October 4.

School of Pharmacy, at 3 p.m.
Inaugural Address by Professor H. McLeod.

Pharmacy Club, at 6.45 p.m.
Dinner at the Café Royal.

Wednesday, October 6.

Pharmaceutical Society.
Meeting of the Council.

Midland Chemists' Assistants' Association.
Inaugural Meeting and President's Address.

MARRIAGE.

Armitage—Ellis.—September 22, at the Armley Baptist Chapel, by the Rev. Wm. Sumner (pastor), Nathaniel Newborn Armitage, M.P.S., Pharmaceutical Chemist, 114, Tong Road, Armley, to Mary Jane (Jennie) Ellis, eldest daughter of Wm. Ellis, Armley, Leeds.

LATE ADVERTISEMENT.

Assistant Wanted.

Coating Room.—Wanted, a young man with Pharmaceutical experience, as Assistant in sugar-coating department. Apply by letter, with full particulars of age, salary, and experience, to Coater, care of Street & Co., 30, Cornhill, E.C.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books.

Attfield's 'Chemistry,' Thorpe's 'Metals, Non-metals, Qualitative, Quantitative Analysis,' Wills' 'Materia Medica,' Minor Lectures, Proctor's 'Pharmacy, Pharmaceutical Testing,' 'Pharmacographia,' Bentley's 'Botany,' Veterinary works, and others.—Etas, 121, Broomwood Road, Battersea.

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d.—Tully, Chemist, Hastings.

OFFERED—(*continued*).

Miscellaneous.

Pure New English Honey, splendid quality, 7s. for 12 lbs.; pure beeswax, 1s. 8d. per lb., carriage forward, packages free, cash.—Brampton, Sudbury, Suffolk.

Overstocked.—5 dozen enemas, seamless, new (Ingram's expired patent), enamelled black, hinged boxes, vagina pipes, leather shields, 30s. dozen; sample posted, 2s. 9d., cash.—Warnes, Chemist; 33, Gray's Inn Road, W.C.

WANTED.

Shop Fixtures, counters, drawers, shelving, show cases, window carboys, stock bottles. Full description and lowest price to—56, Hoghton Street, Southport.

Wanted.—Complete dioptric trial case, equal to new, with accessories and pairs of cylindrical lenses. Lowest price on approval. State maker's name.—W. D. Mason, 113, Stirling Street, New Clee, Grimsby.

NEW IDEAS AND TRADE NOTES.

LIQ. COLCHICINÆ SALICYLATIS.

Messrs. Baiss Bros. now make this preparation, which has hitherto been manufactured by Hopkinson & Co., of Nottingham, and has already obtained a considerable reputation in the medical profession. Pharmaceutically the preparation is evidently skilfully prepared. The importance of having an important and potent alkaloid such as colchicine accurately dosed cannot be well over-estimated, since it is well known that the drug, and most of the galenical preparations of it vary greatly in the amount of alkaloid they contain. It follows from this that the physiological action and therapeutic results obtained with these are also far from concordant. In the preparation under notice, however, these disadvantages have been overcome, and a definite amount of colchicine, equivalent to 1/32nd of a grain of the salicylate, is present in each drachm of the preparation. Numerous communications from medical practitioners show that the liquor is a prompt and effective remedy in various rheumatic affections.

THE ALFORMANT.

This is a most convenient and attractive apparatus, supplied by the Formalin Hygienic Company, Limited, 9 and 10, St. Mary-at-Hill, E.C., for sterilising air or disinfecting rooms, etc., by means of formaldehyde. It consists of a very ornamental spirit lamp provided with a glass chimney, the upper part of which supports two small cup-shaped metal pans, one within the other. In use, the glass chimney, with the upper part, is removed from the lamp, which is then charged with methylated spirit and lighted, care being taken to turn the flame as low as possible. After the flame is properly regulated, replace the glass chimney and insert the dry formalin tablets supplied with the lamp in the following manner :—(*a*) For ordinary air purification or sterilisation and slow evaporation in sick rooms, or crowded living rooms, cabins, store-rooms, schoolrooms, etc., place one tablet for every space capacity of 1000 cubic feet, or a room of 10 feet high by 10 feet wide by 10 feet deep = 1000 cubic feet, into the upper or outside pan from the top. For quick evaporation, remove the inner pan and drop the tablet or tablets into the lower, larger pan. (*b*) For thorough disinfection, and certain destruction of all health-endangering germs or micro-organisms in any part of the room and furniture, such as bedding, stuffed seats, books, wardrobes, etc., use ten tablets for every space capacity of 1000 cubic feet. The complete apparatus is retailed at 12*s.* 6*d.*, and it is recommended for everyday use in living and public rooms to keep the air free from impurity and unpleasant odour. Formalin will also preserve animal and vegetable food in the store- and stock-room, and generally proves of invaluable service for staying putrefaction of any kind.

SYLVIA'S HOME DYES.

Messrs. Ayrton & Saunders, of Liverpool, send a specimen packet of Sylvia's Artistic Home Dyes, together with a handsome and effective show-card containing specimens of fabrics actually dyed with the "Artistic" dyes which, it is claimed, will not stain the hands when used. They are especially suitable for dyeing silk and cotton articles, lace, etc. About twenty different colours are put up in 2d. packets and mounted for sale on cards similar to the one referred to.

A LITERARY HAIR RESTORER.

To readers of the *Pharmaceutical Journal* who are able to spare time from their Sunday's study of that organ to read the *Referee*, the productions of George R. Sims, better known as "Dagonet," will not be unfamiliar, and they will doubtless also be conversant with the fact that he once invented a hair restorer. As a result of using this, his head, which was at one time as bare as a billiard-ball, is now as curly as a doormat. The tax on his time owing to the demands of friends and numerous other correspondents who have desired copies of the recipe has compelled him to put the supply of the article on a commercial basis. A joint-stock company has therefore been promoted to push the sale of the preparation, the base of which appears to be petroleum, so perfumed as to cover its objectionable odour. It is claimed to be a genuine aid to nature, and is sold in bottles at 1*s.* (sample bottle), 2*s.* 9*d.*, 5*s.*, and 10*s.* 6*d.*, the latter being specially prepared for ladies' use. The heading of this paragraph, "A Literary Hair Restorer," is justified by Mr. Sims' statement that people who exercise their brains very much either lose their hair, or it turns white, and his restorer is intended to prevent this taking place.

NEWS IN BRIEF.

Mr. T. G. Joyce, B.Sc., who is a member of the laboratory staff of Messrs. Blackwell, Hayes, & Spilsbury, Birmingham, has been elected to an Associateship of the Mason College.

Sheffield Pharmaceutical and Chemical Society.—The Annual General Meeting of this flourishing Society was held week. The President (Mr. H. E. Ibbitt) occupied the chair, and there was a good attendance of members and associates. The Hon. Secretary (Mr. G. Squire) then read the Annual Report, and submitted a statement of accounts which was adopted as being highly satisfactory. After the votes had been counted the New Council for the ensuing year was declared as follows :—Messrs. John Austen, J. F. Eardley, A. R. Fox, H. E. Ibbitt, C. O. Morrison, G. T. W. Newsholme, F.C.S., G. Owen, Job Preston, J. B. Pater, S. T. Rhoden, George Squire, William Ward, F.C.S. A somewhat lengthy discussion then took place in reference to the winter work of the Society, and several useful suggestions were put forward with a view to making the meetings of the Society more popular with the younger members and associates. The new Council had its first sitting on Tuesday night, and selected the following officers for the ensuing year :—President, Mr. George Squire ; Vice-Presidents, Mr. S. T. Rhoden and Mr. John Austen ; Treasurer, Mr. Job Preston ; Hon. Secretary, Mr. J. B. Pater ; Hon. School Secretary, Mr. S. T. Rhoden ; Auditors, Messrs. R. W. Watson, and E. Wells Smith ; Curator and Librarian, Mr. C. F. Carr. The programme for the coming session will include several important trade subjects of special interest.

Pharmaceutical Society of Ireland.—The annual meeting was held at 67, Lower Mount Street, Dublin, on Monday, October 4, the President, Mr. W. F. Wells, jun., in the chair. The agenda included the election of seven members of Council, there being eight candidates. The following gentlemen were elected :—Messrs. C. E. Tichborne, R. J. Downes, S. Turkington, G. M. Ryan, W. D. Porter, Dr. J. A. Walsh, and Mr. T. O'Sullivan. With the exception of the last-named, all were re-elected from the old Council. In the course of his address the President, Mr. Wells, stated that the number of members of the Society was 166, as against 169 last year ; fifty-nine associates, as against sixty-two, but to counterbalance this decrease they had seven applications for membership and five for election as associate druggists. Amongst other business Dr. J. C. M'Walter moved : "That the practice of pharmacy by limited liability companies constitutes a danger to the public, and is opposed to the best interests of the Pharmaceutical Society." This was seconded by Mr. J. T. Holmes, and after a long debate and the rejection of an amendment to the effect that the cutting of prices by limited companies constituted the danger, the motion was put and carried.

Bradford and District Chemists' Association.—The annual meeting was held on Tuesday, September 20, at the Great Northern Victoria Hotel, when there was a capital attendance of members. Mr. Mackay, President, took the chair, and called upon the Secretary to read his report, which was adopted, as was also the Treasurer's statement, which showed a very satisfactory balance after defraying all expenses. The election of officers was then proceeded with, and resulted as follows :—President : Alderman Hy. Dunn, C.C. Vice-Presidents : Messrs. A. H. Waddington and Geo. Rimmington. Treasurer : Mr. R. W. Silson. Secretary : Mr. S. N. Pickard, 74, Manningham Lane, Bradford. Committee : Mr. E. Mackay, Mr. J. A. Mitchell, Mr. J. M. Newbould, Mr. D. W. R. Wilson, Mr. H. Rogerson, Mr. F. A. Wilcock. It was decided to hold the meetings of the Association at the Great Northern Victoria Hotel during the coming year, the question of permanent rooms being left over for another year. Mr. Pickard gave a brief report of the workings of the P.A.T.A. during the past year, and urged all those present to join the P.A.T.A. for their own benefit. The new syllabus is in process of compilation.

The Brighton Junior Association of Pharmacy commenced the eighth annual session on Wednesday, October 6, by holding a general meeting at Newbury Hall, 31, Cannon Place, Brighton, when the President, Mr. C. A. Blamey, delivered the inaugural address.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

October 7, 1897.

Business has not been particularly active during the past week, the chief event having been the continued advance in value of Quinine. Senna is firm and expected to be dearer. Star Aniseed Oil dearer, also Menthol and Japan Oil of Peppermint. Opium quiet. Morphia dull and weak. Codeia steady. Quicksilver and Mercurials unchanged. Acid Tartaric steady. Cream of Tartar slighly easier. Castor Oil firm. Buchu Leaves again dearer. Cardamoms firm. Acid Citric weaker in sympathy, with lower price of juice. Cacao Butter dearer. Shellac weak and lower. Borax and Acid Boracic dull and weak. Cod liver Oil slightly better. Turpentine again dearer. Glycerin steady. Acid Carbolic dull and weaker. The following are prices actually ruling for articles of chief interest:

Acetanilid—Is steady at 1s. 4d. to 1s. 6d. per lb., according to quantity, and may possibly be dearer if the rise in the price of the raw material continues.

Acid Boracic—Continues very dull, but prices are nominally unchanged at 24s. for ordinary *crystals*, and 26s. for *powder*.

Acid Carbolic—Is weaker at 6¾d. to 7d. for 35°-36° *ice crystal*, 7¼d. to 7½d. for 39°-40° *ice crystal*, and 8¼d. to 8½d. for 39°-40° *detached crystals* in quantity and bulk packing. *Crude* 60°, 1s. 11d.; 75°, 2s. 3d. per gallon. Liquid, of pale colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks and for quantity.

Acid Citric—Is dull and but little business is passing at 1s. 1¼d. per lb. for spot delivery.

Acid Oxalic—Firm at 3½d. to 3¾d. per lb., net, spot.

Acid Tartaric.—*English* on the spot continues to be quoted at 1s. 2d. per lb.; *foreign* being 1s. 1d. per lb.

Ammonia Compounds.—*Sulphate*: Quiet but unchanged at £8 2s. 6d. per ton for gray 24 per cent. prompt London. Hull same price. Leith prompt £8 3s. 9d. Beckton terms, £7 17s. 6d. per ton. *Bromide*: Steady at 2s. 1d. per lb. *Iodide*: Firm at 14s. 6d. per lb. *Salicylas*: 5s. 3d. per lb. *Sulphocyanide*: 1s. 1½d. per lb. *Carbonate*, 3d. to 3¼d. per lb., according to package. *Sal ammoniac*: Sublimed firsts, 33s. 6d. per cwt.; seconds, 31s. 6d. per cwt.; crushed, for batteries, 33s. to 35s. per cwt.; powder, 34s. and 36s. per cwt. *Muriate*: White crystals, 28s. per cwt.

Atropia—Is firm at 12s. 6d. for the *sulphate* and 15s. for the *pure*, and in view of the continued scarcity and dearness of good raw material it would seem probable that any change will be in an upward direction.

Bleaching-powder—Firm at £7 15s. per ton.

Borax.—Quiet at 14s. 6d. per cwt. for *crystals* and 15s. per cwt. for *powder*.

Buchu Leaves.—Since last week's auctions sales of yellowish-green have been made at 7d. per lb., and fair green are now held for 9d. per lb. Stocks both here and in New York appear to be mainly in the hands of one firm.

Camphor.—There is absolutely nothing doing in *crude*, and the article is only nominally quoted. For *refined* there are but few inquiries at current rates.

Cardamoms.—There are several inquiries on the market for this article, but second-hand holders are very firm, and so far we have heard of no business of importance having been done since last week's auctions.

Cascara Sagrada—Is slightly firmer at 13s. 6d. per cwt. on spot and 12s. 6d. to arrive.

Castor Oil.—*E. I.* oil continues scarce on the spot, but business is somewhat restricted owing to high prices asked. Firsts are quoted 5d. per lb.; seconds 4d. per lb. *Italian*: Reports from producers would tend to the expectation that present high values will be fully maintained. Quotation for finest tasteless is 50s. per cwt. in quantity.

Chloral Hydrate—Is steady and in fair demand at 3s. 11d. per lb. for *crystal* and 3s. 9½d. per lb. for cake in quantity and large packing.

Cloves.—Only 111 bales *Zanzibar* offered in auction, of which 60 bales sold at 2¼d. 7 cases picked *Penang* sold without reserve at 6¼d. to 6⅞d. Privately the market for *Zanzibar* continues active with advancing rates. Sales comprise October to December delivery at 2⅞d. and January to March, 3d. to 3⅛d.

Coal Tar Distillation Products.—*Toluol*: 2s. 4d. per gallon. *Benzole*: 50 per cent., 2s. 2d.; 90 per cent., 2s. *Crude Naphtha*: 30 per cent. at 120° C., 1s. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 11d.; 90 per cent. at 160° C., 1s. 8d.; 90 per cent. at 190° C., 1s. 1d. per gallon.

Cocaine—One manufacturer, who enjoys an unenviable notoriety for endeavouring to force sales by unnecessarily cutting prices, not only of this article but of other of his products, is offering below 8s. 6d. per oz. for quantity. The best makers are not, however, free sellers at this price.

Cocoa Butter.—In the monthly auctions on Tuesday 200 cases (20 tons) *Cadbury's* sold, commencing at 12⅜d. and closing at 13d. per lb., the average being 12⅛d. per lb., against 11⅛d. per lb. at the September sale, and 10⅞d. per lb. in August. 150 cases *Dutch*, warranted genuine, bought in at 11½d., also 5 cases from Hamburg at 12½d. per lb.

Codeia—Is firm at 11s. 6d. per oz. for quantity and large packing *Podophillin*. While makers still ask 14s. to 15s. it would appear probable that in sympathy with lower value of the root we may ere long see a reduction.

Cod-liver Oil.—There is rather more inquiry and less desire on the part of holders to sell at the nominal prices ruling. Quotations vary from 68s. to 72s. 6d. per barrel for the *Norwegian* and 2s. to 2s. 3d. per gallon for the *Newfoundland*. Appearances point to higher prices in the near future.

Cream of Tartar—Quiet and rather lower at 77s. per cwt. for first white French *crystals* on the spot; *powder*, 79s. to 80s. per cwt.

Ergot of Rye.—For sound *Russian* 10d. per lb. is asked, and 1s. to 1s. 2d. for *Spanish*. There seems a probability that price will still further advance.

Gentian Root—Is steady at the lower prices lately ruling and is now quoted 23s. per cwt. *f.o.b.*, while on the spot good root fetches 25s. 6d.

Ginger.—At auction only 387 bags rough *Cochin* offered, and 50 bags ordinary washed sold without reserve at 24s. 6d., the rest being bought in; washed at 26s. 20 cases limed native, partly cut, sold at 43s. to 43s. 6d. 45 bags limed *Japan* sold at 14s. to 15s. No *Jamacia* offered.

Glycerin.—Market is steady, and with advent of colder weather we may very likely see an improvement in value. Best German white chemically pure double distilled, 1·260, in tins and cases, is quoted at 55s. to 60s. per cwt., English make being obtainable at rather less money.

Insect Flowers.—Quiet but firm at 80s. per cwt. for the open, 105s. per cwt. for half closed, 130s. for closed flowers, and 140s. per cwt. for the wild closed flowers.

Lithia.—Firm at 9s. 4d. per lb. for the carbonate in quantity.

Lycopodium.—In fair demand at 1s. 4d. to 1s. 5d. per lb. for the sifted quality in quantity.

Menthol.—Market is decidedly better, price for good brands being 7s. to 7s. 9d. per lb. for spot and to arrive, and it is thought possible that we may see a further tangible recovery in value of this article, bearing in mind that present price is still almost unprecedentedly low.

Mercurials—Remain unchanged at 2s. 2d. for *corrosive sublimate*, and 2s. 6d. for *calomel* in quantity.

Morphia.—Makers' price remains nominally 4s. 7d. for the *Hydrochlorate powder*. For 1000-oz. contracts less would, however, no doubt, be readily accepted.

Oils (Essential).—*Cassia*: 80 to 85 per cent. spot, 6s. 9d.; *Cujeput*: Very firm at 3s. 3d. per bottle for good quality; *Citronella*, spot 1s. 2d., *c.i.f.* 1s. 1½d. *Eucalyptus*: In more demand, good medicinal quality is obtainable at 2s. 3d. to 2s. 6d. per lb., whilst fair commercial oil is quoted 1s. to 1s. 6d., according to quality and quantity. *Peppermint*: *HGH* is lower at 5s. 9d. to 6s. for good round lots; the low price should tempt buyers to lay in a good stock. *Japan*, dementholised spot, 3s. 6d.; *c.i.f.*, 4s; 40 per cent. on spot, 5s. per lb. *Star Aniseed* dearer at 8s. 4½d. per lb. on the spot, and 8s 3d., *c.i.f.*, to arrive.

Oils (Fixed) and Spirits.—*Linseed*: The market remains very quiet; pipes on the spot are nominally unchanged at £14 12s. 6d., with barrels at £15. *Rape* fairly steady at

£24 10s. for ordinary brown on the spot; refined, on the spot, £26. *Cotton* very dull and rather lower; refined, on the spot, £15 10s. to £16, according to make. *Olive* firm and dearer at £30 for *Spanish*, £29 for *Mogador*, and £31 for *Levant*. *Cocoa-nut*: *Ceylon*, on the spot, £22; *Cochin*: £29 10s. to £30. *Turpentine* very firm and dearer, and steadily advancing; in our opinion we shall see decidedly higher values. American on the spot 24s. to 24s. 3d. per cwt. November-December 24s. 4½d. per cwt. paid, and January-April 25s. per cwt. paid. *Petroleum oil*: The shade lower at 4⅝d. per gallon for Russian on the spot, and 4⅞d. for American on the spot. *Petroleum spirit*: American 6d. per gallon, deodorised, 6¼d. per gallon.

Opium—Is practically unchanged, with but little doing. It is stated that while the new crop may possibly contain the full average percentage of alkaloid, the paste is very dark in colour, and hardly commends itself to buyers, judging only from appearance.

Orris—Is rather better, really good picked *Florentine* on the spot being held for 52s. 6d. per cut.

Paraffin Wax—Continues cheap; *crude*, 1½d. per lb.; *refined*, 2¼d. to 3½d. per lb. according to melting-point.

Phenacetin—Quiet at 4s. to 4s. 3d. for larger quantity. There is room for a tangible improvement in price of this article when makers decide to abandon the ruinous policy of cutting one against the other regardless of what should be a fair price.

Potash Compounds.—*Chlorate* is quiet but unchanged at 4d. per lb. *Bromide* steady at 1s. 8d. per lb. *Iodide* firm and in good demand at 9s. 9d. to 10s. 3d. per lb. for quantity. *Bicarbonate* steady at 30s. per cwt. for powder. *Cyanide*: Prices are slightly firmer at 10¾d. to 11½d. per lb. in 1-cwt. cases for the 98-100 per cent. *Permanganate* weak at nominally unchanged prices; 70s. for small. and 75s. for large crystals. *Bichromate* firm at 4⅝d. per lb. *Prussiate* unchanged at 5½d. per lb. for Beckton; other English makes 5¾d. to 6d. per lb. *Hypophosphite* unchanged and firm at 3s. 6d. per lb. *Oxalate*: The neutral is quoted 5d. per lb. for the ordinary, and 6½d. per lb. for Schering's.

Quassia Logs—Are dearer, business having been done at £4 per ton this week.

Quicksilver—Quiet at £6 15s. per bottle from importers, with 6d. to 1s. less from second-hands.

Quinine—Is a little quieter; earlier in the week 1s. 3½d. was paid for first brands from second-hand, but to-day there are sellers at 1d. per oz. less. These prices are for 1000-oz. lots. The best makers are still not accepting orders, and it is fully anticipated that, when price is definitely fixed, it will be on a higher basis than figures at which second-hand holders have lately been selling. It is to be hoped in interest of all concerned that the price will remain stable at the improved value.

Resorcin.—Steady at the late reduction, being obtainable in quantity at 6s. 6d. per lb.

Senna.—*Tinnevelly* kinds are in strong inquiry mainly for a quality at about 2½d. per lb., but second-hand holders ask too much money in view of the large offerings in next sales, although it is generally anticipated that prices will rule much higher this season. It is said that the bulk of the offerings in last sale have been already shipped away, mainly to America.

Shellac.—At the fortnightly auctions on Tuesday increased supplies of *Second orange* were catalogued, but a dull tone prevailed throughout, and only about one-fourth was disposed of, chiefly without reserve, at very irregular prices, *TN* descriptions in fair condition averaging fully 3s. decline on last sales' rates, or 61s. to 62s. basis fair, the cakey and blocky kinds showing rather less decline. *Garnet*: No *AC* was offered, and other marks were slow of sale at about previous rates. *Button* neglected. A total of 1601 cases offered and 440 cases sold. *Fine Orange*: of 57 cases 5 sold, *Octagon B* ordinary of the mark at 85s. *Second Orange*: Of 1241 cases 406 cases sold, chiefly bright red cakey at 62s., ditto blocky at 58s. to 59s. *Garnet*: Of 63 cases 7 sold, fair flat free *PB,G* at 56s., *JB,G* flint block at 52s. *Button*: Of 240 cases 22 sold, ordinary to good firsts at 70s. to 76s., seconds at 65s., and *glassy circle* 2's at 59s. to 60s. Since the auctions a rather steadier tone has prevailed.

Soda Compounds.—*Crystals*: Firm at 52s. 6d. per ton ex ship terms. *Caustic*: Firm at £7 15s. per ton for the 70 per cent., with 60 per cent. at £6 15s. per ton. *Nitrate*: Ordinary on the spot £7 7s. 6d. per ton, refined £7 12s. 6d. per ton. *Bicarbonate*: Steady at £7 10s. per ton on the spot for the 99 per cent. and 18s. per cwt. for the *free from monocarbonate*. *Bromide*: Strong at 2s. 1d. per lb. *Iodide*: In small demand at 11s. 7d. per lb. *Benzoic*: 2s. 3d. per lb. for the artificial and 4s. 6d. per lb. for the genuine from gum. *Hyposulphite*: 6s. 6d. to 8s. per cwt. *Salicylas*: Steady at 2s. per lb. for *powder*, 2s. 6d. per lb. for *crystal*, and 3s. 10d. per lb. for the *physiological pure* in quantity.

Spices (various).—*Black pepper*: Quiet but firm at late rates privately; none offered at auction. *White pepper*: 84 bags good bold Singapore sold at 7¼d.; *Siam* bought in at 6⅝d.; and *Penang*, old import, at 5⅞d. *Cassia lignea*: Privately business has been done at 47s.; 250 boxes at auction were bought in at 46s. 6d.; also 125 bales broken at 26s. to 36s. *Chillies*: 14 bales damaged Zanzibar sold at 39s.; a few cases good Japan fetched 55s. *Cinnamon chips*: 140 bags Ceylon bought in at 3½d. to 3¼d. *Mace*: 18 cases Penang bought in at 1s. 9d. to 1s. 10d; 4 cases Java, old import, sold at 1s. 8d.; 1 case broken Ceylon sold at 1s. 5d., and a few packages West India at 1s. 6d. to 1s. 7d. *Nutmegs* continue firm. 20 cases Penang sold, 65's at 2s. 10d., 80's at 1s. 10½d.; a few cases wormy and broken sold at 6d. to 7d. *Pimento*: Privately firm but quiet; none offered at auction.

Sulphate of Copper—Fairly steady at £16 10s. to £17 10s. per ton, according to brand and package.

MONTHLY STATEMENT OF DRUGS, ETC., WAREHOUSED IN LONDON.

October 1, 1897.

		September.		Stocks, Sept. 30.	
		Arrivals.	Deliveries.	1897.	1896.
Aloes (all kinds)	packages	939	1,437	5,228	6,610
Balsams ,,	,,	12	22	428	752
Bark, Cinchona	,,	1,336	1,781	20,174	24,865
Quinine Sulphate	ounces	85,456	22,416	1,432,096	1,476,064
Beeswax	packages	338	754	2,672	2,058
Camphor	,,	170	155	11,624	11,496
Cardamoms	,,	235	337	760	532
Cochineal	,,	144	211	2,112	1,719
Colombo Root	,,	—	68	77	113
Cubebs	,,	—	6	472	331
Dragon's Blood	,,	28	31	101	108
Galls (all kinds)	,,	357	196	5,142	9,875
Gum, Ammoniacum	,,	—	1	32	44
Arabic, all kinds	,,	2,269	2,238	13,842	15,338
Asafœtida	,,	53	58	496	486
Benjamin	,,	153	446	3,231	2,848
Galbanum	,,	—	—	—	1
Gamboge	,,	40	14	341	212
Guaiacum	,,	25	54	78	57
Kino	,,	—	—	21	28
Mastic	,,	—	4	4	10
Myrrh	,,	2	14	504	667
Olibanum	,,	67	371	1,533	3,796
Tragacanth	,,	361	622	3,581	4,087
Ipecacuanha	,,	123	94	321	448
Jalap	,,	—	10	324	374
Nux Vomica	,,	190	119	342	705
Oils, Castor	,,	220	215	400	1,019
Olive	,,	225	293	798	1,083
Aniseed	,,	45	21	109	37
Cassia	,,	—	7	98	20
Rhubarb	,,	199	97	757	492
Saltpetre	tons	317	1,568	3,933	4,421
Sarsaparilla	packages	87	111	236	306
Senna	,,	591	467	1,190	2,374
Shellac	,,	5,278	5,653	53,273	40,184
Terra Japonica, Gambier	tons	652	990	1,055	1,057
Cutch	,,	6	98	1,471	1,886
Turmeric	,,	19	34	631	1,080

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

Sulphonal.—In consequence of renewed outside competition, the two principal makers have reduced their price for quantity to 7s. 3d. per lb., and it is stated that while at this price, they not only make no profit, but practically lose upon the article they are prepared to go even much lower, if necessary, in order to retain their hold upon this product, no doubt in view of the fact that their is a distinctly superior article, they will in the long run succeed in their object.

Turmeric—Continues very firm, although quiet. In auction on Tuesday 200 bags fair *Bengal* were offered, but bought in at 13s. per cwt.

MANCHESTER CHEMICAL REPORT.

October 6, 1897.

Although current reports show a fair business to be passing in Alkali and Bleaching Powder, the outlook forward is not regarded by an eminent authority as satisfactory. This is no less than Sir John Brunner, who on Saturday, in laying the foundation stone of a technical school at Middlewich, alluded to the closing of the Cheshire Alkali Works in that town. The cause, he said in broad terms, was the unwisdom of our American cousins in increasing tariff rates, which had caused a large diminution in the demand for the United States in Alkali, and that probably or possibly the demand might cease altogether. On the other hand the Castner-Kellner Alkali Co. is going "great guns," and has, according to its report, disposed of its output of Bleaching Powder for the next three years. Meantime, there is no change to report in heavy chemicals, except perhaps Soda Crystals, which are advanced for certain northern ports. Brown Acetate of Lime is in fair request, Welsh being quoted £5 2s. 6d. to £5 5s. at station, Manchester, and £5 5s., nett, best American *c.i.f.* Coal Tar Products are generally firmer, especially Benzols. Sulphate of Copper in Bleaching Powder contracts are reported at £6 5s. per ton on rails for next twelve months.

LIVERPOOL REPORT.

October 6, 1897.

Ammonium Salts.—*Carbonate* meets with some inquiry at 3d. per lb. *Sal ammoniac* brings 33s. per cwt. for first quality, and 31s. for seconds. *Sulphate* is as last week, £8 7s. 6d. to £8 10s. per ton.

Beeswax.—Chilian has been selling at £6 12s. 6d. to £7 10s. per cwt.

Bleaching Powder—Is somewhat dull of sale at £6 12s. 6d. per ton *f.o.b.*

Canaryseed—Shows signs of picking up again, prices being firmer and 100 bags of good Turkish seed selling at 26s. per 464 lbs.

Copperas—Is 1s. per ton dearer, 39s. per ton being now asked for Lancashire and 37s. for Welsh.

Copper Sulphate—Is still firm at £16 12s. 6d. to £16 15s. per ton for present delivery.

Linseed—Is still quiet, sellers not being quite so eager for business at late rates.

Oils (Fixed) and Spirits.—*Castor oils* are still bringing the same rates as last week. Calcutta good seconds, 3⅞d. per lb., and French first pressure, 3⅞d. to 3⅝d. No Madras is offering, market being cleared. *Olives* are offering in very small amount, and at late high prices. Sales of Seville are reported at £30 10s. per tun, and Candia is offered at £31 to £31 10s. *Linseed* of Liverpool make has declined in price to 16s. 3d. and 17s. per cwt. *Cottonseed* is being offered at 16s. 3d. to 17s. 3d. per cwt. *Spirits of Turpentine* is very firm at 25s. per cwt., and in moderate demand.

Potash Salts.—*Chlorate*: 3¾d. per lb. *Cream of Tartar*: 80s. to 82s. 6d. per cwt., with only limited inquiry. *Potashes* dull at 19s. 6d. per cwt. *Pearlash*: 29s. to 30s. per cwt. *Saltpetre*: 21s. 6d. to 22s. per ewt.

MARRIAGE.

Downie—Kerr. — At Windsor Place, Dundee, on the 5th inst., by the Rev. Dr. Cox and the Rev. Thomas Johnstone, George Downie, Salvador, C.A., to Nellie Mackie, eldest daughter of Charles Kerr, Dundee.

DIARY OF THE WEEK.

Tuesday, October 12.

Royal Photographic Society, at 8 p.m.
President's Annual Address and Presentation of Medals, at the Gallery, 5a, Pall Mall East.

Wednesday, October 13.

Newcastle-upon-Tyne and District Chemists' Association, at 8 p.m.
Annual Meeting (Métropole Hotel).

Thursday, October 14.

Chemists' Assistants' Association, at 8 p.m.
Smoking Concert at the Holborn Restaurant (Council Chamber).

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Gerard Henry Smith & William Frederick Hoyle Newbery, Medical Practitioners and Surgeons, of Craigholm, and 109, Cazenove Road, Upper Clapton.

Robert Henry Stimpson & William Connah (trading as Anstey, Chave & Co.), Annatto Manufacturers, Rockingham Road, Uxbridge. All debts will be received and paid by Robert Henry Stimpson.

Clement William Greaves, and Edward Ellam (trading as Greaves & Co.), Photographers, 30, Silver Street, Halifax. The business will be carried on under the same name by Clement William Greaves, who will receive and pay all debts.

Sparke, Martyn and Robinson, Surgeons and Apothecaries, Mansfield, Notts, so far as Bertie L. Robinson is concerned.

Reuben Buffham and Leonard Walter Woods (trading as the Science and Art Photographic Co.), Russell Chambers, South Shields. Debts will be received and paid by Reuben Buffham, who will continue to carry on the business.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Edwin Wilson (trading as Wilson & Co.), Chemist and Druggist, 18, Frenchwood Street, and 28a, Church Street, Preston.

LATE ADVERTISEMENTS.

Apprenticeship.

APPRENTICE.—Well educated youth required immediately. E. Pettinger, 30, Rosslyn Hill, and 49, High St., Hampstead.

Assistants Wanted.

BY a large wholesale firm a first-rate Clerk and Cashier, with some knowledge of the drug trade. Reply, giving full particulars of age, experience, and salary required, to A. F. R., care of T. Dixon's Advertisement Offices, 16, Gt. Marlborough St., W.

DISPENSER. Furnished apartments, fire, light, and attendance offered in return for 4 hours' services in the evening. Suitable for a student of pharmacy. Apply M. A., "Pharm. Journal" Office, 5, Serle St., London, W.C.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Grand old Tyrolese violin, in one home sixty years; full, sweet tone; good condition; worth £10, price £5; approval —100, Ainslie Street, Grimsby.

One 3-h.p. vertical cross tube boiler, with all usual fittings, by Robey, Lincoln, 1896; 2 steam jacketed copper pans, working capacity about 30 gallons each, dimensions—32 inches diameter, 16 inches deep; 40 inches diameter, 12 inches deep. Pepper mill. Currant cleaner. Cast-iron mixer, for hand or power, 1 cwt. capacity.—Adams, Manufacturing Chemist, Mansfield.

OFFERED—(*continued*).

Three to four years 'Chemist and Druggist'; ditto 'Mineral Water Trade Review'; 1890-1897 Diaries 'C. and D.'; 21s. the lot. Gun Metal Pump (Willcox), 25s.—Chemist, One Ash, Little Lever, Bolton.

Dozen each Williams', Carter's, Cockle's, Scott's Pills; half-dozen Steedman's Powders, 2/9, 3/2/6; half-dozen each, 1/16/6. Post free, cash with order or references.—Eastman, Forest Lane, Stratford, E.

Water-Bed, Maw's make, 4 feet by 3, good as new, used three times only; cost 4 guineas, sell for 2 guineas; also Air-Pillow, 18 inches by 24, price 5s., cash.—E. F. Young, Pharmacist, Bristol.

Recipes.

Recipe for making an inseparable Glycerin and Cucumber Emulsion (from cucumbers) at 1d. per lb. Post free, 1s.—Malcolm, 10, Smeaton Street, Hull.

WANTED.

Wanted.—'Ph. J.' "Students' Page" only, from commencement; also Green's 'Botany,' Southall's 'Materia Medica.' State price to—"Page," 70, Fortune Green Road, W. Hampstead, N.W.

NEWS IN BRIEF.

Accidental Poisoning by Strychnine.—Mr. Albert Iveson, Coroner for the Gainsborough district, held an inquiry on Saturday, September 25, into the circumstances attending the death of Mary Ann Burton, aged 40, the wife of Mr. Frank Burton, tailor, of Trinity Strect, Gainsborough, who died suddenly the same morning after taking a dose of citrate of iron and quinine. Shortly after taking it she complained of numbness in her limbs, and asked her husband if he thought the medicine was all right. Her husband noticed a "twitching" in her face, and sent for a doctor, but she died shortly afterwards in her husband's arms.—Mr. Stanser, assistant to Mr. Richard Burrows, chemist and druggist, Gainsborough, said he supplied the preparation from a bottle labelled citrate of iron and quinine, which was produced in Court. He also stated that no poison was kept in proximity to the bottle, and that no poisonous substance could have been introduced during the process of weighing the two scruples asked for, as he weighed out the quantity required on a piece of clean paper. The case was adjourned for analysis of the contents of the stomach, and at the adjourned inquest, on October 8, Dr. Muter, the county analyst, deposed that the supposed citrate of iron and quinine contained strychnine. Mr. Burrows stated, in evidence, that the scale preparation had been sold as received from Messrs. Morson & Son, London, in December last, and he had been selling the contents as citrate of iron and quinine, according to the label on the bottle. It would have been possible to test the compound, but it was not customary to do so. Evidence was also given by Mr. Taubman, who said Messrs. Morson & Son were quite unable to account for the mistake. They kept citrate of iron and quinine with strychnine in a different room to the simple citrate of iron and quinine, and in a different kind of vessel. Ultimately the jury returned a verdict of "Death from strychnine poison, sent by mistake for iron and quinine by Messrs. Morson, of London." The jury added a rider that more care should be taken by Messrs. Morson in checking the labelling of bottles.

Brighton Junior Association of Pharmacy.—On Wednesday, October 6, at 9 p.m., this Association held the first meeting of their Eighth Annual Session.—The President (Mr. C. A. Blamey) delivered his inaugural address, in which he spoke in very comprehensive terms of all general matters pertaining to the craft. He was of opinion that the Pharmaceutical Society was entitled to, and certainly should receive more support from the trade than it did, and he urged all chemists to do their part towards extending that support, as greater representation meant greater power, and greater power meant greater benefits to themselves. He remarked that the Benevolent Fund contribution box would be on the table at every meeting of the Association as hitherto, and he hoped it would receive liberal attention. Speaking of the P.A.T.A., he was of opinion that it was a step in the right direction, and ought to meet with the undivided support of the trade. In conclusion, he offered all the new comers a cordial welcome, and urged upon the members to do their utmost in making this session as successful or more so than any previous one had been.—He was loudly applauded on resuming his seat.—Mr. C. G. Yates then proposed a vote of thanks to the President for his address. This was seconded by Mr. G. H. Aird, and was most heartily accorded.—The list of officers and committee has been altered somewhat, owing to the fact of four of them having left Brighton. Others having been elected to replace them, the list now stands as follows:—President, Mr. C. A. Blamey; Vice-President, Mr. G. B. Savage; Hon. Treasurer, Mr. C. G. Yates (Upper Hamilton Road, Brighton); Hon. Secretary, Mr. W. H. Andrews (74, Queen's Park Road, Brighton); Committee, Messrs. W. J. Davies, E. Beckwith, E. H. Aird, E. Sant, A. S. Kent, J. O. McGlinchy, A. Ching, and C. Dixon.

Mr. James Hickisson, the proprietor of the Crystal Palace, John Bond's, Gold Medal Marking Ink, passed away at Bournemouth on September 29, after a long and painful illness, aged 72 years, and was buried at Highgate, London, on October 4. The business will be carried on by his son, Mr. J. Hickisson, under whose management it has been for many years.

Mr. Herbert W. Seely, F.C.S., of Halifax, Vice-President of the P.A.T.A. (retail section), has again been elected to supply drugs, chemicals, surgical instruments, and a qualified dispenser, by the Guardians of St. Luke's Hospital, Halifax, for the ensuing six months.

The General Medical Council.—The *British Medical Journal* understands that Mr. Victor Horsley has been successful in the contest for the vacant seat on the General Medical Council. The contest practically lay between him and Sir Walter Foster, M.P. The exact figures will not be known till Saturday, when the result of the election will be officially declared by Sir Richard Quain, the President of the Council; but it is believed that Mr. Horsley has a majority of about 600. The total poll is believed to have been about 13,300.

Messrs. Ayrton and Saunders, of Liverpool, have secured a spacious room at the Central Hotel, Dublin, which they have fitted up as a show-room, with a very large assortment of druggists' sundries, medical glass, perfumery, toilet articles, show-cases, surgical appliances, sponges, brushes, and other articles of interest to chemists and druggists. They have made extensive arrangements for the display in question, and think it will probably be the largest exhibition of the kind ever shown in Ireland. The room was opened on Monday, and the firm's representatives, Mr. T. White and Mr. G. Stott, will be in attendance, and glad to see visitors at any time from 9 a.m. to 10 p.m.

Mr. John W. Franklin will in future carry on the business of J. L. Thompson & Co., of Kobe, Japan.

MANCHESTER CHEMICAL REPORT.

October 13, 1897.

Although the outlook continues to be regarded by experts here as far from favourable, a fairly good feeling prevails in heavy chemicals, and the Board of Trade returns are on the whole satisfactory. The exports to the United States appear to be compensated for by the increased demand for other countries, which nearly counterbalance the decrease on American account. So far as can be ascertained, contracts continue to be made on home account, the basis for Bleaching Powder being £6 3s. 9d. to £6 5s., according to quantity, while Alkali varies considerably according to point of delivery. Brown Acetate of Lime is steady, £5 2s. 6d. to £5 5s. for Welsh, net, and £5 3s. 9d. to £5 5s. ex warehouse here for best American. Bicarbonate of Soda continues in good demand at late rates, Industrial Bicarbonate (for mineral waters) being quoted £4 5s. to £4 10s. per ton, bags, and £5 5s. for 1-cwt. kegs, both on rails at the works, Northwich, Lancashire. Makers of Green Copperas are largely increasing their production, and owing to the small quantity of Welsh arriving they are again asking 1s. to 2s. per ton on rates prevailing a fortnight ago. This applies to home demand, but for shipment there is no change in price. Sulphate of Copper a trifle easier at £17 5s. per ton best brands, Manchester.

LIVERPOOL REPORT.

October 13, 1897.

Ammonium Salts—Have not altered since last report.

Beeswax.—Sales of 27 packages of Gambia at £5 17s. 6d. per cwt., 40 ditto Gambia at £6 2s. 6d. per cwt., and Chilian at £6 12s. 6d. to £7 10s. per cwt. are reported.

Bleaching Powder — Continues at £6 12s. 6d. per ton for hard, *f.o.b.*

Canaryseed—Commands a little more attention at present than of late, and is rising steadily. Early in the week small sales of Turkish seed were made at 26s. per 464 lbs., later 250 bags brought 27s. 3d., and at present 27s. 6d. is asked by holders.

Carnauba Wax.—Grey has been sold on private terms.

Copperas—Continues very firm at 39s. per ton for Lancashire and 37s. for Welsh.

Copper Sulphate. — Present delivery £16 12s. 6d. to £16 15s. Forward (spring) £17 2s. 6d.

Kola Nuts.—30 packages of dried found purchasers at 3d. per lb.

Linseed—Is steady in tone, with a good inquiry, but no sales are reported.

Oils (Fixed) and Spirits.—*Castor oil*: Calcutta remains at 3⅞d. per lb., but French is a little easier at 3⅞d. per lb. *Olive oils* generally are in short supply, and prices consequently continue fully up to those last reported. *Linseed oils* of Liverpool make are slow of sale, and a turn easier in price, 16s. to 17s. per cwt. *Cotton-seed oil* is now quoted at 16s. to 17s. per cwt. *Spirits of turpentine* is very firm, and in fair demand at 25s. 9d. per cwt.

Quillaya Bark.—75 bales of Chilian sold at £26 per ton, and £27 is the price asked at present.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

October 14, 1897.

Business in drugs and chemicals has been somewhat restricted during past week. There are also no changes of importance to report. Cinchona Bark is again dearer, while Quinine, after being somewhat weak, appears to have resumed its firm and upward tendency. Opium and Morphia steady. Codeia firm. Acid Citric weak. Cream of Tartar lower. Acid Tartaric steady. Shellac in better demand. Glycerin looking up. Cocaine easier. Quicksilver and Mercurials unchanged. Cod-liver Oil expected to improve. The following are the ruling prices for articles of chief interest :—

Acid Carbolic—Is quiet at 6¾d. for best make of 35-36° *ice crystals* in bulk. Other qualities in proportion : *Crude*, 60°, 2s. 1d.; 75°, 2s. 6d. *Liquid* : 95 per cent. of pale yellow colour, 1s. 3d. per gallon in quantity and in 40 gallon casks.

Acetanilid.—This article is in fair demand, but prices do not improve. Quotations range from 1s. 4d. to 1s. 6d. per lb. according to quantity.

Acetate of Lead.—This article is very firm, but so far the expected advance has not been made. Fine quality is quoted 24s. 3d. per cwt. on the spot.

Acid Boracic—Continues very quiet, but prices are unchanged at 24s. per cwt. for *crystals* and 26s. for *powder*.

Acid Citric—Is somewhat weak at 1s. 1½d. to 1s. 2d. per lb. for the P.B. quality. In view of the low price at which the juice has been selling, it is thought that price of the acid should be lower, especially as the consumption is not so large at this season of the year as during the summer months.

Acid Oxalic—Is unaltered, *crystals* being quoted 3½d. to 3¾d. per lb., *powder*, 4d. to 4¼d. per lb., according to quantity.

Acid Tartaric—Is steady at 1s. 2d. for English and 1s. 1d. for foreign.

Ammonia Compounds.—*Sulphate* : Dull and lower at £8 per ton for gray prompt 24 per cent. London. Hull and Leith same price. Beckton terms prompt, £7 15s. *Muriate* : Rather easier at 25s. 6d. per cwt. for 98 per cent. free from metals, and 32s. per cwt. for chemically pure. *Sulphocyanide* : Is lower at 11d. per lb. in *kegs*, or 1s. per lb. for *jars*.

Belladonna Root—Continues extremely scarce, and really good root on the spot is worth 45s. to 46s. per cwt. and hardly to be had at all.

Bleaching Powder—Firm at £7 15s. per ton on the spot.

Borax—Quiet at 14s. 6d. per cwt. for *crystals*, and 15s. for *powder*.

Cascara Sagrada.—The turn appears at last to have set in, and it is reported that there are buyers at 15s. per cwt. with but few sellers at that figure.

Cinchona Bark.—At the London monthly auctions on Tuesday only very small supplies were offered, amounting to 1307 packages of all descriptions, as compared with 1378 packages last month. Competition was keen, especially for cinchonidine barks, and the bulk sold at fully the rates paid at the last Amsterdam sales to rather dearer. *Ceylon* : Of 269 bales and 4 cases offered 267 bales sold, according to analysis. *Succirubra* stem chips, ordinary to fair at 2⅞d. to 4⅜d., fair shavings at 4d. to 4¾d., branch at 2⅞d. to 3d., root 3⅜d. to 3¼d. ; renewed chips and shavings, ordinary to fair at 3⅜d. to 4⅜d. ; *Officinalis*, renewed chips at 3⅛d., branch 2½d. to 3⅛d. ; hybrid root at 3¼d. *East Indian* : Of 229 bales and 6 cases offered 196 bales sold. Red stem chips and shavings, common to good, at 2¾d. to 4⅝d., fair root 4d. ; renewed chips and shavings, fair to good rich at 3¾d. to 7⅛d. ; *Officinalis* chips and shavings, fair to good at 3⅞d. to 4¾d., with common at 3d. ; renewed ditto, fair to good rich, at 4d. to 7⅝d. ; *Ledger*, renewed chips, good, at 6⅜d. *Java* : 107 bags and 61 bales offered, and 107 bags sold, good *Ledger* stem chips at 7⅝d., ditto branch at 7⅛d., ditto root at 7⅛d. to 7¼d. *South American* : Of 117 bales *Bolivian*, cultivated *Calisaya*, 102 bales sold from 5¼d. to 8¼d. for fair to good yellow quill. 94 bales soft *Columbian*, of old import, sold at 4d. *African* : Of 420 bales offered 324 bales sold, fair to good quill at 5d. to 6¾d., damages at 4⅛d. to 4⅝d., broken quill and quillings at 3¼d. to 4½d. per lb.

Cinchonidine Sulphate—Continues to advance owing to the extreme prices realised for barks containing cinchonidine. Quotations range from 8d. to 9d. per oz.

Cinchonine—Is also dearer at 4¼d. to 4½d. per oz. for both the *muriate* and *sulphate*.

Cloves.—Privately *Zanzibar* continue in demand. Prices have fluctuated somewhat, but rule higher than last week. November-January delivery, $3\frac{1}{32}$d. ; January-March, $3\frac{5}{32}$d. to $3\frac{7}{32}$d. Only 81 bales *Zanzibar* were offered in auction, and bought in. *Penang* also bought in, picked, at 6¼d. for fair to 10¼d. for fine.

Coal Tar Distillation Products.—*Toluol* : 2s. 4d. *Benzole* : 50 per cent., 2s. 2d. ; 90 per cent, 2s. 1d. *Crude Naphtha* : 1s. *Solvent Naphtha* : 95 per cent. at 190° C., 1s. 11d. per gallon.

Cocaine.—The pressure to sell on part of some makers has led to a distinctly weaker feeling in the article, and the brands which are less in favour can be bought below 8s. 6d. for 100 oz. lots, at the same time there are rumours that the supply of the *crude* article, which was stated to be considerable, has to a large extent been bought up, which points to the possibility of a reaction; at any rate those who secure a stock at the present figures will at least be buying at the lowest price on record.

Cod-Liver Oil.—There is not very much doing, prices varying from 72s. 6d. to 77s. 6d. for best new non-freezing *Norwegian*. It is believed, however, that with the advent of colder weather and consequent increase in the demand for consumption we may very likely see higher prices.

Codeia—Is firm at 11s. 3d. to 11s. 6d. per oz. according to quantity. In view of the fact that season of year is approaching when demand is most active, it would appear probable that any alteration in price will be in an upward direction.

Cream of Tartar—Lower and very dull. First white French *crystals* are quoted 76s. 6d. per cwt., *powder* 78s. 6d. to 79s. per cwt.

Ginger—*Cochin* : Quiet, 460 bags sold, washed rough 23s. 6d. to 27s. ; also 38 cases common small limed native partly cut sold at 28s. to 28s. 6d. Of limed *Japan*, 60 bags sold at 13s. 6d. to 14s. *Jamaica* : Steady, 45 barrels sold, ordinary dark 68s. ; middling bright 78s. ; 4 barrels lean rough *Grenada* sold at 52s.

Glycerine.—Large sales seem to have been made by refiners for delivery over the remaining months of this year, and a rather better tone is experienced. Quotations range from 49s. to 55s. per cwt., according to make and package. There seems no doubt that, considering the price of the crude article, the chemically pure article should be dearer, and there is little doubt with the advent of frosts we shall see higher prices.

Mercurials—Unchanged at 2s. 2d. for *Corrosive Sublimate* and 2s. 6d. per lb. for *Calomel* in 5-cwt. lots.

Morphia.—Nominally still unchanged at 4s. 6d. to 4s. 7d. per oz. for the *hydrochlorate powder*, but for large contracts makers would possibly accept somewhat less rather than let orders go past them. In America the ruling price of $1.85 to $1.90 per oz. is much above value here.

Nitrate of Soda—Is quoted £7 7s. 6d. for ordinary on the spot, the refined being 5s. per ton dearer.

Oils (Fixed) and Spirits.—*Linseed* is very firm at an advance ; pipes on the spot are quoted £14 17s. 6d., and barrels, £15 5s. *Rape* : Decidedly dearer at £26 10s. for ordinary brown on the spot, and £27 15s. for refined on the spot. *Cotton* : Quiet at £15 5s. to £16, according to make. *Olive* : Firm at £30 for *Spanish*, £29 for *Mogador*, and £31 for *Levant*. *Cocoanut* : *Ceylon*, on the spot, £22 ; *Cochin*, £29 10s. to £30. *Turpentine* : the market this week has been lower and very depressed, prices touched 23s. 10½d. but closes firm at 24s. 1½d. per cwt. *Petroleum Oil* : Lower at 4¼d. for Russian, and 4⅛d. for American on the spot. *Petroleum Spirit* : American, 6d. ; deodorised, 6¼d. per gallon.

Opium.—The market is firm. There is not, however, very much doing in the article, the views of buyers and of sellers being somewhat at variance. Good to fine *Smyrna* is quoted 9s. 6d. to 10s. 6d., and *seconds* (*druggists'*), 8s. 9d. to 9s. 3d. In the United States the price is $2.65 to $2.70 per lb., which is very tangibly above London parity. Opinion appears to vary as to the future of value here. For *Persian* the

market is also quiet, but firm sales have been effected at about recent figures.

Orris—Is practically unaltered at 52s. 6d. to 55s. for really best selected *Florentine* root.

Potash Compounds.—*Chlorate* is a shade easier at 3⅞d. to 4d. per lb. on the spot. *Cyanide* is much firmer at 11d. per lb. for the 98-100 per cent. cake; higher prices are anticipated. *Prussiate*: Yellow is still quoted 5¾d. to 6d. per lb., but is scarce for prompt delivery; red also is in good demand at 1s. 1d. to 1s. 2d. per lb. *Bromide* steady at 1s. 8d. per lb. *Iodide*: A fair business passing at unchanged rates, 9s. 9d. to 10s. 3d. per lb. *Bicarbonate* firm at 30s. per cwt. for powder. *Permanganate* dull of sale; quotations nominally unchanged at 70s. per cwt. for small and 75s. for large crystals. *Oxalate* firm at 4¾d. to 5d. per lb. for the neutral. *Hypophosphite* firm at 3s. 6d. per lb.

Quicksilver—Is quiet at £6 15s. from first hand and 1s. per bottle less from second hand.

Quinine.—The market has again assumed a firmer tone. Makers are not free sellers, in fact practically will neither sell nor even name a price. From second hand a few 1000-oz. lots might, perhaps, still be picked up at about 1s. 3d., there is not, however, much available. Higher prices are confidently anticipated, and the results of late London Bark Sale would certainly appear to point in this direction.

Shellac.—The demand on the spot continues moderate, with sales of about 200 cases, including *TN* orange basis 62s. cash. For arrival a steadier tone prevails, but business continues restricted, including *TN* October to December steamer at 60s., with further buyers thereat. The speculative market is also steady, and more business has been done.

Soda Compounds.—*Crystals*: Firm and unchanged, 52s. 6d. per ton ex ship terms. *Acetate* is lower at 35s. per cwt. for the chemically pure, and 14s. per cwt. for refined white crystals. *Hyposulphite* is lower at 5s. 9d. to 6s. 3d. per cwt. *Bircarbonate*, unchanged at £7 10s. per ton for 99 per cent. on the spot, and 18s. per cwt. for the free from monocarbonate. *Bromide*, unchanged at 2s. 1d. per lb. *Iodide*: Quiet at 11s. 7d. per lb.

Spices (Various).—*Black Pepper*: only 5 bags Singapore sea-damaged offered at auction, and sold at 3½d. privately, quiet but firm; Singapore, 3¾d. to 4⅛d., according to position. *White Pepper*: 15 bags fine Singapore at auction fetched 7d. privately, steady though quiet. *Chillies*: 29 bales damaged Zanzibar sold without reserve at 30s. to 31s. 6d., the bulk being bought in at 42s. 6d.; fine bright Japan bought in at 55s., 8 bales dull being sold at 48s. to 49s. *Cassia vera* bought in at 27s. *Cassia lignea* quiet at 47s. *Cinnamon chips*: 200 bags Ceylon partly sold at 2⅞d. *Mace*: 5 cases Penang bought in at 1s. 9d.; 5 cases Bombay sold at 1s. 6d.; 26 packages West Indian sold at 1s. 4d. to 1s. 8d. *Nutmegs* quiet at about late prices. *Pimento*: 240 bags sold at 3⅝d. to 3$\frac{15}{16}$d.

Sulphate of Copper— Unchanged at £16 10s. to £17 10s. per ton, according to brand and package.

Thymol.—This article can be purchased in quantity at the unprecedentedly low price of 6s. 6d. per lb., and with the possibility that the raw material may become dearer, it might be advisable to lay in a stock of the article while still obtainable at this low figure.

In to-day's drug auctions the chief point of interest was the advance in value of Senna. Vanilloes and Cardamoms were very firm, and the 5000 ozs. Brunswick Sulphate of Quinine which were offered sold quite briskly.

Aloes.—3 cases *East Indian*, in monkey skins, part good, part rough, fetched 41s. 13 boxes and 22 cases dark and coarse *Curacoa*, 9s. 6d. to 11s. 6d. 30 kegs and 39 cases *Socotrine* held for 80s. to 85s. 4 cases fair hard but very dull *Cape* sold cheaply at 15s. per cwt., 37 cases good hard bright ditto realising 21s. to 21s. 6d., inferior quality fetching 17s. 6d. to 20s., these figures showing lower value for the *Cape* quality.

Ambergris.—4 tins part held for 30s. to 40s., and undeveloped for 10s. per oz.

Aniseeds.—50 bags *Greek*, similar in appearance to the ordinary *Syrian*, taken out at 21s., 20 bags fair quality selling at 19s. 6d. per cwt.

Arraroba.—6 barrels fair colour, rather woody, were held for 3s. per lb.

Asafetida.—81 cases were offered, and there seemed to be some desire on the part of the broker to make sales, even at a reduced price, but only succeeded with 8 cases of fair but heavy block, which realised 50s. per cwt., a decline of fully 10s. per cwt.

Buchu Leaves.—Fair pale green rounds sold comparatively cheaply as compared with holders' late ideas at 5¼d. to 5½d.

Cardamoms—Were in very small supply, and prices asked were extreme. *Seed* sold at 4s. per lb., whilst 3s. 6d. to 4s. per lb. was realised for brown *Malabar*.

Castor Oil.—175 cases yellow seconds *Calcutta* held for 3¾d., good firsts selling for 4½d. per lb.

Cinchona Bark.—20 bales *Crown* sold at 8d. to 10d. 50 bags mossy *Lima* held for 3½d. 88 bales *yellow* sold at up to 10d. for the sound. 9 bales *Carthagena* bought in at 8d., and fair *Succirubra* quills at 1s. per lb.

Colocynth.—14 cases low *Spanish*, part very dark, were taken out at 6d. 10 cases fair small to boldish *Turkey* apple at 1s. 3d. per lb. 18 cases good *pulp* held for 3s. per lb.

Colombo Root.—31 bags fair small to bold sorts, slightly wormy, sold at 31s. 6d. to 33s. 6d. 12 bags fair sound were bought in at 30s. per cwt.

Croton Oil.—1 case "Herrings" sold at 2d. per oz.

Croton Seed.—5 bags of fair quality were bought in at 60s. per cwt.

Cummin Seeds.—65 bags fair *Malta* held for 30s. to 35s. per cwt.

Cubebs.—24 bags rather mouldy held for 22s. 6d., and 22 bags of fair quality for 30s. per cwt.

Cuscus Root.—5 bags fair cleaned were held for 30s. per cwt.

Cuttlefish.—33 mats good pale were bought in, price required being 3½d.; fair selling at 3d., small broken bold at 2½d., bold at 3½d., and very bold at 8d. per lb.

Dragon's Blood.—Some 30 cases were offered, but no fine quality was shown. Only 3 cases dark-coated slabs of dull colour sold cheaply at 77s. 6d. per cwt. A bid of £5 15s. was made for a parcel of very seedy lump of fair colour, but holders ask £6.

Ergot of Rye.—10 bags fair but rather weevily *Spanish* sold subject to approval at 10d.; 18 bags good sound *Russian* were held for 1s.; fair small ditto for 10d. per lb.

Fenugreek Seed.—38 bags *Morocco* bought in at 12s. 6d. per cwt.

Galangal Root.—33 bales held for 25s. per cwt.

Gamboge.—Of 29 cases soft bright *Saigon* pickings sold at £6 15s., good bright softish pipe being held for £8 15s., dull pickings for £6, and lower quality for £5 5s. per cwt.

Guarana.—2 cases of fair quality bought in at 1s. 9d. per lb.

Guaza.—Of 50 robbins fair green part sold prior to sales, price required for balance being 3d. per lb.

Gum Ammoniacum.—3 cases part blocky held for 55s. per cwt.

Gum Arabic.—2 cases fair bold white picked taken out at £11 per cwt.; 32 bales *Aden* siftings held for 25s.; pale grain for £6 17s. 6d., and small to bold pale picked for £14 10s.; yellowish grain for £6 15s. per cwt.

Gum Benjamin.—Fair *Palembang* bought in at 25s., low ditto fetching 17s. 6d. Fair *Sumatra* sold at £5 15s. to £6, seconds ditto selling cheaply at 90s., lower qualities at 55s. to 85s. 9 cases *Siam* without reserve sold at 45s. per cwt.

Gum Chicle.—10 bags fair pale held for 1s. 4d. per lb.

Gum Kino.—1 case red *African* bought in at 4s. per lb.

Gum Mastic.—3 cases fair pale held for 1s. 8d. per lb.

Gum Myrrh.—3 casks *Aden* picked taken out at 110s., 3 bales siftings at 50s. 7 cases fair sorts were held for 60s. 28 cases fair *Aden* picked and dark siftings for 30s., good *Aden* picked for 85s., pale siftings for 40s. to 60s. per cwt.

Gum Sandarac.—9 casks new crop bought in at 67s. per cwt.

Honey.—30 cases good *Italian* were taken out at 42s. per. cwt., less would, however, no doubt be accepted.

Ipecacuanha.—About 60 bales *Rio* were offered but only about one-fourth sold at unchanged rates—6s. to 6s. 3d. per lb.—according to quality. Of *Carthagena* 1 bale sold at 5s. per lb.

Jaborandi Leaves.—18 bags of low quality and stalky held for 1d. per lb.

Jalap.—39 bales fair small heavy, part mouldy, held for 6¾d. to 7d. per lb.

Jequirity Seeds—Sometimes called Jamaica wild liquorice, were taken out without mention of price.

Kola Nuts.—3 bags fair bold bright held for 6d.; 7 bags dull for 3d. per lb.

Lavender Flowers.—1 bag fair mixed were taken out without price being named.

Liquorice Root.—48 bales fair *Russian* new crop held for 35s. per cwt.

Menthol.—16 cases good dry white crystals were held ior 7s. 3d. per lb.

Musk.—A few tins only were offered, but nothing sold. Thin skin grey small to bold part damp Pile I. held for 65s. to 70s. per oz., Pile III. of same at 40s. per oz., Pile I. old-fashioned small to medium dry and rather stale looking held for 52s. 6d. per oz.

Oils Essential.—*Clove*: Has been advanced 1d. per lb. this week, making present price for the English 2s. 4d. per lb. *Bay*: 2 cases sold at 6s. 6d. to 6s. 9d. per lb. *Star aniseed*: Held for 8s. 6d. per lb. *Peppermint*: 8 cases dementholised held for 3s. 3d. per lb. For 2 drums *Citronelle*, guaranteed genuine, 1s. 2½d. per lb. was bid, but 1s. 3d. was stated to be the price. 3 cases *Lime* realised 3s. 7d. per lb.; *Wintergreen*, 1 case held for 5s. per lb.; *Eucalyptus*: Globulus oil is held for 1s. 9d. per lb., and ordinary commercial quality at 10d. to 1s. per lb.

Orange Peel.—14 packages dark, thin-cut, part fetched 7d. per lb., part having been sold previously; good bright ditto held for 9d., thick-cut for 5½d., and ringlets for 5½d. per lb.

Orris Root.—4 serons good *Mogador* sold subject to approval at 30s., 11 serons ditto being bought in at 40s. Fair quality new *Florentine*, part sold at 45s., balance bought in at 50s. per cwt.

Rhubarb.—Good bold round *Shensi* grey and pinky fracture held for 4s., good flat ditto for 3s. 9d., small ditto selling at 2s. 5d.; mixed dull-coated ditto held for 2s.; ditto good trimming root sold at 2s., and good *Shensi* pickings at 1s. 3d.; fair flat *Canton*, good colour, sold at 1s. 2d.; 2 cases ditto selling without reserve at 1s. 1d. to Is. 1½d.; bold round ditto, good pinky and grey fracture held for 1s. 6d.; ditto good small, part rough fine colour for 1s. 5d.; ditto bold flat, rather rough, good colour for 1s. 7d.; good medium to bold flat *high dried* fetched 11d., and very rough horny ditto with but very little colour, part selling without reserve at 7d.; ditto bold, fair colour held for 1s. 2d.; ditto second size part sold at 12½d.; balance held for 1s. 1d. per lb.

Sarsaparilla.—10 bales *Guayaquil* sold at 1s. 3d. to 1s. 4d., 8 bales *Lima* at 1s. 4d., 5 bales *Honduras* at 1s. 2d. per lb.

Scammony Root.—197 bags held for 35s. per cwt.

Senna.—About 750 bales *Tinnevilly* were offered, the whole selling with excited competition at very full prices and about ¼d. to ½d. per lb. dearer for the low grades, and ½d to 1d. dearer for the better grades, a few lots of the finest quality being up to 2d. per lb. dearer. The position of the article is very firm, and no doubt a large number of orders remain unexecuted. *Alexandrian* is in small demand, and but very few sales have been made.

Squills.—13 bags fair second quality were held for 2½d. to 3d. per lb.

Sulphate of Quinine.—5000 ozs. *Brunswick* sold readily at 1s. 2¾d., a lot of Taillandier's, which make is not in much favour here, fetching 1s. 1d. per oz.

Tamarinds.—Of 46 barrels *West Indian* only 5 barrels sold, at 7s. 3d., remainder being held for 8s. to 9s. 6d.

Vanilloes—Were in rather small supply. Holders were very firm, and but few sales were made at steady rates.

Wax.—Of 700 packets *Madagascar* only 5 packages sold at £5 10s., remainder being taken out at £5 15s. to £6 10s. 8 casks and 7 cases *Morocco* at 95s. per cwt. 93 bales fair *Zanzibar* sold readily at £5 15s. to £5 17s. 6d. 8 bags fair *Italian* bought in at £6 10s. per cwt. 18 cases *Calcutta* at £6, one case selling without reserve at 95s. per cwt. *Japan*: Held for 40s to 41s. for good quality, 6 cases inferior selling without reserve at 32s. per cwt.

Bank Rate, advance to-day to 3 per cent.

NEWCASTLE CHEMICAL REPORT.

October 13, 1897.

Business in this special line still continues very steady, and good business passing. Soda Crystals have been further advanced, 2s. 6d. per ton for exportation. Caustic Soda and Soda Ash in good request. Prices are:—Bleaching Powder, £6 10s. to £7 10s. Soda Crystals, 42s. 6d. to 60s., according to markets. Caustic Soda, 70 per cent., £7 10s. to £7 15s. Soda Ash, 52 per cent., £4. Alkali, 52 per cent., £5. Sulphur, £4 15s. to £5 per ton.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Wednesday, October 20.

Brighton Junior Association of Pharmacy, at 9 p.m.
Short papers by C. A. Blamey and A. S. Kent.

Midland Chemists' Assistants' Association, at 9.15 p.m.
"Microscopic Gems" (Illustrated), by F. H. Alcock.

Plymouth, Devonport, Stonehouse and District Chemists' Association, at 7 p.m.
Annual Dinner (Freemasons' Hall, Princess Street).

Western Chemists' Association, at 8.30 p.m.
Annual Meeting (Westbourne Restaurant, Paddington, W.).

Royal Microscopical Society, at 8 p.m.
"The Limits of Species in the Diatomaceæ," by Thos. Comber.

Thursday, October 21.

Chemists' Assistants' Association, at 9 p.m.
Demonstration of Practical Microscopy, by M. J. Cole.

Leicester Chemists' Social Union, at 8.15 p.m.
Limelight Lecture on "Australia," by A. Bray (Dover Street Schoolroom).

LATE ADVERTISEMENTS.

Business for Disposal.

RETIRING.—The Proprietor of the old established Businesses, 27, Gt. Tower St., City, and 65, Queen's Rd., Peckham, who is retiring, will sell by private treaty the above businesses as going concerns. 27, Gt. Tower St. is returning between £1000 and £1500, and 65, Queen's Rd., Peckham, between £400 and £500. First come, first served. Good leases. No agents. Apply H. C. Lambert, Esq., Solicitor, 35, Queen Victoria St., E.C. Bona fide.

Assistant Wanted.

LONDON, N.—Wanted immediately a smart qualified Assistant. Age about 26. Also a Junior, about 21. Easy hours, every home comfort, half day weekly. Apply personally, if possible, or if by letter, with full particulars and photo, to Mitchell Parker, Crouch End, N.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Gas-engine, for generating steam and small power, with three steam-jacketed pans, £15.—Butcher, Chemist, Blackheath, S.E.

Grand old Tyrolese violin, in one home sixty years; full, sweet tone; good condition; worth £10, price £5; approval.—100, Ainslie Street, Grimsby.

Water-Bed, Maw's make, 4 feet by 3, good as new, used three times only; cost 4 guineas, sell for 2 guineas; also Air-Pillow, 18 inches by 24, price 5s., cash.—E. F. Young, Pharmacist, Bristol.

Southall's D collection of about 230 materia medica specimens, each in cardboard box; condition excellent. Cost 55s.; offers wanted.—Dewhirst, 125 Mount View Road, Stroud Green, London, N.

EXCHANGE—*(continued)*.

Camwal Share for sale. What offers?—Arthurs, c/o Cliftonville Post Office, Belfast.

For disposal, stock of Laurance's spectacles, 1s. to 10s. 6d., with show case, cost £9 twenty months ago; any reasonable offer accepted.—Lee, Chemist, Guiseley.

Shop Fittings.

Three Show Jars, as Maw's Fig. 2, page 273, 24 inches S.C., with stand, 26s. 6d. each; what offers.—Brearley, Chemist, East Greenwich.

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d.—Tully, Chemist, Hastings.

EXCHANGE—*(continued)*.

Books.

Pharmaceutical 'Magazine,' 'Times,' and 'Journal,' from 1841 to 1886.—M. Hamilton, Bron Wylfa, Mold.

Chemists' and Druggists' Diaries, 1890-97 inclusive; also 160 numbers same, with some Journals, 15s. lot; 10 lbs. superfine Oil Lemon, 2s. 6d. per lb., sample lb. 3s., free on rail.—Chemist, One Ash, Little Lever, Bolton.

WANTED.

Wanted.—Lupton's 'Chemical Arithmetic,' Pendlebury's 'Arithmetic,' Arnold's 'Latin Grammar,' Maisch's 'Materia Medica,' latest editions. What offers for Thorpe's 'Non-Metals' nearly new.—53, London Road, Reigate.

BRITISH PHARMACEUTICAL CONFERENCE.

A meeting of the Ulster General Reception Committee was held on Saturday, October 9, at 11.30 a.m., in 12, Garfield Chambers, Royal Avenue, Belfast, Mr. J. C. Payne, J.P., presiding. There was a good attendance of members. Mr. M. Whitla, of Monaghan, and others sent letters of apology. A letter was read from the Hon. Secretaries of the Conference, asking the Committee to submit a date that would suit them for holding the Conference in Belfast next year. An early date in August, 1898, was settled on, and the local Hon. Sec. was directed to submit it to the Conference Council. An Executive Committee was appointed, consisting of the following ten pharmacists and ten chemists and druggists:—Mr. Thos. Green (Messrs. Grattan and Co.), Mr. J. Montgomery, Mr. J. Tate, Dr. Tweedie, Dr. Fieldin, Mr. D. W. Elliott, Mr. James Guiler, Mr. T. N. Moffatt, Mr. P. J. Lyons, Mr. G. Waugh, Sir J. Haslett, M.P., Mr. T. McMullan, Junr., Mr. J. Watson, Mr. S. Clothworthy, Mr. R. Campbell, Mr. S. Acheson, Mr. W. J. Gibson, Mr. J. Richardson, Mr. W. Jameson, Mr. J. H. Shaw, the Hon. Secretaries and Hon. Treasurer. Mr. J. C. Payne, J.P., was unanimously elected Chairman. The Hon. Secretaries announced that the Guarantee Fund was close on the amount required.

OXFORD AND DISTRICT CHEMISTS' ASSOCIATION.

The first meeting of the second session of this Association was held at the Clarendon Hotel, Oxford, on October 12, the President, Mr. G. Claridge Druce, Sheriff of Oxford, in the chair. The proceedings were of a purely business character, five candidates being nominated for election as members.—Mr. G. T. Prior, for many years local secretary of the Pharmaceutical Society, was unanimously re-elected to that office by members and associates of the Society present.—It was decided that the Association should hold its meetings on the second Tuesday in each month, with the exception of the vacation months—June, July, August, and September.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

On Wednesday, October 13, the above Association held the first of its annual series of fortnightly "social and musical evenings," which took place at the rooms of the Association, Newburgh Hall, Cannon Place, Brighton. An excellent programme, for which Messrs. C. G. Yates and A. S. Kent were responsible, was admirably rendered, and under the genial chairmanship of the President, Mr. C. A. Blamey, a very enjoyable time was spent by the company present, which was, as usual, a very large one.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on Friday evening, the 15th inst., the second annual meeting of this Association was held at the Pharmaceutical Society's House, 67, Lower Mount Street, Mr. G. G. Fetherston, Honorary Vice-President, in the chair.—Mr. J. Tyrie Turner, Honorary Treasurer, read the annual statement of accounts, which showed the Association to be in a thoroughly satisfactory condition. Notwithstanding the heavy expenses of the past year there was in hand, after paying all debts, a balance of over £11, exclusive of the renewal subscriptions which were now due.—Mr. O'Sullivan then read the Annual Report, which gave a summary of the work done during the session, and was unanimously adopted.—Mr. W. J. Hardy, the outgoing Vice-President, was unanimously elected to succeed to the Presidency of the Association, Mr. Henry Hunt was elected Vice-President, Mr. J. Tyrie Turner Honorary Treasurer, Mr. W. Vincent Johnston and Mr. W. J. Dunwoody Hon. Secretary and Assistant Hon. Secretary respectively. The following were elected on the General Committee:—Messrs. McCarthy, O'Sullivan, Parker, Cowie, Taylor, Yoxall, Ashe, Cahill, Hogan, Meyrick, W. U. Smith, Savage, Watson, Nagle, Ardill, Glover, and Carroll.—On the motion of Mr. Dunwoody, it was decided to re-name the Association the "Irish Pharmacists' Assistants' Association."—Mr. O'Sullivan then said the question of adding an employment agency to the Association had been spoken of for a long time. Of late it was pressed more vigorously than ever, with the result that he brought the matter before the Committee, which considered it a most judicious step to take. The first thing to do was to see the employers and ascertain what they thought of the project. If the agency were formed each member of the Association should do his best to help on the ageney. The matter was of special moment to employers and *employés* alike.—Mr. Conyngham agreed with the last speaker. At present there was no place in Dublin outside the wholesale houses where a record of assistants was kept, and no more popular line could have been mapped out by the Association. Ultimately the matter was left in the hands of the Committee to carry out as recommended.—On the motion of Mr. McCarthy, the subscription of country members was reduced from 10*s.* to 7*s.* 6*d.* per annum in future.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS.

A meeting of this Society was held in the rooms, 21, Bridge Street, on Wednesday, the 13th inst., at 9.15 p.m., Mr. John Johnston, President, in the chair. The principal business on the card was the report of the Education Committee, recommending Mr. Marshal Watt Teacher of the Society's School of Pharmacy. The Committee's recommendation was unanimously adopted.

EXTRACTS FROM CONSULAR REPORTS.

The Net Import of Medicines into China from foreign countries during 1896 were valued at 670,988 h. taels, being a decrease of 40,436 h. taels on the previous year. The import of morphine was 77,289 ounces, value 106,451 h. taels, as against 70,339 ounces, or 87,022 h. taels in 1895. Perfumery totalled up to 70,856 h. taels, an increase of 12,853 h. taels on the 1895 import. Opium showed a decrease, being 51,525 piculs or 29,164,800 h. taels in 1895, and last year 48,930 piculs, value 28,651,592 h. taels.

The Camphor Export from China fell from 17,513 piculs, 472,201 h. taels, in 1895, to 2173 piculs, or 67,738 h. taels in 1896. Medicines increased slightly in value, being worth 1,161,404 h. taels in the former and 1,163,574 h. taels in the latter year. The export of star aniseed was more than doubled in 1896, also beating the highest record of any previous year, 6710 piculs having been shipped, as against 3268 in 1895. Essential oils (aniseed, cassia leaf, etc.), also more than doubled, the export value realising 201,953 h. taels in 1895 and 581,121 h. taels last year.

The Straits Settlements imported nearly 1100 chests of opium more in 1896 than the total import of 12,455 chests in 1895. This increase, however, has not brought up the total to the importation of 1894 15,054) by some 1499 chests.

The Export of Chemical and Medicinal Preparations and chemicals from Great Britain during the month of August increased by £41,668 over that of the same period last year, while the expor for the eight months, ending August 31, increased by £229,636 over that of the corresponding months of 1896. The import of chemicals, etc., on the other hand, decreased £51,195 and £579,260 respectively.

An Albumin Factory, started by an enterprising Frenchman, in Pakhoi, China, during the early summer of 1896, has proved a failure, for in January of the present year the enterprise was given up, and the agency established for the purpose of buying eggs in sufficient quantities for the factory has been withdrawn.

An Experiment to Convert Native Opium into a quality approaching that of the foreign drug is being carried on at Swatow (China). Though the promoters claim success they have not, as yet, put any of their refined drug upon the market. The price is expected to be about 1 dollar for 4 Chinese ounces retail, or about 400 dollars a picul, in comparison with 1 dollar for 1⅓ Chinese ounces of the foreign drug, or about 900 dollars a picul.

NEW IDEAS AND TRADE NOTES.

A NOVELTY IN TOILET PAPER.

Messrs. James Townsend & Son, Little Queen Street, Exeter, send samples of their patent Pine Tree Toilet Paper, in penny packets. They are made up in a very novel style, just suitable for the pocket, and supplied at a very cheap rate. The paper is soft, tough, and is stated to be pure and free from injurious chemicals, while especially valuable to persons who suffer from hæmorrhoids. A complete sample is sent to any chemist or wholesale dealer for 1½*d.* in stamps.

NEW VINOLIA PRODUCTS.

Messrs. Blondeau et Cie. send samples of some new Vinolia products, including Vinolia Tooth Paste, Hair Wash, Shaving Cream (for use without water), Vinolia Violet Powder (a smaller package at 3*d.* for those who do not wish the full-size tins), Blondeau Perfume (in new style cannon-shape bottle to retail at 1*s.*), and a box of their new Blondeau Choice Toilet

Soaps (assorted), including buttermilk, lilac, and heliotrope. These soaps are guaranteed as to quality, and are sold to the public at 3*d.* per tablet. It is impossible to do other than highly praise all these goods, which are got up in most elegant style, and are in every way as good as they are claimed to be.

MICROSCOPE AND LANTERN SLIDES.

Mr. Abraham Flatters, 16, Church Road, Longsight, Manchester, sends a catalogue of his microscopical and lantern preparations in every branch of Natural History, which are sent out at the marvellously cheap rate of six shillings per dozen. We have on a previous occasion called attention to the Pharmaceutical Series of microscopical studies in elementary and advanced botany, comprising forty-eight preparations. The whole series, packed in rack box, may be had for the very low price of £1 1*s.* post free, or selections can be made of sets of twelve slides at six shillings per set.

S. HARVEY & CO., LIMITED.

We are informed that there are a few shares still unallotted in Dr. Mackenzie's Toilet Soap Co. No public issue has been made, and the shares are offered to the trade.

THE SANITAS CO. LTD., AND THE P.A.T.A.

As will be seen from a notice which appears in our advertisement columns this week, the Sanitas Co. is in doubt as to the wisdom of placing "Sanitas" Disinfecting Fluids, Oil, Powder, etc., on the P.A.T.A. list. The management is desirous of learning the opinions of chemists generally on this question, and will be glad if all who are interested in the sale of "Sanitas" preparations will read the special notice and communicate their views to the firm.

"SANITAS EMBROCATION."

We understand that this Company is about to place on the market a new preparation under the name of "Sanitas Embrocation," and will be in a position to book orders from November 1. It may interest our readers to know that, acquiescing in an application from the Relief Committee at Maidstone, the Company has given 200 bottles of "Sanitas" Disinfecting Fluid and 200 bottles of "Sanitas" Crude Disinfecting Fluid, each accompanied by one of its copyright books, 'How to Disinfect.'

A LANTERNIST'S POCKET BOOK.

Messrs. W. Butcher & Son, Blackheath, S.E., dealers in photographic and lantern apparatus, have published a third edition of the '"Primus" Lanternist's Pocket Book.' It is a very compact and extremely useful book for lanternists or anyone interested, containing as it does reference tables, memorandum pages, and lists of lantern and lantern slide requisites. It may be obtained free of charge from most photographic dealers, or direct from the firm.

LOZENGES FOR WINTER USE.

Messrs. Robert Gibson & Sons, Manchester, and 1, Glasshouse Yard, London, E.C., send us samples of their vocal lozenges, and the linseed, liquorice and chlorodyne lozenges. Both are very palatable, and it is claimed for the first-named that they are an effectual remedy for all chest affections, sore throats, and hoarseness. Debility and weakness of the vocal organs is said to be unknown to those who regularly use these lozenges. A sample box is sent to any part of the kingdom upon receipt of 1*s.* 2*d.* in stamps. Especial attention is called to their new enamelled and beautifully decorated tins for the linseed, liquorice, and chlorodyne lozenges. Each tin holds 7 lbs., and is given with the lozenges, thus affording security for them keeping in any climate. Price list on application.

A NEW PRICE LIST.

Messrs. Baumann Bros. have just issued a special price list of their celebrated "Lion and Mug" brand enamelled ware for hospital and surgical purposes. It is claimed that the goods are quite free from any poisonous substances whatever, and can therefore safely be used for any surgical purposes. A copy of this catalogue will be sent to any dealer in surgical instruments on application to Messrs. Oscar Moenich & Co., Billiter House, Billiter Street, London, E.C.

NEWS IN BRIEF.

Notice to Correspondents. — Several letters were received too late for publication in this issue.

The Manchester District "Diamond Jubilee" Contribution to the Benevolent Fund.—The report and balance-sheet of the above Committee, which were presented to the outgoing Council of the Manchester Pharmaceutical Association last week, stated that the sum of £117 13*s.* 5*d.* had been raised in donations to this charity, and that whilst by no means so large a sum as it might have been, yet it stood out singularly well when viewed in comparison with the total amount of donations received from the whole of Great Britain. In this connection it was to be borne in mind that the amount actually sent through this Committee did not represent the total outcome of its efforts, for the assistants (to whom much credit is due) took up the cue and raised a separate contribution. And although this included some sums which would have otherwise come into the larger list, the Committee had reason to be pleased with their co-operation in such a charitable work. Again, there were a few who remitted direct to London, thinking their donations would be credited to the local list, and yet others who preferred (for reasons into which it was not right to inquire) to send their cheques direct. When, therefore, it was considered that over one-twentieth part of the whole of the country's donations went from this district, there was no reason to feel ashamed. The Committee thought it due to the friends at Eccles and at Wigan to acknowledge the help given through Messrs. Howie and Phillips respectively. The best feature of the whole affair was that the appeal made to the trade had been the means of awakening greater interest in the Benevolent Fund, and of adding several new names to the list of annual subscribers, besides promises of increased annual subscriptions from some old contributors. It was to be regretted that the balance resulting from the concert given in May was so small (£2 4*s.* 5*d.*), and in no way commensurate with the unstinted labours of the Sub-committee, who had hoped by this means to add something substantial to the Fund.

Messrs. Reynolds & Branson, of Leeds, have been awarded a bronze medal for their "Bandage Shoot," at the Earl's Court Exhibition, now being held in London.

Mr. A. H. Allen, Public Analyst for the City of Sheffield, in his quarterly report to the City Council for the three months ending September 29, says he examined six samples of glycerin, which proved to be of full strength and free from arsenic and other objectionable impurities. Of six samples of liniment of camphor, four proved to be of good quality. One sample was of suspicious character, but no adulteration could be definitely detected. It contained, however, the correct proportion of camphor. The remaining sample contained 68 per cent. of mineral oil. Sixty-four samples were examined during the quarter. Mr. Allen,

in his report to the West Riding County Council, says the samples submitted to him have been of a varied character, and in not a few cases it was impossible to satisfactorily analyse the articles, or having analysed them to certify in such terms as the Act required. Thus Vi-cocoa is a preparation of a secret character, hence it is not within his power to state whether the sample he received really consisted of the preparation it was described to be. A sample described as aromatic iron and quinine wine contained both iron and quinine, and hence appeared to be of the proper quality and substance, the preparation being an unofficial one. Similarly, a sample of glycerin and lime cream was found to contain glycerin and cream of lime; and a sulphur hair restorer contained sulphur and other ingredients usual in the so-called hair restorers. Such preparations commonly owed their efficacy to the fact that they contained notable quantities of lead, which, in conjunction with the sulphur, ultimately formed black sulphide of lead, with consequent darkening of the hair. They were essentially dyes, and incapable of restoring auburn or other light hair to its original colour. There was, however, no penalty for making false statements on labels. A specimen of sulphur lozenges was found to contain sulphur, and "camphorated oil" contained camphor and oil. A sample purchased as "chewing gum" was found to consist of an insoluble gum and refined sugar. As the label described it as "for chewing only," he did not see that it could be regarded as an article of food, and hence it did not properly come within the scope of the Sale of Food and Drugs Act. The difficulties described were, he thought, the outcome of the unsatisfactory condition of the law, which, unfortunately, Parliament seemed in no hurry to amend.

Messrs. Wilkinson & Simpson, 24 to 32, Newgate Street, Newcastle-on-Tyne, have decided to carry on their business in future as a limited company, under the title of Wilkinson and Simpson, Limited, the change being effected for the adjustment of capital and admission into partnership of several *employés* who have had active management in their firm for about twenty years. The Company has been registered with a capital of £55,000 in £10 shares (of which 2500 are 6 per cent. cumulative preference). The number of directors is not to be less than three nor more than seven. We understand that Mr. Geo. F. Merson, F.C.S., pharmaceutical chemist, will join the firm early in the new year, and will take over the management of the laboratory and manufacturing departments.

The Chemists' Assistants' Association has arranged to hold a Third Series of Cinderella Dances, at the Dorset Hall of the Portman Rooms, Baker Street, W., on the following dates:—Thursday, November 18, 1897; Thursday, February 3, 1898, and Thursday, March 24, 1898. The prices of tickets this season include the supply of refreshments at all times during the evenings. The tickets will be issued as follows:—Double, admitting lady and gentleman to the series of three dances, patrons and members, 25s., non-members, 27s. 6d.; single, admitting gentleman to the series of three dances, patrons and members, 14s., non-members, 15s. 6d.; double, admitting lady and gentleman to one dance, patrons and members, 9s., non-members, 10s.; single, admitting gentleman to one dance, patrons and members, 5s., non-members, 5s. 6d.; single, admitting lady to one dance, 4s. 6d. Dancing to commence at 7.30 p.m.

At the Working Men's College, 46, Great Ormond Street, W.C., a course of about thirty lectures on "Biology" will be given by Mr. W. Langdon Brown, M.A., M.B., on Wednesday evenings, at 8 o'clock, beginning Wednesday, October 6, 1897. The lectures will be illustrated by the microscope, diagrams, and dissections, and opportunities will be given for practical work. The fee is only 2*s.* 6*d.* per term (two terms to the course), covering the right to use the library, common room, etc., for the term. For particulars as to other classes, apply to the Secretary at the College.

The Author of 'Kalistratus' (Longmans), H. H. Gilkes, M.A., Master of Dulwich College, is a son of the late Wm. Gilkes, of Leominster, a Founder of the Society, and for many years a member.

Camphorated Oil or Liniment of Camphor.—At the Sheffield City Police Court, on October 12, Walter Alcock, chemist, of 318, Shalesmoor, Sheffield, was summoned for selling as liniment of camphor a preparation consisting of 20 parts of camphor, 12 parts of olive oil, and 68 parts of mineral oil. A fine of £1, including costs, was imposed.

Pharmaceutical Society of Ireland.—Registered Druggist Examinations. The following have passed:— J. Craig, D. C. Loughlin, J. J. McClean, J. McKnight, W. R. P. McNeight, W. R. H. Orr, R. Ramsay. Four candidates were rejected. Pharmaceutical Licence Examination. The following have passed:—J. S. Ashe, J. C. P. O'Farrell, Ada S. Wyatt, W. Gray, P. J. Duane, W. J. Thompson. Nine candidates have been rejected.

Football.—The following teams met at football at Wormholt Farm, Shepherd's Bush, on Saturday last:—Metropolitan College of Pharmacy F.C. *v.* "Pharmaceuticals." The game throughout the first half was fairly even, but during the second half the Metropolitans had the decided advantage, the game resulting finally in a win for the Metropolitans by two goals to nil.

The International Jury on Pharmacy and Medicine at the Brussels International Exhibition has awarded Messrs. Burroughs, Wellcome & Co. the Grand Prix and two gold medals for the high standard and scientific excellence of their fine chemical and pharmaceutical products.

Mr. Fredk. R. Cooper, of the firm of Messrs. Standing, Son, & Co., Chemists, 124, Market Street, Manchester, is the Conservative candidate for St. Clement's Ward at the ensuing municipal election.

Nottingham and Notts. Chemists' Association.—The inaugural meeting of the winter session will be held at the Albert Hotel, Derby Road, on Wednesday, October 27, at 9 p.m., when an address will be delivered by Mr. G. T. W. Newsholme, Vice-President of the Pharmaceutical Society.

Edinburgh Chemists', Assistants', and Apprentices' Association.—The opening meeting of the twentieth session will be held at 36, York Place, on Friday evening, October 29, at 9.15, when the inaugural address will be delivered by Mr. George Sinclair, President. The presentation of the botanical prize will also be made by Mr. John Bowman, President of the Edinburgh and District Chemists' Trade Association. Those who have not hitherto attended the meetings are cordially invited to be present.

Presentation at Glasgow.—On Wednesday evening, October 13, in Anceit's Restaurant, Glassford Street, George T. Campbell was made the recipient of a handsome dressing bag and gold pendant from the retail department of the Glasgow Apothecaries' Company, on the occasion of his leaving to start business on his own account as a mineral water manufacturer. —Mr. Arnott (the head of the department), in making the presentation, referred to Mr. Campbell's long connection with the firm, and wished him every success in his new venture. — Thereafter a most enjoyable social evening was spent.

Mr. W. Beaverly Cowie, pharmaceutical chemist, Edinburgh, has withdrawn from the firm of J. A. Sheriffs & Co.

Dr. James Walker, D.Sc., Ph.D., Professor of Chemistry in University College, Dundee, has agreed to give the Inaugural Sessional Address of the Evening Scientific Meetings of the Pharmaceutical Society in Edinburgh, on Friday, November 26, at 8.30.

Excise Prosecution.—J. Iley, chemist, Market Place, Wolsingham, was charged at Wolsingham Petty Sessions, on Tuesday, October 5, with selling bottles of Iley's bowel complaint mixture and not having a Government stamp on the bottles as required by the Act. The bottles bore a stamp very similar to the Government stamp. An Excise man called at defendant's shop on August 20 and purchased a bottle for 1*s.* Defendant said he did not charge for the stamp, but the prosecution stated the price on the handbills given with the bottle was 1*s.* 1½*d.* Defendant said the stamps he used were not made to defraud the Government. He promised in future to properly stamp all the remainder he sold with Government stamps. The bench, in inflicting a fine and mulcting defendant in costs, said it was his business to make himself acquainted with the Act.

Owens College, Manchester.—The following awards to scholarships, etc., have been made by the Council:—Dalton Chemical Scholarship, £50 per annum, tenable for two years, R. H. Jones, B.Sc.; Pharmaceutical Entrance Exhibition, W. B. Walmsley.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the article quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

October 21, 1897.

Business has been far from active during past week, and in some quarters considerable disappointment has in consequence been expressed. The chief event of the week has been the advance in price of Bromides. Quinine is the turn weaker, but price is nevertheless expected to be maintained, in fact a further advance is still confidently looked for in some quarters. Glycerin a shade stronger. Ergot of Rye firm. Cod-liver Oil firmer. Iodine and Iodines, and Quicksilver, and Mercurials unchanged. Acid Citric and Cream of Tartar weak. Acid Tartaric quiet but steady. Belladonna Root still very scarce. Cocaine quiet. Phenacetin and Acetanilid steady. Sulphonal very unsettled. Shellac quiet. Sugar of Milk dearer, and likely to further advance. The following are the prices actually ruling for articles of chief interest :—

Acetanilid.—Steady at 1s. 4d. to 1s. 6d. per lb.

Acid Boracic.—Unchanged at 24s. per cwt. for *crystals* and 26s. per cwt. for *powder*.

Acid Carbolic—Quiet at 6½d. to 6¾d. per lb., according to make, for 35 to 36° *ice crystal* in quantity and bulk ; other qualities and packing in proportion. *Crude* : 60°, 2s. 1d. ; 75°, 2s. 6d. per gallon. *Liquid* : 95 per cent., of pale straw colour, 1s. 3d. per gallon.

Acid Citric—Is very dull, and the quotation of 1s. 1½d. per lb. is quite nominal.

Acid Oxalic—Quiet at 3¾d. per lb. for *Crystals*, and ½d. per lb. more for the *Powder*.

Acid Tartaric.—Quiet at 1s. 1¾d. per lb. for *English* and 12¾d. per lb. for *foreign*.

Ammonia Compounds.—*Bromide* dearer at 2s. 2d. per lb. for quantities less than 1 cwt. *Sulphate* dearer. Grey prompt 24 per cent., London, £8 2s. 6d. to £8 5s. per ton, Hull prompt £8 2s. 6d., Leith same price.

Atropine—In good demand at 12s. 6d. per oz. for the *Sulphate* in quantity, and 2s. 6d. per oz. more for the *pure*. It would not appear probable, in view of the scarcity and dearness of good raw material, that this article will be cheaper, at least not in the near future.

Belladonna Root.—Really good root remains very scarce, and 45s. per cwt. would have to be paid for same. On the spot the article is scarcely procurable, and certainly not in really first class quality.

Bleaching Powder.—Steady at £7 15s. to £8 per ton.

Bismuth.—So far no change has taken place in price either of the metal or of the salts, the *subnitrate* being quoted 4s. 10d. per lb. in 5-cwt. lots.

Borax—Continues slow of sale at 14s. 6d. per cwt. for *crystals* and 15s. per cwt. for *powder*.

Bromides.—At end of last week makers announced an advance in prices all round to the following figures :—

	s.	d.	
Potass. Bromid.	1	10	per lb.
For 1 cwt.	1	9½	,,
For 10 cwt.	1	9	,,
Sodii Bromid.	2	2	,,
For 1 cwt.	2	1½	,,
For 10 cwt.	2	1	,,
Ammon. Bromid.	2	2	,,
For 1 cwt.	2	1½	,,
For 10 cwt.	2	1	,,

The only reason which can be given for the advance appears to be that at previous figures manufacturers' profits were very meagre. It is further reported that a close combination of the makers of *Bromides* has been formed, similar to that which already existed as regards *Iodides*.

Cloves.—At auction 200 bales *Zanzibar* sold at 2 15/16d. to 2⅞d. *Amboyna* bought in at 4½d. Of *Penang* 5 cases dull sold, without reserve, at 6⅝d., and 2 cases fine bright bold picked at 1s. to 1s. 0½d. Privately *Zanzibar* quiet and easier ; January-March delivery 3 1/32d. to 3 1/16d.

Coal Tar Distillation Products.—*Toluol* : 2s. 3d. *Benzole* : 50 per cent., 2s. 2d. ; 90 per cent., 2s. 1d. *Crude Naphtha* : 1s. *Solvent Naphtha* : 95 per cent. at 160° C., 1s 11d. per gallon.

Cocaine—Is quiet at unaltered prices. Makers of the brands chiefly in demand can hardly be said to be free sellers at 8s. 6d. per oz. for 100-oz. lots, other makes which are less in favour being obtainable somewhat below this figure.

Cod-Liver Oil—Is tending dearer, quotations being very firm at 72s. 6d. to 77s. 6d. per barrel for the best brands of new non-freezing *Norwegian*. There is very little doing in *Newfoundland*, and quotations are quite nominal.

Codeia—Firm and in good demand at 11s. 6d. per oz.

Cream of Tartar—Is an exceedingly dull market with lower quotations, which, however, do not lead to business. First white *crystals*, on the spot, 76s. ; *powder*, 78s. to 79s. per cwt.

Ergot—Continues very firm, *Russian* being quoted 10d. per lb. for sound, whilst good *Spanish* is difficult to find, the bulk of that offered being more or less weevily. For really good sound *Spanish* ergot a long price would have to be paid.

Galls.—*China* are firm at 62s. 6d. per cwt. on the spot, with but little business doing. *Persian* selling steadily at dearer rates ; blues, 52s. 6d. to 56s. 6d. ; greens, 45s. to 50s. ; whites, 41s. to 43s. per cwt. ; sorts, 48s. to 52s. 6d. per cwt.

Gentian Root—Is steady at 26s. per cwt. on spot, and 23s. 6d. *f.o.b.* to arrive.

Ginger.—*Cochin* : dull at about late rates ; only 120 bags rough sold, small and ends, 21s. ; good washed, 28s. ; the bulk being bought in at 26s. to 27s. Of native limed, 47 cases small, part cut, sold at 31s. to 32s. 6d. ; 60 bags limed *Japan* sold at 13s. 6d. Of *Jamaica*, 50 barrels bought in at 71s. to 80s., also 17 half-barrels good at 110s.

Glycerin—Is rather firmer, in sympathy with higher prices for the *Crude*. Quotations vary from 55s. to 60s. per cwt. for best white double-distilled, chemically pure 1260 quality in tins and cases.

Insect Flowers.—Closed new are quoted 140s. per cwt. *Powder* : Genuine quoted 105s. per cwt. from open flowers, 120s. from half closed, and 135s. from closed flowers ; other qualities 6d. to 9d. per lb.

Iodides—Remain steady at unchanged prices, value of iodine being 7½d. per oz. and the salts in proportion.

Japan Wax—Continues rather slow of sale on the spot at 40s. per cwt. for good. For arrival quotation remains unchanged at 38s. per cwt., *c.i.f.* terms.

Lithia—In fair demand at 9s. 8d. down to 9s. 2d. per lb., this latter price being for large quantity.

Menthol.—Market is firm at 7s. 3d. to 7s. 6d. per lb. for good white dry crystals in quantity, and in bulk, and price seems more than likely to still further advance.

Mercurials—Remain unchanged at 2s. 2d. for *Corrosive sublimate*, and 2s. 6d. for *Calomel* for 10-cwt. lots. An agent of foreign manufacturers is, however, endeavouring to press sales of the latter preparation by quoting a lower figure. We think, however, that buyers will be well advised in sticking to the article of home manufacture.

Morphia—Dull and weak at 4s. 6d. per oz. for the *Hydrochlorate salt* in *powder*.

Nitrate of Soda—Quiet at £7 10s. to £7 15s. per ton according to quality and quantity.

Nux Vomica.—The crop is reported to be short and prices are rather firmer consequently. For arrival 9s. 6d. per cwt. *c.i.f.* terms is asked for fine Cochin. Ordinary dull on the spot, 5s. 6d. to 7s. 6d. per cwt.

Oils Essential.—*Star aniseed* : Is rather weaker on the spot at 8s 3d. per lb. *Cassia* : Also easier at 6s. per lb. for 70-75 per cent., and 6s. 6d. per lb. for 80-85 per cent. *Peppermint* : H.G.H. is weaker at 6s. per lb. on the spot. *Wayne County* : 3s. 9d. per lb. *Japan* : Is firm at 5s. per lb. for 40 per cent., and 3s. 3d. per lb. for dementholised. *Citronelle* : Is firm at 1s. 3d. per lb. on the spot. *Lemongrass* : Dearer at 3¼d. per oz.

Oils (Fixed) and Spirits.—*Linseed* : Is quiet and easier at £14 10s. for pipes on the spot, and £15 for barrels. *Rape* : Ordinary brown is the shade easier at £26 5s., whilst refined is steady at £27 15s. *Cotton* : Dull and lower at £14 15s. to £15 15s. for refined on the spot according to make. *Olive* : Dearer, Spanish being quoted £32 and Levant £31 10s. to £33. *Cocoanut* : Unchanged, Ceylon on the spot £22. Cochin, spot nominal, October to November, £27 5s. *Turpentine* : This market is dull and easier ; American on the spot, 24s. per cwt., with higher prices for later delivery. *Petroleum oil* : Dull at last week's prices ; American on the spot, 4½d., and Russian at 4¾d. per gallon. *Petroleum*

spirit: American, 6d.; deodorised, 6¼d. per gallon.

Opium—Remains quiet and practically unchanged in value at, say, 8s. 6d. to 12s. 6d. for ordinary to fine, with *Persian* at 9s. 6d. to 11s. 3d. per lb.

Phenacetin.—Demand is somewhat quiet at 4s. to 4s. 3d. per lb. according to quantity.

Potash Compounds.—*Chlorate* is weak at 3⅞d. to 4d. per lb. on the spot. *Cyanide*: Firm at 11d. per lb. for the 98-100 per cent. *Prussiate*: Yellow is quiet at 5¾d. to 6d. per lb.; red unchanged at 1s. 1d. to 1s. 2d. per lb. *Bromide*: Dearer at 1s. 10d. per lb. for less than 1-cwt. lots. *Iodide*: In fair inquiry at unchanged rates, 9s. 9d. to 10s. 3d. per lb. *Bicarbonate*: Firm at 30s. per cwt. for powder. *Permanganate*: Dull of sale, nominal quotations 70s. per cwt. for small and 75s. per cwt. for large crystals. *Oxalate*: Steady at 4¾d. to 5d. per lb. *Hypophosphite*: Steady at 3s. 6d. per lb.

Quicksilver: Unchanged at £6 15s. per bottle from importers, and £6 14s. to £6 14s 6d. from second-hands.

Quinine.—The market is, if anything, just the turn weaker. Some of the makers of brands less in favour are willing to sell quite moderate quantities at 1s. 3¼d. per oz., but manufacturers of the first brands such as *B. & S.*, not only decline to sell but will not even name a price. From second hands a few thousand ounces could still be picked up at 1s. 3d. per oz.

Saffron.—Firm at 37s. 6d. to 43s. 6d. for good to fine *Valentia*.

Senega Root—Continues firm, and higher prices are anticipated. On the spot 1s. 4d. per lb. is the nearest quotation, whilst 1s. 2½d. per lb. is asked for arrival *c.i.f.* terms.

Senna.—*Tinnevelly* continues to come forward slowly. The "Oriental" ss., due here 23rd inst., brings only 200 bales. In next week's sales about 400 bales will be catalogued.

Shellac.—The market is quiet, with sales on a retail scale only. The small supplies at auction on Tuesday met a firmer market, and the larger proportion of *Second Orange*, offered without reserve, all more or less blocky, found buyers at about last auction rates, free descriptions showing an advance of 1s., the value of standard *TN* now being 62s. to 63s. *AC Garnet* firmly held; blocky *Button* quiet. A total of 586 cases offered, and 328 cases sold. *Second Orange*: Of 454 cases 328 sold, chiefly without reserve, more or less blocky at 56s. to 59s., good bright curly little matted at 60s. to 62s., fair bright free at 62s. to 63s., and good pale flat *SM* in circle at 78s. *Garnet*: 78 cases offered and bought in. *AC* free curly at 74s., blocky at 73s., also common weak blocky at 57s. *Button*: 54 cases offered and chiefly bought in. The speculative market is fairly steady, with sellers of November to December delivery at 65s., after some transactions thereat.

Soda Compounds.—*Crystals*: Steady at 52s. 6d. per ton ex-ship terms. *Bicarbonate*: Somewhat firmer at £7 10s. to £7 15s. per ton for the 99 per cent. article, whilst the free from monocarbonate is firm at 18s. per cwt. *Hyopsulphite*: Quiet at the late reduction, 5s. 9d. to 6s. 3d. per cwt. *Bromide*: Dearer at 2s. 2d. per lb. for quantities less than 1 cwt. *Iodide*: Unchanged at 11s. 7d. per lb.

Spices (Various).—*Black Pepper*: 21 bags Penang sold at 3⅛d.; Singapore bought in at 3¾d.; 559 bags Tellicherry sold at 3¾d. *White Pepper*: Only 89 bags Singapore sold at 6¾d., the bulk being bought in; Penang, 5⅞d.; Siam, 6½d. to 6¾d.; Singapore, 7¼d. to 7½d. *Chillies* all bought in. *Capsicums*: 20 bales brownish East India bought in at 25s. *Cassia Lignea*: 241 boxes old bought in at 47s. 6d. 130 bales broken sold at 26s. *Cinnamon chips*: 20 bags common coarse Ceylon sold at 2⅞d. *Mace*: 14 cases Penang sold at 1s. 8d., 7 packages West India sold at 1s. 5d. to 1s. 7d. *Nutmegs*: 7 cases Penang sold, 79's at 1s. 10½d., 110's at 1s. 3½d. 2 cases Bombay sold, 82's at 1s. 9d., 101's at 1s. 4d. *Pimento*: 472 bags sold, largely without reserve, at 3½d. to 3¾d., being easier.

Sugar of Milk—Has advanced, the finest American in *powder* being quoted 65s. to 70s. per cwt., and Italian at 55s. to 62s. 6d., according to quality and quantity; *crystals*: 2s. 6d. to 7s. 6d. per cwt. more.

Sulphate of Copper.—Unchanged at £16 10s. to £17 10s. per ton according to brand and package.

Sulphonal.—The two first makers lately reduced their price for this article to 7s. 3d. per lb. for quantity and bulk packing, at same time, however, stating that they were not selling at the price, which on the face of it certainly had a rather strange appearance. Meantime an outside maker was endeavouring to hawk the article round at 6s. 9d. per lb., but failing to find buyers this price has also since been withdrawn, and the article now just remains in its anomalous position, neither buyers nor sellers appearing to know exactly where they are.

Thymol.—There are still sellers in quantity at 6s. 3d. to 6s. 6d. per lb., while the actual price of *Adjowan seed*, from which thymol is made, would quite justify makers in asking at least 1s. per lb. more money, which fact points to the probability of an upward movement in price before very long.

Turmeric—Is firm and in good demand. About 250 bags *Bengal* sold privately at 11s. 6d. per cwt.; *Madras*, good to bright finger, 18s. to 19s. 6d. per cwt.; dull *Malabar* kind, 17s.; fair bright *Cochin*, split bulbs, 8s. 6d. per cwt.

MANCHESTER CHEMICAL REPORT.

October 20, 1897.

There is a moderately active business, to put a stereotyped phrase, going in heavy chemicals, and prices continue to be well maintained. Caustic Soda is quoted £7 5s. to £7 12s. 6d. on rails for white 70 per cent. Bleaching Powder is steady at £6 3s. 9d. to £6 7s. 6d. on rails, but for next year £6 2s. 6d. is quoted, while for foreign markets the range is very great indeed. Bicarbonate is unchanged at £6 12s. 6d. to £6 17s. 6d. for 1-cwt. kegs. Industrial Bicarbonate (for mineral waters), £4 5s. to £4 10s. per ton, bags, and £5 5s. per ton, 1-cwt. kegs, both on rails at works, Northwich. Chlorate of Potash is easier at 3½d. to 4d. Brown Acetate has advanced, owing to small amount offering, to £5 5s. and £5 10s., according to delivery. Welsh is well sold. Acetate of Soda is dull. Naphthas and Benzols are easier, but without change in price. Sulphate of Copper has put on another spurt, and £17 10s. to £17 15s. is quoted for best brands delivered here, while little is offering forward. Yellow Prussiate is quoted at 6d. per lb. in quantity, but 6½d. is generally asked for best Lancashire make. Alum still dull. Green Copperas is in increased output, but local makers do not guarantee delivery under a month at old rates. Aniline Oil and Salt again lower.

NEWCASTLE CHEMICAL REPORT.

October 20, 1897.

This chemical market remains well on the steady side, with Soda Ash and Soda Crystals still very scarce. Caustic Soda is very firm, whereas Bleaching Powder keeps to a dull tone. Prices are:—Bleaching Powder, according to markets, £6 10s. to £7 10s. Soda Crystals, 42s. 6d. to 57s. 6d. Caustic Soda, 70 per cent., £7 10s. to £7 15s. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5. Sulphur, £4 15s. to £5 per ton.

LIVERPOOL REPORT.

October 20, 1897.

Ammonium Salts—Are somewhat quiet at late rates, *carbonate*, 3d. per lb.; *sal ammoniac*, 33s. and 31s. per cwt., according to quality; *sulphate*, £8 7s. 6d. to £8 10s. per ton.

Bleaching Powder—Is dull of sale at £6 12s. 6d. per ton for hard *f.o.b.*

Canaryseed.—Is firmer as regards the Turkish seed, of which some 300 bags have been sold at 27s. 6d. per 464 lbs. for good quality seed.

Copperas—Is steady at 39s. per ton for Lancashire and 37s. for Welsh.

Kola Nuts.—22 packages of dried sold at 3¼d. per lb.

Linseed—Is firm, and sellers by no means numerous. Early in the week 750 bags of Turkish sold at 34s. per 416 lbs., and later some 500 bags found buyers at 34s. 6d. to 35s.

Oils (Fixed) and Spirits.—*Castor* oils are fairly steady. French 1st pressure has been selling in some quantity on a slightly falling market, varying between 3⅞d. and 3½d. per lb., closing at the latter figure. Calcutta good 2nds is in better demand at 3⅛d. per lb. *Olive* oils are doing a good trade at higher rates; Liverpool is cleared of *Seville* oil at £30 10s. per tun, which is offering at Goole for £30 to £31. *Linseed* oil of Liverpool make is a shade firmer at 16s. to 17s. per cwt. *Cottonseed* oil is very quiet, but the price remains at 16s. to 17s. per cwt. *Spirits of Turpentine* is only in small demand at the easier rate of 25s. per cwt.

Potash Salts—Are unchanged. *Chlorate*: 3¾d. per lb. *Bichromate*: 4⅝d. per lb. *Potashes* are merely nominal at 19s. 6d. per cwt. *Pearlash*: Slow of sale at 29s. to 30s. per cwt. *Cream of tartar* is quoted at 80s. to 82s. 6d. per cwt. for finest white, but is much neglected; good Patras tartar

sold to some amount ex store at 67s. 6d. per cwt. *Saltpetre*: 21s. 6d. to 22s. per cwt.

Quillaya Bark. — Chilian has found buyers at £27 per ton.

Soda Salts.—*Bicarbonate*: £6 15s. per ton. *Crystals*: £2 17s. 6d. per ton. *Caustic*: 70 per cent., £7 10s. per ton: 60 per cent., £6 10s. *Borax*: £14 10s. to £15 per ton. *Nitrate*: 7s. 4½d. to 7s. 7½d. per cwt.

Sulphur.—Roll: £6 7s. 6d. per ton. Flowers: £7 10s. per ton.

PUBLICATIONS RECEIVED.

Ueber die Werthbestimmung der Kolanuss und des Kolaextraktes. Von Dr. Karl Dieterich-Helfenberg Pp. 11. Sonderabdruck aus der Pharmaceutischen Zeitung. No. 76. Berlin. 1897.

Chemistry for Photographers. By Chas. F. Townsend, F.C.S., F.R.P.S. Illustrated. Pp. 158. Price 1*s*. London: Dawbarn and Ward, Ltd., 6, Farringdon Avenue, E.C. From the Publishers.

Semi-Annual Report of Schimmel and Co. (Fritzsche Brothers). Pp. 88. Leipzig and New York. October, 1897. From the Publishers.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Warner & Landon, Physicians and Surgeons, Woodford Green, Essex.

Holmes, Messer & Bunting, Surgeons and General Medical Practitioners, Newburn, Lemington, and Scotswood, Northumberland.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Herbert Lacy (trading as E. Lacy & Co.), Chemists, 156, Whitechapel Road, Middlesex.

Thomas Robert Pearson, Surgeon, Claremont House, Harrogate, Yorks.

John Flood, Surgeon, 206, King's Road, Chelsea.

George Taylor, Druggist, 17, Strafforth Terrace, Denaby Main, Yorks.

Charles Grevile, Surgeon-Dentist, residing at 9, Princes Street, Ulverston, and carrying on business at 74, Duke Street, Barrow-in-Furness.

NEW BOOKS AND NEW EDITIONS.

"Practical Muscle Testing and the Treatment of Muscular Atrophies." By Dr. W. S. Hedley. Illustrated. Pp. 8+128. 8vo., cloth. 3s. 6d. London: H. K. Lewis. 1897.

"Camera and the Pen." By T. C. Hepworth. Illustrated. Pp. 64. Dy. 12mo., paper. 6d. (Popular Photographic Series, No. II.) London: Lund. 1897.

"Organic Chemical Manipulation." By J. T. Hewitt. Illustrated. Pp. 272. Cr. 8vo. 7s. 6d. net. London: Whittaker. 1897.

"How to Choose and How to Use Photographic Lenses." By John A. Hodges. Illustrated. Pp. 142. Cr. 8vo. 2s. net. London: Lund. 1897.

"Infant Diet and Sterilised Milk." Pp. 46. Cr. 8vo., paper, 6d.; cloth, 1s. London: Low. 1897.

"Asbestos and Asbestic—Their Properties, Occurrence, and Use." By Robert H. Jones. Illustrated. Pp. 384. 8vo. 16s. London: Lockwood. 1897.

"Absorption of Exudations Under the Influence of Massage." By Dr. Arvid Kellgren and Dr. Carlo Colombo. Illustrated. Pp. 42. 8vo., sewed. 1s. London: Baillière. 1897.

"Diseases of the Eye," a Manual for Senior Students. By J. Arthur Kempe. Pp. 56. Cr. 8vo. 1s. 6d. net. London: Livingstone. 1897.

"Physics," an Elementary Text-Book for University Classes. By C. G. Knott. Pp. 360. 12mo. 7s. 6d. London: Chambers. 1897.

"The Elements of Algebra." By R. Lachlan. Pp. 264, 12mo. 2s. 6d. (Arnold's Mathematical Series). London: E. Arnold. 1897.

"Analytic Geometry for Technical Schools and Colleges." By P. A. Lambert. Diagrams. Pp. 216+12. Cr. 8vo., cloth. 7s. 6d. London: Macmillan. 1897.

"The History and Technique of the Vaginal Radical Operation." By Professor Landau, Dr. Leopold, and Dr. Theodor Landau (English Translation by Drs. B. L. Eastman and Arthur E. Giles). Illustrated. Pp. 174, 8vo., cloth. 7s. 6d. London: Baillière. 1897.

"A Detailed Course of Qualitative Chemical Analysis of Inorganic Substances, with explanatory notes." By Arthur A. Noyes. Pp. 92, 8vo., cloth. 5s. net. London: Macmillan. 1897.

"Everybody's Guide to Photography." By Operator (*pseud.*). Pp. 162. 16mo., roan. 1s. London: Saxon. 1897.

"Wasted Records of Disease." By Chas. E. Paget. Pp. 92. Cr. 8vo. 2s. 6d. London: Arnold. 1897.

"The Medical Temperance Dictionary" By J. J. Ridge. 4to. 2s. 6d. London: Jarrold. 1897.

"Diseases of the Gall-Bladder and the Bile Ducts." By A. W. Mayo Robson. Illustrated. Pp. 180. 8vo., cloth. 7s. 6d. London: Baillière. 1897.

"Septic Conditions of the Infantile Alimentary Canal and their Treatment." By Dr. F. W. Forbes Ross. Pp. 160. Cr. 8vo. 7s. 6d. London: Rebman. 1897.

"Anatomical Atlas and Obstetric Diagnosis and Treatment." By Dr. Oscar Schaeffer. 145 col. Illustrated. Pp. 234. Cr. 8vo., cloth. 12s. 6d. (Hand. Atlas series.) Vol. III. London: Baillière. 1897.

"Atlas and Essentials of Gynecology." By Dr. Oscar Schaeffer. 173 col. Illustrated and 54 woodcuts. Pp. 288. Cr. 8vo., cloth. 15s. London: Baillière. 1897.

"Quantitative Estimation of Urine:" New system of rapid analysis for medical men. By J. B. Smith. Pp. 37. Cr. 8vo., sewed. 1s. London: Baillière. 1897.

"The Chemistry of Dairying." By Harry Snyder. Cr. 8vo. 7s. 6d. net. London: Gay & Bird. 1897.

"A Hand-Book of Medical Chimatology," embodying its principles and therapeutic application, with scientific data of the chief health resorts of the world. By S. Edwin Solly. Illustrated. Pp. 9+470. 8vo., cloth. 16s. London: Churchill. 1897.

"The Oxygen Treatment for Wounds, Ulcers, Burns, Scalds, Lupus, and Diseases of the Nose, Eye, and Ear." By George Stoker. Illustrated. Pp. 40. Roy. 8vo., sewed. 2s. London: Baillière. 1897.

"Photographic Annual for 1897," A Compendium of Information and Statistics of the Year. Edited by Henry Sturmey. Dy. 8vo. Paper, 2s. 6d. Cloth, 3s. 6d. net. London: Iliffe. 1897.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Tuesday, October 26.

Royal Photographic Society, at 8 p.m.
"Photo-Micrography from 2-2000 Diameters," by Mr. Edmund J. Spitta.

Wednesday, October 27.

Brighton Junior Association of Pharmacy, at 9 p.m.
Social Evening. Chairman: Mr. W. H. Gibson.

Nottingham and Notts. Chemists' Association, at 9 p.m.
Inaugural Meeting, and Address by Mr. G. T. W. Newsholme, Vice-President of the Pharmaceutical Society (Albert Hotel, Derby Road).

Thursday, October 28.

Chemists' Assistants' Association, at 9 p.m.
Short Papers by Members.

Friday, October 29.

Edinburgh Chemists', Assistants', and Apprentices' Association, at 9.15 p.m.
Inaugural Address by Mr. George Sinclair (President) and Presentation of Botanical Prize by Mr. John Bowman.

LATE ADVERTISEMENT.

Assistant Wanted.

LONDON.—Dentist and Chemist Assistant. Light Retail. Prescribing, and Dispensing. Must be thoroughly competent to take impressions and fit cases. Half-day holiday weekly and one hour each morning. Home comforts. Good salary. State age and salary required. J. C. Pentney, Chemist and Surgeon Dentist, 98, Queen's Road, Dalston, London, N.E.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Best cash offer, 100 ozs. original tin Howard's Quinine.—Endle, Chemist, Boscombe.

Water-Bed, Maw's make, 4 feet by 3, good as new, used three times only; cost 4 guineas, sell for 2 guineas; also Air-Pillow, 18 inches by 24, price 5s., cash.—E. F. Young, Pharmacist, Bristol.

Shop Fittings.

Three Show Jars, as Maw's Fig. 2, page 273, 24 inches S.C., with stand, 26s. 6d. each; what offers. —Brearley, Chemist, East Greenwich.

OFFERED—*(continued)*.

Books.

Pharmaceutical 'Magazine,' 'Times,' and 'Journal,' from 1841 to 1886.—M. Hamilton, Bron Wylfa, Mold.

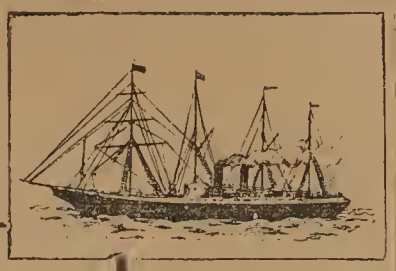
Cassells' 'New Popular Educator' complete, 4 vols. bound, 20s.; Bentley's 'Botany,' 5s. 6d.; Prautt and Vine's, 5s., and other books cheap. Various chemical apparatus.—Hornby, 13, Willis Road, Hillsboro, Sheffield.

OFFERED—*(continued)*.

Microscope by Crouch.—1 in. by ⅛ objectives for sale, cheap; also Vine's 'Botany,' latest edition.—W. E. M., 28, Gracechurch Street, City.

WANTED.

Wanted.—Professor Grecnish's translation of Dragendorff's 'Plant Analysis'; state price.—J. Stenhouse, c/o Messrs. Duncan, Flockhart, and Co. 104 S.B. Canongate, Edinburgh.



COLONIAL AND FOREIGN ISSUE.

THE

PHARMACEUTICAL JOURNAL

of NOVEMBER 27, 1897,

Will have a large extra circulation, and copies will be sent to every Wholesale and Retail Chemist and Druggist throughout

AUSTRALIA	CHINA	CEYLON
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STRAITS SETTLEMENTS, &c., &c.

The names and addresses have been carefully taken from the most recent and authentic sources, and no endeavour will be spared in order to make the distribution as comprehensive as possible.

Advertisers are reminded that ordinarily the "Pharmaceutical Journal" has a most extensive circulation amongst wholesale and retail chemists, and on this occasion the total circulation at home and abroad will exceed

11,000 COPIES.

Reduced rates for a series of insertions will be forwarded on application. For an insertion in the Journal of November 27 the charges will be as follows:—

WHOLE PAGE	£5 0 0
HALF PAGE OR WHOLE COLUMN	2 10 0
QUARTER PAGE OR HALF COLUMN	1 5 0
EIGHTH PAGE OR QUARTER COLUMN	0 12 6
EIGHTH COLUMN	0 6 6

Advertisements should be sent without delay to

THE PUBLISHERS,

5, Serle Street, Lincoln's Inn, London, W.C.

PLEASE READ THIS, and REPLY to the UNDERSIGNED.

THE SANITAS CO., LD. AND THE P.A.T.A.

FOR years before the P.A.T.A. was originated we had given serious attention to the subject of cutting the prices of our well-known **"Sanitas" Disinfecting Fluids, Oil, and Powder** (1/- sizes), and had actually endeavoured from time to time to prevail upon members of the Trade in certain localities to abstain altogether from the practice, or, at least, not to sell below a mutually agreed figure. These efforts, however, were not very successful, or only produced temporary results.

Since then the P.A.T.A. has been organised, but, so far, we have not seen our way to join its ranks, because, on the one hand, we do not like anything in the nature of interference with free trade, and, on the other hand, we are not assured that such a step would be either in our own interests or meet the general wish of the Trade

We feel that it would be a distinct advantage at the present time for us to learn the views of Chemists generally, and consequently we respectfully solicit expressions of opinion on the following points :—

1. **Do they wish us to join the P.A.T.A. ? Yes or No.**
2. **If we joined, should we determine upon making the face value of our articles the realisable values—that is (in respect of those above-named) 1/-, or should we be content with less, and, if so, how much ?**
3. **At what rates should supplies be made to the Retail and Wholesale trades respectively ? (At present we supply £5 (net) orders at 8/6 dozen, and under that amount at 9/- per dozen)**

Our products have a world-wide sale, and, as is well known, we continuously and systematically expend large sums of money in advertising them to the public, thus creating an increasing demand. We wish the Trade to make a resonable profit on sales made through them, and we want their continued good will to ensure the exhibition of our wares and showcards, and the distribution of our literature. We are genuinely in doubt, however, whether these objects and our own prosperity will be best promoted by joining the P.A.T.A., and, if so, upon what lines ; and consequently we hope the Trade generally will assist us in coming to an early decision upon this matter, which affects them and ourselves mutually, by favouring us with their replies.

For the SANITAS CO., LIMITED.

C. T. KINGZETT,

Bethnal Green, London, October 19th, 1897. Managing Director.

NEW IDEAS AND TRADE NOTES.

Messrs. Evans, Gadd & Co., of Forc Street, Exeter, send samples of their perfumes "Victoria Violets" and "Minnehaha," which have been added to the P.A.T.A. list of protected articles. Thc perfumes are exquisitely got up, the bottles being packed in pretty boxes convenient for either displaying the perfumes on the counter or to keep the bottles in when in use. Together with the samples is inclosed a specimen of a Christmas circular calling attention to the firm's choice perfumery, etc. Reference is also made to the fact that the firm has recently added to the protected list a 1*s.* size of "Ambrosia," a new substitute for cod-liver oil. The firm will be happy to send samples and price lists to any chemist on application.

Messrs. Ayrton & Saunders, Liverpool, announce that their Dublin show-room has been removed to the George Hotel, Limerick, and will be removed from that place to the Eglinton and Winton Hotel, Belfast, on Wednesday, November 3.

Mr. C. Thompson, of Birmingham, sends a specimen paper chest protector, bearing advertisements of his goods. Whilc it seems likely to answer all the requirements of a felt protector, the paper article is produced at a nominal cost, so that it may be given away and serve as a novel advertising medium.

The Eastman Photographic Materials Co. is holding a photographic exhibition at the New Gallery, Regent Street, W., on Monday, the object of which is to show the increasing extent and importance and the distinctive qualities and advantages of film photography. In the central hall there are Kodak appliances, including a new folding pocket Kodak. In the second room are included the results of a large Kodak Film Picture Competition. In a third room are a number of enlargements from photographs by some of the best known photographic exhibitors in Great Britain, whilst the fourth Gallery is devoted to technical exhibits.

NEWS IN BRIEF.

Mr. James Laidlaw Ewing and Mr. William Gilmour have been appointed Justices of the Peace for the city of Edinburgh by Sir Andrew McDonald, Lord Provost of that city. We heartily congratulate both gentlemen at the honour that has been conferred upon them, and is, through them, reflected upon the craft.

Mr. William Allan, pharmaceutical chemist, Dumfries, has been presented with a bowl of solid silver, of the Monteith type and of fluted design, by the Kirk session and trustees of St. Mary's Parish Church, Dumfries, in grateful recognition of his services as session clerk from August 3, 1883, to March 14, 1897. The Rev. A. Chapman, minister of the congregation, made the presentation, referring to Mr. Allan's long connection with the Church and the vital interest he had always manifested in its work.

Windsor District Chemists' Association.—On Wednesday a meeting of the above Association was held at the residence of Mr. Wood, High Strcet, Windsor, at which were present Messrs. Everett, Harmer, Rowland, Westlake, and Wood (Windsor), Mr. Dawson (Slough), Mr. Willcocks (Datchet), and Mr. Oldham (Eton). Letters of regret were read from Messrs. Grisbrook and Lewis, who were unable to attend. The members were most kindly entertained by Mr. Wood, and a very pleasant evening was spent in discussion of local matters connected with the Association, and after a hearty vote of thanks to Mr. Wood, the meeting terminated.

Sheffield Pharmaceutical and Chemical Society.—The Society's programme for the session includes a paper on the P.A.T.A., by Mr. J. H. Bradwall; a ball at the Masonic Hall; a paper on "A Proposed New Pharmacy Bill," by Mr. G. Squire (President); a paper on "The New Pharmacopœia," by Mr. J. F. Eardley, in the event of that work being published early in January; a paper on "Poor Law Dispensers," by Mr. Autcliffe; and a "Microscopical Evening," when papers will be contributed by Mr. J. Austen and Mr. C. O. Morrison.

North of England School of Pharmacy.—The students attending this School, at Newcastle-on-Tyne, held their fourth annual smoker in the Collingwood Hotel on Thursday evening, the 21st inst. There were close on one hundred present, and Mr. G. F. Merson, F.C.S., Principal, occupied the chair. An enjoyable feature of the entertainment was a lantern exhibition illustrative of a trip to Norway. The slides were the work of Mr. W. J. Clarke, Stockton-on-Tees, who also manipulated the lantern, and the descriptive matter was given in an able manner by Mr. R. Lillie, Gateshead.

Mr. Arthur W. Allen, son of Mr. J. Allen, M.P.S., of Plymouth, has been awarded the Joan Bennett exhibition, value £50 a year, available at either Oxford or Cambridge Universities.

Mr. Fred Reynolds, of Leeds, contributes a clever sketch to the *Yorkshire Evening Post* for Friday, October 22. It is headed "The Wily Teuton," and is intended to represent the position of the German workmen towards their English brethren during the great engineering lock-out. The sketch shows the German in the act of contributing his dole to the engineers' fund while at the same time he picks the Englishman's pockets of orders, contracts, etc.

Edinburgh District Chemists' Golf Club.—Hole and Hole Tournament.—The fifth and final round of the above competition, which began in May, was played over the Braids course last week, the finalists being Messrs. D. N. Wyllie and Jas. Stott. Mr. Wyllie receiving 2 holes, finished 3 up and 2 to 90.

Provincial Pharmaceutical Education.—At the Municipal School of Science and Technology, Brighton, a series of lectures and practical demonstrations has been arranged to cover the whole of the course for the Minor examination of the Pharmaceutical Society. There are also evening classes in chemistry and botany, full particulars of which may be obtained on application at the School.

The Executive Committee, appointed by the Pharmaceutical Congress in Brussels, to hold office until the date of the Ninth Congress, consists of the following members:—The President, M. Ranwez; Vice-Presidents, M. Martin, M. De Beul, M. Gosset; other members, M. Pelerin, M. Désirant, M. Delacre, M. Vandenbroeck; General Secretary, M. Duyk; Assistant-Secretary, M. Raymond. The General Secretary's office is at 102, Chaussée de Wavre, Ixelles district, Brussels.

The Manchester Retail Price-List for 1897 is issued under the auspices of the Council of the Manchester Pharmaceutical Association. It is conveniently arranged, bearing a general resemblance to the familiar Liverpool list, and is sold at the price of one shilling by most wholesale houses. The revised list of dispensing charges is headed with the legend "No prescription to be dispensed for less than One Shilling," and the charges themselves can only be described as fair and reasonable.

Aluminium Coins are likely to be seen in America before long, for the subject has been reported upon by the Committee on coinage, and it is believed that Congress will consider the matter during the course of the next session. The lightness of aluminium should make it a popular substitute for the heavier copper or bronze. The chief drawback, perhaps, which might be urged against its employment is the possibility of its being used fraudulently, by reason of its resemblance to silver, although the difference in weight ought to prevent this.—*Daily Chronicle.*

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Thomas Henry Williams and Charles Joseph Rees, Chemists and Druggists, carrying on business at 60, Leather Lane and 149, Goswell Road, E.C, under the style of Vaughan & Co., and at 66, Leather Lane, E.C., under the style of Bainbridge & Pound. Debts will be received and paid by Thomas Henry Williams, who will continue the businesses under the present titles.

George Johnston and Edwin W. D. Kite, Surgeons and Apothecaries, 275 and 277, St. Philip's Road, Sheffield, and at Holme House, Hillsborough, near Sheffield. George Johnston will practise on his own account at 275 and 277, St. Philip's Road, Sheffield, and Edwin W. D. Kite will practise on his own account at Holme House, Hillsborough, aforesaid.

John D. Holland and Walter F. L. Braidwood, Aërated Water Manufacturers, 37, High Street, Battersea, S.W., carrying on business under the style of T. Hicks & Co. Debts will be received and paid by Walter F. L. Braidwood.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

October 28, 1897.

Business has been somewhat quiet during past week, the anticipated and hoped for activity in the autumn not having so far manifested itself. The course of Quinine has proved somewhat disappointing. It is believed, however, that the upward course of value of the article has only been temporarily checked, not permanently arrested. Quicksilver is dearer, but makers have so far made no advance in price of Mercurials Iodine and Iodides unchanged. Acid Citric, Tartaric, and Cream of Tartar dull and weak. Acid Carbolic in rather more demand. Cod-liver Oil slightly firmer. Glycerin irregular. Opium, Morphia, and Codeia unchanged. Cocaine and Sulphonal quiet. Menthol and Thymol slightly firmer. The following are actual prices for articles of chief interest :—

Acetanilid—Is weaker, and in quantity could be bought at 1s. 3d. per lb.

Acid Boracic—Quiet at 24s. per cwt. for *crystals*, and 26s. for *powder*.

Acid Carbolic—Is in rather more demand and somewhat firmer at 6½d. to 6¾d. for the 35°-36° *ice crystal* in quantity and bulk packing ; 39°-40°, 7¼d. ; and *detached crystals*, 39°-40°, 8d. to 8½d. per lb. *Crude* : 60°, 2s. 1d. ; 75°, 2s. 6d. per gallon. *Pale Liquid* : 95 per cent., 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks and for large quantity.

Acid Citric.—Very dull and rather lower at 1s. 1¼d. to 1s. 1½d. for crystals on the spot.

Acid Oxalic.—Unchanged at 3½d. to 3¾d. per lb. net.

Acid Tartaric.—Quiet at 1s. 1½d. per lb. for *English* crystals on the spot, and 12¾d. per lb. for *Foreign* crystals.

Ammonia Compounds.—*Sulphate* is a strong and dearer market ; grey prompt, 24 per cent., London, is quoted £8 5s. per ton ; Hull and Leith, same price. *Bromide* firm at the late advance to 2s. 2d. per lb. *Sal ammoniac* : Sublimed firsts, 33s. 6d. per cwt. ; seconds, 31s. 6d. per cwt. ; crushed, for batteries, 33s. to 35s. per cwt. ; powder, 34s. to 36s. per cwt.

Asafœtida.—119 cases just arrived by the "Oriental" are, it is said, to be held off the market for the present. Small sales of old stock have been made at current rates.

Belladonna Root.—Really good root still very scarce at 45s. to 47s. 6d. per cwt. on spot.

Bleaching Powder—Quiet at £7 10s. to £7 15s. per ton on the spot.

Borax—Is very dull at 14s. 6d. per cwt. for crystals, and 15s. for powder.

Buchu Leaves.—Up to the time of going to press no sales had been made. Round leaves of fine colour are firmly held, and longs are held for 7d. to 8d. per lb.

Cardamoms.—The principal sale had not come on at the time of leaving for press, but the prices realised on the small lots offered up to that time showed a slight decline.

Chrysophanic Acid.—Makers are no longer free sellers at the low prices lately ruling, it being stated that supply of really good raw material is very limited. Price for the acid is 11s. to 11s. 6d. per lb. according to make and quantity.

Cloves.—*Zanzibar* at auction, all bought in at 2⅞d. *Amboyna* also bought in at 4¾d. Of *Penang* 12 cases fair picked sold at 6⅛d. to 6⅞d., the remainder bought in, unpicked at 5½d., picked 8½d. to 11d. Privately *Zanzibar* have fluctuated, but are lower than last week. Recent business January-March delivery at $2\frac{13}{16}$d. to $2\frac{7}{32}$d.

Coal Tar Distillation Products.—*Toluol*, 2s. 2d.; *Benzole*, 50 per cent., 2s. 2d.; 90 per cent., 2s. 1d. per gallon. *Crude Naphtha* 1s., *Solvent Naphtha*, 95 per cent. at 160° C., 1s. 11d. ; 90 per cent. at 160° C., 1s. 8d. ; 90 per cent. at 190° C., 1s. 1d. per gallon.

Cocaine—Is steady but quiet, price for the brands most in favour being 8s. 6d. per oz. for 100-oz. lots, while a little less money would buy some of the makes which are less esteemed. It would appear probable that the low figure will check supplies of raw material, with the usual result of tangibly higher prices for the manufactured article.

Codeia—Is firm at unchanged prices, say 11s. 3d. to 11s. 6d. per oz. according to quantity.

Cod-liver Oil—Appears to be hardening, although, as a matter of fact, except for very first brands, prices remain unchanged at 70s. to 75s. for non-freezing *Norwegian*. *Newfoundland* is nominally 2s. to 2s. 6d. per. gallon, but is practically in very little demand.

Cream of Tartar—Is again lower, and very dull. First white crystals can be had at 75s. 6d. per cwt., and powder at 2s. to 2s. 6d. per cwt. more.

Galls.—*China* continue firm with higher prices for arrival, 61s. 6d., *c.i.f.*, being quoted for December to February shipment. *Persian* are also strong, but high prices asked check business.

Gentian Root—Is somewhat scarce on spot, and 26s. 6d. per cwt. is asked for same, but to arrive, the article can be bought for rather less money.

Ginger.—Of rough *Cochin* 136 bags washed, 1895 import, sold at 25s. 6d. to 27s. ; the remainder, good brown, bought in at 34s. Of native limed kinds 26 cases sold, common small part cut at 28s. Only 10 barrels *Jamaica* sold, low middling dull washed at 72s.

Glycerin.—Is somewhat irregular in price, some makers quoting as low as 50s., quality of same is, however, rather doubtful. Price of best white double distilled 1260 chemically-pure quality in tins and cases may be taken at 57s. 6d. to 62s. 6d. per cwt. for quantity.

Iodine—Is unchanged at 7½d. per oz., prices of the *Iodides* remaining unchanged accordingly.

Ipecacuanha.—50 bales of *Rio* quality were offered and met with more demand than at the previous auctions, from 6s. to 6s. 3d. per lb. was paid for thin to fairly bold root. 4 bales *Carthagena* root sold at 4s. 8d. per lb. for first class, and 4s. 6d. to 4s. 7d. for second class damages.

Manna—Is dearer, flake is held for 2s. 3d. per lb. ; other kinds in proportion.

Menthol.—Market is firm at 7s. 6d. to 7s. 9d., according to quantity, for best white dry crystals.

Mercurials.—So far makers have not followed the advance in quicksilver, and in fact it is hardly anticipated that they will do so. Prices remain therefore unchanged at 2s. 2d. for *corrosive sublimate*, and 2s. 6d. for *Calomel* in 10-cwt. lots and in bulk packing.

Morphia—Quiet and somewhat weak at 4s. 6d. for the *Hydrochlorate* powder.

Nitrate of Soda—Steady at £7 15s. to £8 per ton.

Oils Essential.—*Cinnamon* is very scarce, and sold at 1s. 6d. to 1s. 7d. per oz. Leaf oil being held for 4d. ; *Cassia* is lower, 5 cases. 70 to 75 per cent. aldehyde sold at 5s. 1d. to 5s. 2d. per lb. ; 83 per cent. at 5s. 7d. to 5s. 8d., and 60 per cent., 4s. 9d. to 5s. per lb. ; 6 cases *Nutmeg oil* were taken in at 3d. ; *Peppermint*, 5 cases Dodge & Olcott's oil were bought in at 5s. 6d., and a similar quantity of Fisher's *Patchouli* oil was taken in at 1s. 3d. per lb.

Oils (Fixed) and Spirits.—*Linseed* is very firm and dearer at £14 12s. 6d. for pipes on the spot, and £15 2s. 6d. for barrels in same position. *Rape* firm at £26 5s. for ordinary brown on the spot ; refined £27 15s. *Cotton* lower at £14 10s. to £15 10s., according to make. *Olive* : *Spanish*, £32 ; *Levant*, £31 10s. to £33. *Cocoanut oil* : Ceylon on the spot, £22 ; Cochin spot nominal, £28 10s. for near *c.i.f.* *Palm* : Lagos on the spot, £21 15s. *Turpentine* flat and easier ; American on the spot, 23s. 7½d. per cwt. *Petroleum oil* quiet ; Russian spot, 4¼d. per gallon ; American on the spot, 4½d. per gallon ; waterwhite, 5½d. to 5⅝d. *Petroleum spirit* : American 6d., deodorised 6¼d. per gallon.

Opium.—Market is quiet at fairly steady prices, without, however, any particular change to report, value ranging from 8s. 9d. to 11s. 3d., according to kind and quality and quantity.

Potash Compounds.—*Chlorate* quiet at 3⅞d. per lb. *Prussiate* : Yellow is slow of sale at 5½d. to 6d. per lb. ; red 1s. 1d. to 1s. 2d. per lb. *Bromide* unchanged at 1s. 10d. per lb. *Iodide* firm at 9s. 9d. to 10s. 3d. per lb. *Bicarbonate* steady at 30s. per cwt. for powder. *Permanganate* very dull, but nominally unchanged at 70s. per cwt. for small crystals, and 75s. for large crystals. *Bichromate* steady at 4⅝d. per lb. *Oxalate* steady at 4¼d. to 5d. per lb.

Quassia Wood—Is inquired for, and £4 10s. is asked for fair.

Quicksilver.—Price has been advanced

to £7 from the importer, price from second-hand being about 1s. below this figure.

Quinine.—Some surprise was caused by the announcement on the part of some of the German makers that their price was 1s. 2d. per oz., many people having expected that when price was fixed it would be at a distinctly higher figure. The agents for one of the brands most in favour state, however, that while their price is nominally the figure named above, they are not sellers at same, or, in fact, at any price. Messrs. Howards & Sons, on the other hand, have advanced their price to 1s. 3d. per oz. for 1000-oz. lots in bulk packing. The opinion generally amongst those who should be best informed tends to the belief that we shall see the price of quinine dearer before the end of the year.

Saffron—Is tending lower, finest *Valencia* being now quoted 42s. 6d. per lb.

Sandalwood Logs.—There has been a fairly considerable business in this article lately, mainly, it is said, for American account, and all the cheap lots have been cleared, £50 to £55 per ton is now asked.

Senna.—About 500 bales *Tinnevelly* were offered and again met with a very active competition, and practically the whole sold at a further advance of ¼d. per lb. on the lower qualities, and more on the fine grades. The arrivals in view are very small, but considering the little that has so far come forward, one would think that some lots are being held back by the natives. *Alexandrian*: 21 packages were offered without reserve; 4 cases picked leaf sold cheaply at 5d. per lb., siftings and broken at 3d. to 4¼d. per lb., and good pods at 4½d. per lb.

Soda Compounds. — *Crystals* firm at 52s. 6d. per ton ex ship terms. *Bicarbonate* steady at £7 10s. to £7 15s. per ton for the 99 per cent., and 18s. per cwt. for free from monocarbonate. *Hyposulphite* dull and rather easier at 5s. 9d. to 6s. per cwt. *Bromide* firm at late advance, 2s. 2d. per lb. being the quotation for less than 1 cwt. *Iodide* steady at 11s. 7d. per lb. *Nitrate*: Ordinary, on the spot, £7 10s.; *refined* £1 15s. per ton.

Spices (Various).—*Black Pepper*: None offered at auction. *White Pepper* all bought in, Penang 5¾d., Signapore 6¾d. to 7½d. *Chillies*: 14 bales Zanzibar sold at 40s., 10 cases fine Japan bought in at 56s. *Cassia Lignea*: 200 bales broken bought in at 36s. *Mace*: Penang bought in at 1s. 8d. to 1s. 10d., pickings 1s. 6d.; 27 packages West India sold at 1s. 5d. to 1s. 9d. *Nutmegs* are dull at about late rates. *Pimento* sold at rather easier rates, largely without reserve, realising 3¼d. to 3⅝d. for common to middling, a few lots better quality fetching 3¾d. and 3⅞d.

Sulphate of Copper.—On the spot, £16 10s. to £17 per ton, according to brand.

Sulphonal.—This article remains in its uncertain position, the two principal makers still quoting 7s. 3d. per lb. They declare, however, that this price actually shows them a loss on actual cost to manufacture, and that they are not selling at the figure named, or at least only in quite moderate quantities to their regular customers. The cheaper offers from outside makers appears to have ceased, it is thus difficult to form an opinion as to the future of the article, consumers can, however, hardly do wrong to lay in a moderate stock at present low quotation.

Thymol.—The best make of this article is rather higher at 6s. 9d. per lb. for fair quantity.

Turmeric — Firm but quiet. *Bengal* quoted 12s., and *Madras* 17s. to 19s. 6d. per cwt., according to quality.

Vanilloes —About 350 tins offered, and sold on the whole at fairly steady rates, although in a few cases a decline of about 1s. per lb. was accepted.

To-day's drug auctions went off quietly at fairly steady prices, there being no changes of any very great importance to record. Ipecacuanha sold at rather firmer prices. Senna also selling at an advance. The following are the particulars as far as it has been possible to give same up to time of going to press:—

Aloes.—Fair bright hard *Cape* sold at 21s. 6d. down to 15s. for drossy and inferior; fine livery *Curacoa* realising 28s. down to 12s. 6d. for dark and of lower quality; good *Socotrine* fairly dry sold at 78s., balance being bought in at 85s. per cwt.

Aniseeds.—50 bags fair quality taken out at 19s. per cwt.

Colocynth.—6 cases *Turkey* fair apple bought in at 1s. 3d. per lb.

Colombo Root.—Fair sorts rather small sold at 30s. per lb., good ditto realising 35s. up to 40s. 6d. for good bold quality.

Dragon's Blood.—2 cases dullish seedy block sold well at £6 per cwt, the rest of the offering being bought in. No fine was offered; this quality is much wanted.

Ergot of Rye.—3 bags very weevily *Spanish* sold at 6d. per lb., fair sifted *ditto* being taken out at 1s. 1d.

Gum Ammoniacum.—3 barrels very fine glassy block sold at 1s. 6d. to 1s. 10d. per lb., 1 tub of dull drossy only fetching 2½d., 1 case fair tear was held for 50s. per cwt.

Gum Arabic.—Good soft sorts held for 86s. 12 bags *Aden* for 32s. 6d. per cwt., fair grain sold at £6 5s. White picked small taken out at £15 per cwt.

Gum Bdellium.—5 bales sold at 25s. 6d. per cwt.

Gum Benjamin.—Blocky and woody *Siam*, some bold, but chiefly small, held for £7, only £4 15s. per cwt. being bid. Good free small to fair bold almonds sold at full prices, say, £15 7s. 6d. to £17 15s., while rather blocky fetched £12 10s. down to £6 17s. 6d. for seedy block, and 55s. for small seedy ditto. Medium to fair *Sumatra* sold at 92s. to 94s.; medium *Palembang* held for 21s.

Gum Elemi.—8 cases of rather dark colour bought in at 22s. per cwt.

Gum Myrrh.—Good pale sorts were held for 85s., a bid of 80s. being refused. Pickings and inferior quality taken out at 27s. to 45s. per cwt.

Gum Tragacanth.—Good pale firsts were bought in at £12 10s. to £15 per cwt., lower qualities selling at £5 to £8.

Honey.—Fair to good to fine *Jamaica* was held for 24s. to 30s. per cwt., part selling at 25s. for fair, while 20s. 6d. to 21s. 6d. was paid for medium quality. Fair white *Californian* held for 30s.

Jalap.—29 bales part sold cheaply at 5½d. for small heavy but somewhat wormy, balance being held for 6¾d. per lb.

Liquorice Root.—48 bales decorticated *Russian*, new crop, thin to medium bold, were held for 35s. per cwt.

Musk.—Small to boldish grey and brown *Tonquin*, a few broken, held for 74s. per oz., ditto very damp for 46s., old-fashioned half trimmings, rather damp, selling cheaply at 40s.

Quinine.—5000 ozs. *Brunswick* were all taken out at 1s. 3d. per oz.

Sarsaparilla.—Good *Jamaica* held for 2s. per lb., 1s. 8d. being bid, 2 bags fair *Native* selling for 1s.

Seneka Root.—23 bales of fair quality held for 1s. 3d. per lb.

Shellac.—1 case sold at 64s., which was about full value.

Rhubarb.—Good bold flat *Canton*, part rough, sold at 1s. 4d. per lb., good round ditto being held for 1s. 6d., medium ditto selling at 1s. 2d., and very rough pickings, round and flat, at 1s., and low ditto, without reserve, at 6d. to 6½d. Good flat *high-dried* fetched 1s., bold common ditto, very rough and horny, with no colour, being held for 7½d.; fairly bold flat *Shensi* was held for 1s. 2d.

Star Aniseeds.—28 cases fair *China* part sold at 90s. per cwt., balance being bought in at 92s. 6d.

Tamarinds.—17 packages fair quality *West Indian* sold at 7s. 6d. per cwt.

Wax.—Good *Jamaica* was held for £7 10s.; medium to fair *Madagascar* partly wormy sold at £5 7s. 6d. to £5 10s.; balance held for £6 to £6 2s. 6d.; fair *San Domingo* realised £5 15s.; fair *Australian* held for £6 10s., and medium *Spanish* for £6 2s. 6d.

NEWCASTLE CHEMICAL REPORT.

October 27, 1897.

A very steady market has again to be given, but at unchanged prices, and without any new feature of interest. Soda Ash, also Soda Crystals remain scarce. Caustic Soda very steady. Bleaching Powder dull. Prices according to destinations are:—Bleaching Powder, £6 10s. to £7 10s. Soda Crystals, 42s. 6d. to 57s. 6d. Caustic Soda, 70 per cent., £7 10s. to £7 15s. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £5 per ton.

LIVERPOOL REPORT.

October 27, 1897.

The recent advances in the price of Oils seem to have reached their limit, for, with the exception of Olive Oils, a perceptible though slight reduction all round is noticeable. Beeswax, Kola Nuts, Quillaya Bark, Linseed, and Turkish Canaryseed have been sold at fully late prices, but Cream of Tartar is a turn easier, though the amount offering is small. Holders of Olive Oils are withdrawing their lots recently offering in consequence of a general rise in most varieties of Olive Oils. The chemical business is reported as slack, though the scarcity of Alkali and Copperas still continues, but prices are not changed to any appreciable extent.

Ammonium Salts—Are unchanged from

last week. Sulphate still offers here at £8 7s. 6d. to £8 10s. per ton.

Beeswax.—About 15 bags of good Chilian readily sold at £6 12s. 6d. to £6 17s. 6d. per cwt.

Bleaching Powder—Is still quiet at £6 12s. 6d. per ton for hard *f.o.b.*

Canaryseed.—Turkish is in slow demand, the price being from 26s. 6d. to 27s. 6d. per 464 lbs., at which former price 50 bags found buyers.

Copperas—Is firmer. Lancashire, 39s. per ton; Welsh, 37s.

Copper Sulphate.—For spot delivery £16 10s. to £16 12s. 6d. For some markets there is a good shipping demand.

Honey.—35 barrels of Chilian Pile I. made 24s. 6d. per cwt.

Kola Nuts.—40 packages dried sold at 2½d. to 3d. per lb.

Linseed.—A fair business has been done in Turkish at 34s. 9d. per 416 lbs. Holders now ask 35s. to 35s. 6d.

Oils (Fixed) and Spirits.—*Castor oils* are easier in price, Calcutta selling well at 3¾d., and French, first pressure, at 3½d. per lb. *Olive oils* have advanced in price, and are held for a further rise. Candia is now quoted at £32 to £33 per tun, and Seville at £31 10s. to £32. *Linseed oil* of Liverpool pressure has dropped 3d. per cwt. in price since last week, and is now selling at 15s. 9d. to 17s. per cwt. *Cottonseed oil*, Liverpool refined, has also experienced a decline to 15s. 6d. to 16s. 6d. per cwt. *Spirits of turpentine* maintains a steady market at 24s. 9d. per cwt.

Quillaya Bark.—All offering at £27 per ton has been bought up; £28 is now asked.

Tartar.—Finest white cream is easier at 79s. to 80s. per cwt.

MANCHESTER CHEMICAL REPORT.

October 27, 1897.

For prompt delivery there is no change to report in the prices of heavy chemicals, but for next year's delivery, owing to competition the principal makers are disposed to make concessions. For Bleaching Powder £6 is quoted, and about 5s. per ton is conceded on Caustic Soda; high strength 77 per cent. is quoted £8 15s. There has been a further advance in freights, and consequently Brown Acetate of Lime has had another advance, £5 10s. being generally refused. Sulphate of Copper remains at £17 10s. to £17 15s. per ton, best brands, delivered here, and higher figures for spring delivery are named. Naphthas and Benzols are still unchanged and fairly firm, makers being well sold forward. Yellow Prussiate is dull at 6d. to 6½d. for best Lancashire. Green Copperas: Local make continues scarce, but prices are unchanged at 35s., *f.a.s.*, Manchester Ship Canal, and 40s. to 42s. *f.o.b.* Liverpool. Salt Cake: 23s. to 24s. per ton in bulk on rails. Creosote has advanced to 2d. and 2⅛d. Recovered Sulphur: £5 to £5 2s. 6d. Oxalic Acid: 3¾d. to 4d. per lb., according to delivery. Peroxide of Manganese: £12 15s. to £13 12s. 6d., and Battery Manganese, £9 5s. to £9 17s. 6d. Ironfounders' Plumbago: £13 15s. to £14 per ton, delivered Manchester, according to quantity. Epsom Salts and Glaubers': Unchanged.

PUBLICATIONS RECEIVED.

Reference-Book of Practical Therapeutics, by Various Authors. Edited by Frank P. Foster, M.D., in two volumes. Vol. I., viii.+652 pp.; vol. II., 618 pp. Price £2 10s. London: Smith, Elder & Co., 15, Waterloo Place. 1897. From the Publishers.

Heart Disease, with Special Reference to Prognosis and Treatment. By Sir William H. Broadbent, Bart., M.D.Lond., F.R.S., F.R.C.P., and John F. H. Broadbent, M.A., M.D. (Oxon.), M.R.C.P. Pp. x+331. Price 10*s.* 6*d.* London: Baillière, Tindall, & Cox. 1897. From the Authors.

Some North American Coniferæ, being a Series of Papers reprinted from the 'American Journal of Pharmacy,' January, 1896, to July, 1897. By Edson S. Bastin and Henry Trimble. Pp. 124. Philadelphia: 'American Journal of Pharmacy.' 1897. From the Authors.

The Principles of Chemistry by D. Mendeléeff, Translated from the Russian. Sixth edition. By George Kamensky, A.R.S.M., and edited by T. A. Lawson, B.Sc., Ph.D., in two vols., illustrated. Vol. i., xviii.+621 Pp.; vol. ii., 518 Pp. Price 36*s.* London: Messrs. Longmans & Co., 39, Paternoster Row, E.C. From the Publishers.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Monday, November 1.

Chemists' Ball.
Committee Meeting at 2.15 p.m.
General Meeting at 2 50 p.m.
Royal Institution, at 5 p.m.
General Monthly Meeting.
Society of Chemical Industry, at 8 p.m.
Papers by Messrs. W. H. Stanger, Bertram Blount, and W. P. Evans.

Tuesday, November 2.

Royal Colonial Institute, at 8 p.m.
"The Railway System of South Africa," by Sir David Tennant.

Wednesday, November 3.

Brighton Junior Association of Pharmacy, at 9 p.m.
"Mediæval Town Life," by Mr. George Long.
Midland Chemists' Assistants' Association.
Musical and Social Evening.
British Pharmaceutical Conference, at 4.30 p.m.
Meeting of the Executive Committee.

Thursday, November 4.

Midland Pharmaceutical Association, at 8.30 p.m.
Inaugural Meeting and Conversazione (Grand Hotel).
Chemical Society, at 8 p.m.
Papers by Professors H. Moissan and J. Dewar.
Chemists' Assistants' Association, at 9 p.m.
Musical and Social Evening.
Linnean Society, at 8 p.m.
Papers by Sir John Lubbock and Mr. W. C. Wordsell. There will also be two exhibitions by Mr. F. G. Jackson and Mr. Reginald Lodge.

NEW BOOKS AND NEW EDITIONS.

"Elementary Non-Metallic Chemistry." By S. R. Trotman. Pp. 192. 12mo. 2s. London: Rivington. 1897.

"A Manual of Practical Medical Electricity," with Chapters on Röntgen Rays. By Dr. Dawson Turner. Illustrated. Pp. 335. 8vo. Cloth, 7s. 6d. London: Ballière.

"The Student's Handbook of Diseases of the Skin.' By Utile Quad Facias (*pseud.*). Pp. 96. Cr. 8vo' 2s. 6d. net. London: Livingstone. 1897.

"Carbon Printing." By E. J. Wall. 3rd edition, revised and enlarged. (Amateur Photographer's Library, No. 8). Pp. 90. Cr. 8vo., limp. 1s. London: Hazell. 1897.

"Surgery: Its Theory and Practice." By William Johnson Walsham. Illustrated. 6th edition. Pp. 856. Cr. 8vo. 12s. 6d. London: Churchill. 1897.

"Practical Radiography": A Handbook of the Application of the X Rays. By H. Snowden Ward, with Chapters by E. A. Robins and A. E. Livermore. Illustrated. Pp 80., cr. 8vo. 1s. 6d. net. London: Dawbarn. 1897.

"Major Questions Set at the Pharmaceutical Major Examinations from 1892 to 1897." By Henry Wootton. Pp. 60, cr. 8vo, sewed. 1s. 6d. London: Simpkin. 1897.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books.

Pharmaceutical 'Magazine,' 'Times,' and 'Journal,' from 1841 to 1886.—M. Hamilton, Bron Wylfa, Mold.

'Pharmaceutical Journals,' 1st and second series complete; 3rd series 11 vols.; half bound calf. Offers requested.—S. H., 177, Regent Street.

Optical and Photographic.

Microscope (Crouch), 2 objectives, 2 eye-pieces, condenser, polarising apparatus, rackwork movement, coarse and fine adjustments, etc., complete in box; offers; may be examined.—"Micro," Chemists' Club, Stonecutter Street, London, E.C.

OFFERED—*(continued).*

Miscellaneous.

For Sale, Cheap, two Slow-Combustion Heating Stoves (the "Tortoise"); best for shops, warehouses, workrooms, etc.—Kemp, Chemist, Chorlton-cum-Hardy.

Opportunity! "The Gem" Soda-water Machine, in working order; 75 doz. large, 150 doz. small; cost £28; price only £14.—Spa Co., near Diss.

Shop Fittings.

Three Show Jars, as Maw's Fig. 2, page 273, 24 inches S.C., with stand, 26s. 6d. each; what offers. —Brearley, Chemist, East Greenwich.

OFFERED—*(continued).*

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d. —Tully, Chemist, Hastings.

WANTED.

Wanted.—Wills' 'Materia Medica,' with plates. Price to—Weston, 10, Store Street, Todmorden, Yorkshire.

Wanted.—Small Granite Roller Mill or Edges runner, suitable for hand-power; also Pfleiderer', Mixer, for 28-lb. pill mass. Full particulars to C. E. 79, Wendover Road, London, N.W.

THE 1898 CONFERENCE MEETING.

ALBERT MEMORIAL, BELFAST.

IT may seem early to begin discussing the prospects for the next annual gathering of British pharmacists, but after the record attendance at Glasgow some attempt should be made to maintain the marked improvement of the past two years. The only disadvantage that the Ulster Committee will have to contend with in trying to keep up the attendance will be the necessity for the English and Scotch members to cross the Irish Sea, but this should encourage them to experiment with their own particular remedies for *mal de mer*, and provide statistics for an interesting paper for future reference. The crossing can, however, be made so easily and comfortably from Fleetwood or Liverpool to Belfast, or from Stranraer to Larne, that no one need let the sea passage deter them from attending, unless they are past all hope of behaving themselves on the water.

Belfast is situated on the banks of the River Lagan, and for commercial purposes is to Ireland what Glasgow is to Scotland, in

GRAND CENTRAL HOTEL, BELFAST.

fact, it rivals Glasgow in many ways. The city offers many opportunities for outings, and visits to the linen factories, lace makers, and ship-building yards will interest everyone, but the trips to the country which surrounds Belfast will be delightful, provided the weather is good—the district is credited with two hundred wet days in the year—for the scenery is unique.

The local committee has already begun work, and the local secretary, Mr. R. W. McKnight, has commenced his preliminary arrangements for next year's reception of the members in the Emerald Isle. It is probable that the headquarters of the Conference will be the Grand Central Hotel, which is situated in the heart of the city, and the meetings will be held at Queen's College, which is not far distant.

The Committee will have no difficulty in finding a suitable district for the whole-day excursion, for a trip to Portrush and on to the Giant's Causeway will find favour with everyone and enable them to see one of the most charming portions of

QUEEN'S COLLEGE BELFAST.

the North of Ireland. The ladies need have few spare hours, for there will be much to interest them, and shopping at the large linen establishments will always help them to fill a spare hour if it should be wet.

The prospects of a pleasant social gathering are very good, and only those members who are acquainted with the heartiness of an Irish welcome can imagine the reception which awaits them; but

THE GIANT'S CAUSEWAY.

most of the pharmacists possess, or reside at a "Medical Hall," so we poorer brethren who possess but a "shop" shall expect to learn a wrinkle or two, so that we may attempt the transformation of our humble places of business into the more aristocratic establishments which possess the higher sounding title.

PARLIAMENTARY NOTES.

The Board of Trade Report, just issued under Section 29 of the Companies (Winding-up) Act, 1890, would afford an appropriate text for a very improving address if one were minded to preach a lay sermon on commercial immorality. It is the sixth of its kind, and treats of the companies wound up either by order of the court or by voluntary liquidations during the year 1896. No better illustration of the facility with which the commercial rook may, with the aid of the Companies Acts, secure an ample supply of pigeons could be found than the array of facts marshalled by Mr. John Smith, the Inspector-General in Companies' Liquidation. That gentleman may be freely absolved from any suspicion of personal bias, for he can have no earthly interest in championing one side more than the other. When, therefore, he impeaches the system he is charged to supervise, it is reasonable to suppose that there is good ground for it. One of the considerations offered for the cogitation of the President of the Board of Trade is that voluntary liquidations are becoming proportionately moro numerous than those brought to the notice and under the control of the Court, because of the increased number of "one-man" companies.

Such Companies naturally do not need such bold advertisement at their obsequies as was found necessary at their birth. Mr. Smith, who does not seem to have much sympathy with the *de mortuis nil nisi bonum* principle when applied to deceased companies, remarks that serious objections exist to the system which permits the silent interment, so to speak, of dishonest—or at any rate doubtful—concerns. In the first place, creditors have the very difficult task of proving fraudulent practices before the interference of the Court can be invoked. How can the creditors know the cause of failure: and if they guess it to be due to irregular conduct on the part of the managing director, who will indemnify them for costs should the guess be a bad one? The result is that the wise creditor thinks twice before risking the expensive expedient of asking the Court to investigate the proceedings of a company which, perhaps, has deliberately swindled him to a considerable amount.

The Logical Corollary of this indisposition of interested persons to apply for official investigation, is to leave the "one man" to play his game without fear of a public exposure. In the case of other companies, also, the system is conducive to the concealment of fraud, for, as Mr. Smith points out, there is nothing to stop dishonest managers from denuding the company of its assets by issuing debentures and mortgages given in anticipation of winding up. To use his own words "it is difficult to conceive a situation involving a greater denial of justice to the parties who may have been defrauded." These are strong words for an official to use concerning the law under which he holds his position, and it may be assumed that they are prompted by a strong sense of the iniquity which has been created by the Companies Acts, and which is allowed to flourish in the ideal environment of their sheltering clauses. But Mr. Smith has played the part of the official Jonah before, yet Nineveh still stands, nor is it likely that any practical effect can be given by the Government to the warnings of its departmental experts, whilst the rules of the House of Commons allow every member with an axe to grind or a log to roll to reduce the opportunity for effective legislation during the session to a feeble minimum.

In This Respect Great Britain is behind some of her Colonies. Sir Courtenay Boyle, in endorsing the remarks of his inspector, points out that Victoria has now amended its law relating to limited companies by an Act largely drawn upon the lines of the English Amendment Bill, which for two sessions has engaged the attention of a Select Committee of the House of Lords. There seems little doubt of the accuracy of the dictum of the Inspector-General in Liquidation when he says of "one-man" companies that "they are capable of entailing a considerable loss on the trading community, which ultimately forms a tax on industrial enterprise," and it follows that the law permitting the unrestrained imposition of such a tax must, apart from holding out a premium for dishonesty, constitute a standing menace to a nation which has, not inaptly, been described as a nation of shopkeepers.

The Ostensible Object of the Companies Acts was to stimulate industrial enterprise, and doubtless they have largely developed the principle of commercial co-operation, but it is now officially shown every year that the Acts are being increasingly used by persons whose object is to secure, without risk, an amount of credit they could never obtain as individuals. Moreover, the evil is increased by the interpretation given by the courts to the statutory provisions relating to the formation of companies, and the only hope of a remedy is in an alteration of the law. Victoria has apparently solved that difficulty and placed fetters on the single-person company. It should no longer be open, therefore, for anyone in this country to maintain that our difficulties in relation to the British "corporate" individual are incapable of solution.

The Report contains some exceedingly interesting examples of the procedure found most effective in defrauding creditors, and the history of such companies as the London and Universal Bank, Limited, is set out in detail. In a list of the eighty-four companies wound up compulsorily one discovers a fair—or perhaps unfair would be the more correct word—proportion which were floated by undischarged bankrupts.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

A special general meeting of this Association will be held at the Rooms, Whimple Street, Plymouth, on Wednesday, November 10, at 7.30 p.m., Mr. James Cocks, President, in the chair, to discuss the following resolution, in addition to other business :—

"Resolved, that it is desirable, in the best interests of pharmacy, that the Council of the Pharmaceutical Society of Great Britain should, without delay, take the necessary steps to introduce a Bill into Parliament, providing—

(1) That pharmaceutical students should, on registration as such, be eligible for election as 'Associates of the Pharmaceutical Society';

(2) That there should be an interval of three years between registration and presentation for the 'Minor' or 'Qualifying' examination;

(3) That registered pharmaceutical students should, on passing the 'Minor' or 'Qualifying' examination, be entitled to assume the title of 'Pharmacist' or 'Pharmaceutical Chemist,' and be eligible for election as 'Members of the Pharmaceutical Society';

(4) That registered pharmacists should, on passing the 'Major' or 'Honours' examination, be eligible for election as 'Fellows of the Pharmaceutical Society.'

"The Plymouth, Devonport, Stonehouse and District Chemists' Association hereby pledges itself to do its utmost locally to support the Council of the Pharmaceutical Society in the endeavour to secure the passing of such a Bill, and commends the matter to the Federation of Pharmaceutical Associations as being worthy of immediate and careful consideration by the constituent Associations."

The objects aimed at in drafting this resolution are the consolidation and strengthening of the Pharmaceutical Society. It is assumed that students would be much more likely to join the Society early in their career were a more satisfactory title offered them, and that the enforcement of the three years' interval between registration as a student and qualification would prove advantageous in rounding off the improvement likely to be effected when the new Bye-laws come into force. As regards the matter of titles, if all chemists and druggists were permitted to style themselves pharmaceutical chemists, the jury service difficulty would be got over without waiting for special legislation; whilst it is clearly obvious that unless some extra inducement is offered to "Major" men, they are likely as a class to diminish in number every year.

It is hoped that the decision arrived at by the meeting may be acquiesced in by other pharmaceutical associations throughout the country.

Sulphonal in Night Sweats.—Combemarle and Deschemaker find that from 15 to 30 grains of sulphonal given every night in cases of phthisis produce excellent results. The night sweats are greatly relieved, and the cough diminished. In very advanced stages of tuberculosis, however, the influence of this drug is not marked.—*Therap. Gaz.*, xxi., 261, after *Revue de Thérap., Méd., Chir.*, Dec., 1896.

EXTRACTS FROM CONSULAR REPORTS.

Some Interesting Facts About Sponges are given in a recent report on the sponge and oyster industries of Southern Italy. Science has declared that a sponge is an animal, and biologists have observed that though a living sponge is fixed and apparently motionless, the holes in its surface are capable of opening and shutting, and from the largest of them, when open, a stream of water issues which is supplied by innumerable smaller holes, generally invisible, except under the microscope. Young sponges swim freely about by means of little waving hairs upon their surface, until they reach an age when they prefer security to independence and monotony to danger. They live on solid food ; the water entering by the small pores passes through a system of branching and fine canals, and is collected again by a similar system into the outflowing current from the large holes. At the junction between the two systems of tubes are the most vital organs of the sponge, little swollen cavities of microscopic size walled in with tiny living particles, each bearing a vibrating hair with which it lashes on the current, and a transparent filmy skirt with which it catches any food that may pass. All this labyrinth of canals and cavities is living, soft flesh, set through and through with little flinty needles or thorns to prevent it falling a prey to the hungry creatures that exist in the water. The sponge of commerce during life shows only the largest of its numerous holes ; over all the rest the dark slate-coloured flesh forms a continuous film.

In the Ordinary Course of Sponge-Fishing, the fisherman, having once secured his sponge, proceeds to prepare it for the market. The animal rapidly decomposes if exposed to the air, and therefore the body has to be rapidly beaten or washed in running water till the fleshy substances are thoroughly removed. If decomposition has advanced too far, no process is known by which the skeleton can be purified and rendered fit for use. The sponges, when cleaned, must be thoroughly dry before they are packed, otherwise they will develop orange-coloured spots, which the Greek fishermen call "sponge-cholera."

Experiments in Sponge-Farming have been made, and its advocates state that if a living sponge is cut into pieces with a sharp instrument, and the pieces fastened to canes immersed in clean sea water, the fragments will grow to marketable size in five years, when they can be fished without expense or trouble. The great practical obstacle is, however, in establishing ownership over a suitable spot, apart from the initial difficulty of finding such a spot.

The Sponge Fisheries of Castellamare di Stabia yielded very unsatisfactory results during the season of 1896. Fifty-five boats only were employed as against sixty boats the previous year, the most fortunate boat made a net profit of about £80, but many did not cover their expenses.

Medicines Imported at Rome from Great Britain during 1896 amounted to 48 cwt., as compared with an importation of 94 cwt. in 1895. The total import also shows a large decrease, being 124 cwt. in the former and 78 cwt. in the latter year.

Gum Arabic, or "samgh," is to be found in great quantities in the part of Arabia round about Jeddah, and Consul Devey is of opinion that a considerable trade might be done if collection on a large scale should be attempted. The red quality exists to the east of Medina and the superior white south of Mecca. The production of honey and beeswax, he thinks, is an industry also susceptible of considerable improvement in the neighbourhood.

The Cultivation of the Indiarubber Tree (*Manihot glaziovii*) is making considerable progress in the German colony of Togoland (Africa). The trees are raised from seeds only, and grow with astonishing rapidity, bearing seeds in ten months after sowing, which when sown in their turn, come up in from three to four weeks. In the mountains a considerable amount of indiarubber is obtained from the Landolphia, another source being the *Kicksia africana* which grows in the neighbourhood of Nkonya, from either cuttings or seeds. Efforts are being made by Dr. Woeckel, a naturalist, to instruct the natives in the art of cultivating rubber-yielding plants, and it is hoped as a result that the industry will soon make good progress.

NEW REMEDIES.

Commelina Tuberosa as a Hæmostatic.—This plant, known in Mexico as "Yerba del Pollo," is largely prescribed as a remedy for internal hæmorrhage. It is given in the form of an aqueous extract, either as pills or dissolved in water, in doses of 1 to 2 grains of the extract. It is stated to be a very effective remedy. —*Pharm. Post*, xxx., 389.

Strontium Lacticum.—Bronowski recommends for advanced cases of Bright's disease doses of 1·0 or 6·0 grammes per diem of the preparation in aqueous solution. His treatment excludes the use of other medicines, and no baths are prescribed. On the second day, the action of the remedy on the urine is said to be manifest, and a considerable reduction of the daily secretion of albumin takes place. Injected directly into the blood, strontium lactate at first retards the pulse rate, but larger doses accelerate it; there is no action on the kidney epithelium.—*Pharm. Post*, xxx., 293.

Diachylon Powder.—This powder, which has a very extensive sale in Germany and Austria, is prepared as follows :—Lead acetate, 2, dissolved in distilled water, 10 ; castile soap, 3, also dissolved in distilled water, 15. The two solutions are mixed, and each part of the precipitate of lead oleate formed is triturated with starch, 10. To the mixture 3 per cent. of boric acid is added. Another formula for a similar preparation is : Lead plaster, 15 ; yellow wax, 5 ; ether, 50. Dissolve and add starch powder and French chalk, of each, 90 ; boric acid, 3 ; and bergamot sufficient to perfume.—*L'union Pharm.*, xxxviii., 298, after *Zeit. Oesterr. f. Pharm.*

Quinine Sulphate as an Oxytocic.—Schwab finds quinine as an oxytocic of great value in ordinary uterine inertia and in all cases where the uterine contractions are, or will be, feeble. A number of cases under his notice in which quinine was administered produced the best results. The question has arisen as to the wisdom of giving quinine in cases of pregnancy. Schwab, however, considers it can be given in moderate doses with perfect safety.—*Therap. Gaz.*, xxi., 248, after *Journ. de Med. de Paris*, Nov. 29, 9896.

Action of Iodine on Casein, Iodocasein.—In studying the action of iodine on albuminous bodies, Lepinois finds that iodine will combine with milk-casein in definite proportions, and suggests that the body so formed, analogous to thyroidin, may be of service in medicine. It is obtained by adding a solution of iodine in potassium iodide to milk, until a slight excess of iodine is present after twenty-four hours' contact, as indicated by the coloration imparted to chloroform. The yellowish-brown coagulum is thus obtained, which is washed by decantation, suspended in water, treated with a very slight excess of caustic soda, and thrown upon a previously moistened filter. The filtrate is rendered faintly acid with acetic acid, when the casein is re-precipitated. To obtain the body absolutely pure, this process of solution in alkali and re-precipitation with acid must be repeated five or six times. The precipitate is then washed first with water, then with alcohol, and finally with ether. The substance thus obtained is pure, and leaves practically no ash on incineration. The definite combination of iodine with the casein is proved by the determination of the iodine and nitrogen in the five precipitations from soda. These gave remarkably concordant figures, the last three containing a mean of 22·1 of iodine, and 14·1 of nitrogen. Therapeutic experiments with this body are to be made, the results of which will be subsequently published.—*Journ. de Pharm.* [6], vi., 151.

Arsenite of Copper in Gastro-Intestinal Catarrh.—Krüger finds this preparation a marvellous relief to young children in cases of acute infectious gastro-intestinal catarrh. A 1 in 100,000 solution of arsenite of copper was given in teaspoonful doses every ten or fifteen minutes, followed by a teaspoonful of iced milk every half hour, to a child of nine months old, the vomiting at once ceased and the diarrhœa was soon checked. It was prescribed later in powder form with sugar of milk, 1/500th of a grain every hour. In most cases 1/60th of a grain in twenty-four hours was sufficient to relieve the dangerous symptoms, and it was never necessary to give more than three times this amount during the course of the disease.—*Pediatrics*, iii., 427, after *Allgem Medic. Central-Ztg.*

NEWS IN BRIEF.

The Annual Dinner of the Westminster College of Chemistry and Pharmacy will take place on Friday, December 3, at the Holborn Restaurant, when the silver medals for the session will be presented, Mr. T. Skewes-Cox, M.P., in the chair.

Mr. C. J. Wain, pharmaceutical chemist, is again returned to the Council of the Borough of Newcastle-under-Lyme. Three years ago, Mr. Wain was placed at the head of the poll by a large majority, this year there was no opposition.

Western Chemists' Association of London.—At a committee meeting, held on October 27, 1897, the following officers were elected for the ensuing year, viz. ;—President, Mr. J. H. Mathews; Vice-President, Mr. A. J. Phillips; Hon. Treasurer, Mr. J. H. Mathews; Hon. Secretaries, Mr. Herbert Cracknell, 17, Craven Road, W., Mr. J. F. Harrington, 45, High Street, Kensington, W.

Southampton Pharmaceutical Association.—On Tuesday evening, November 2, a meeting of Southampton chemists, convened by Mr. G. H. Bishop, was held at Messrs. Randall & Son's, 146, High Street, to discuss the advisability of forming a chemists' association. Mr. Hughes was voted to the chair. After a general discussion by all present, it was proposed, seconded, and carried unanimously—

"That it is advisable in the interest of the local craft that an association be formed for Southampton and district."

Mr. G. H. Bishop was elected Hon. Sec., and a sub-committee formed to draft rules, etc., to be brought forward at the next meeting. Votes of thanks to Messrs. Randall & Son for the use of the room and to the Chairman for presiding brought the meeting to a close.

Bradford and District Chemists' Association.—A meeting of the above Association took place on Tuesday, November 2, at the Great Northern Victoria Hotel, to hear a paper on "Shoptalk," by Messrs. F. A. Wilcock, and J. A. Mitchell, two of the members of the Association. The speakers dealt with several important suggestions, some of which will undoubtedly be acted upon in the future. The paper proved highly interesting and instructive, and was listened to with great attention. A discussion followed, and was taken part in by Messrs. Silson, Pickard, Waddington, Newbould, and Dunn. Messrs. Wilcock and Mitchell replied.

Messrs. Evans, Sons & Co., send a revised and enlarged price-list of their coated tasteless pills, etc., and direct attention to the fact that since the issue of their special pill list in May last, they have put up additional and improved machinery. In consequence, the prices have been carefully revised, and the firm is now prepared to give special quotations to buyers in quantity. At the end of the list quotations are given for flexible gelatin capsules, medicated pessaries, suppositories and bougies, also quotations for compressed pellets.

Mr. A. H. Cupit has taken over the business lately carried on by Mr. E. Histed, at Upper St. James Street, Brighton.

A Meeting of Public Dispensers will be held at the Trinity Church schools, 252b, Gray's Inn Road, Holborn, at 7.30 p.m. on Tuesday next, the 9th, to form an association to protect and further the interests of dispensers, and generally to improve their social position. All dispensers are urgently invited to attend.

Mr. Justice Lindley who has just been appointed to the high legal position of Master of the Rolls, is a son of the late eminent botanist, Professor Lindley, whose books are even nowadays familiar to pharmaceutical students.

A Bottle Containing Iodine left on top of a chest of drawers attracted the attention of a three-year-old boy at Luton, and he drank some of the contents, with fatal results. The jury returned a verdict of "Accidental poisoning," and passed a vote of sympathy with the parents of the child, but no comment appears to have been made with respect to the undesirability of leaving the bottle in the place where the boy found it.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Fripp and Harwood, Dental Surgeons, 20 and 22, Station Road, Willesden, and 97, Sloane Street, Chelsea.

John T. Godwin, C. O. Maslen, and Alfred Watts (trading as J. L. Godwin & Co.), Grocers, Provision Merchants, and Patent Medicine Vendors, 14, South Street, Worthing. Debts will be received and paid by John T. Godwin and Charles O. Maslen.

Ambrose Walton and Edward Sheldon (trading as A. Walton & Co.), Chemical Manufacturers, Milnsbridge, near Huddersfield, and at 14, Ridgefield, John Dalton Street, Manchester. Debts will be received and paid by Edward Sheldon, at Milnsbridge, aforesaid.

James Haigh and Ernest L. Jones, Medical Practitioners, Cambridge. Debts will be received and paid by Henry John Whitehead and Son, Solicitors, 2, Post Office Terrace, Cambridge.

Thomas J. P. Hartigan and Charles Wright Edwards, Physicians and Surgeons, East Grinstead.

George C. Harding and W. S. Jones (trading as the College Park Drug Stores), Chemists and Druggists, 3, Victor Parade, Harlesden, N.W.

Edward A. Hedley and Armorer Hedley (trading as Thomas Hedley and Co.), Soap Manufacturers, Newcastle-on-Tyne. Debts will be received and paid by Armorer Hedley, who will continue the business under the old style.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Charles Knight, Photographer, 108, High Street, Newport, Isle of Wight.

LIST OF LOCAL SECRETARIES OF THE PHARMACEUTICAL SOCIETY.*

District.	Local Secretary.
Aberdeen	Strachan, Alexander.
Aberystwith	Wynne, Edward P.
Abingdon	Smith, William F.
Altrincham	Burgess, A. H.
Arbroath	Jack, James.
Ashton-under-Lyne	Bostock, John W.
Aylesbury	Palmer, Edwin T.
Ayr	McGregor, Adam.
Banbury	Bartlett, Hubert.
Banff	Alexander, William.
Bangor	Jones, Owen.
Barnet	Young, R. Fisher.
Barnsley	Eastwood, Lewis.
Barnstaple	Goss, Samuel.
Barrow-in Furness	Chapman, Leonard P.
Bath	Appleby, Edward J.
Bedford	Taylor, James B.
Belper	Burkinshaw, Wm. T.
Berwick	Lyle, William.
Birmingham	Thompson, Charles.
Bishop Auckland	Dobinson, Thomas.
Blackburn	Critchley, Thomas.
Blackpool	Laurie, John.
Blandford	Groves, Richard H.
Bodmin	Cardell, Richard T.
Bolton	Knott, Percy.
Bootle	Wyatt, Harold, junr.
Boston	Grimble, Albert.
Bournemouth	Bilson, Frederic E.
Bradford (Yorkshire)	Waddington, Alfred H.
Brecon	Meredith, John.
Bridgnorth	Deighton, Thomas M.
Bridgwater	Basker, John Anthony.
Bridlington	Purvis, John B.
Brighton	Gwatkin, James Ross.
Bristol	Keen, Benjamin.
Burnley	Cowgill, Bryan H.
Burslem	Oldham, Wm.
Bury St. Edmunds	Clark, Owen A.
Buxton	Wright, Robert.
Camborne	Tonking, Charles H.
Cambridge	Deck, Arthur.
Canterbury	Bing, Edwin.
Cardiff	Munday, John.
Carlisle	Hallaway, John.
Carmarthen	Lloyd, Walter.
Carnarvon	Jones, John.
Carshalton	Carter, Francis.
Castle Douglas	Veitch. Andrew.
Chelmsford	Metcalfe, Wilson.
Cheltenham	Barron, William.
Chester	Shepheard, Wm. F. J.
Chesterfield	Barfoot, John R. D.
Chichester	Long, William Elliott.
Chippenham	Coles, John Coles.
Chorley	Hill, William.
Cockermouth	Scott, Walter S.
Colchester	Weddell, Arthur.
Coldstream	Elliot, William M.
Crewe	Dale, J. A.
Croydon	Clarke, Josiah.
Dalkeith	Storie, Robert.
Darlington	Robinson, James.
Deal	Green, John.
Derby	Cope, John A.
Devonport	Rendle, Richard H.
Doncaster	Howorth, James.
Douglas (Isle of Man)	Radcliffe, John C.

* Local Secretaries are appointed in all towns in Great Britain (except London and Edinburgh) which return a Member or Members to Parliament, and in such other towns as contain not less than three Members of the Society or Associates in Business.

District.	Local Secretary.
Dover	Bottle, Alexander.
Droitwich	Harris, Stephen.
Dudley	Gare, Charles Hazard.
Dumfries	Allan, William.
Dundee	Kerr, Charles.
Dunfermline	Gilmour, D.
Eastbourne	Crook, Herbert.
Eccles	Howie, Wm. Lamond.
Egremont	Ireland, E. J.
Elgin	Robertson, Alex.
Enfield	Goldby, Frank.
Evesham	Elliott, Henry, A.
Exeter	Lake, John Hinton.
Falkirk	Murdoch, David.
Finchley	Freeman, Fredk. Wm.
Folkestone	Knight, John.
Forfar	Fowler, George R.
Frome	Green, Edmund C. F.
Galashiels	Ross, William.
Glasgow	Currie, William L.
Gloucester	Minchin, William.
Goole	Timm, Edmund.
Grantham	Whysall, William.
Gravesend	Clarke, R. Feaver.
Great Grimsby	Cook, Robert.
Great Yarmouth	Pole, Wm. Sheppard.
Greenock	McNaught, Archibald.
Guernsey	Nickolls, John B.
Guildford	Long, Alexander J. T.
Haddington	Watt, James.
Halifax	Seely, Herbert W.
Harrogate	Davis, R. Hayton.
Harrow	Gunn, Samuel John.
Hartlepool	Horsley, John.
Harwich	Bevan, Charles F.
Hastings and St. Leonards	Tharle, Charles A.
Hawick	Maben, Thomas.
Helensburgh	Harvie, George.
Hendon	Goldfinch, George.
Hertford	Durrant, G. R.
Hexham	Gibson, John Pattison.
Heywood	Hazlitt, Frank.
Hitchin	Ransom, Francis.
Horncastle	Kemp, Herbert W.
Hornsea	Morrow, Charles.
Huddersfield	King, William.
Hull	Bell, Charles Bains.
Huntly	Chalmers, George.
Hyde	Wild, Joseph.
Hythe	Lemmon, Robert Alce.
Ilkley	Worfolk, George W.
Inverness	Allan, Alex.
Ipswich	Anness, Samuel Richd.
Jersey	Cole, George.
Keith	Pirie, James.
Kendal	Severs, Joseph.
Kidderminster	Smith, Maurice.
Kilmarnock	Borland, John.
Kingston-on-Thames	Walmsley, Samuel.
Kinross	Dow, William.
Kintore	Keith, Alfred G.
Kirkcaldy	Storrar, David.
Kirkwall (Orkney)	Stewart, Duncan.
Knaresborough	Lawrence, William P.
Knutsford	Silvester, Henry T.
Lancaster	Vince, James.
Leamington	Barrett, Josephus T.
Leeds	Reynolds, Richard.
Leicester	Clark, Walter Beales.
Leigh (Lancs.)	Bennett, John Wm.
Leith	Garvie, Alexander.
Leominster	Sandiland, R. B., Junr.
Lewes	Higham, Thomas.
Leytonstone	Bennett, Cornelius.
Lichfield	Perkins, John Jaquest.
Lincoln	Birkbeck, J. Thomas.
Liverpool	Smith, John.
Louth	Dennis, F. Woodrow.
Ludlow	Woodhouse, George.
Luton	Duberley, George S.
Maidenhead	Walton, Ralph.
Maidstone	Corfe, A. Fred.
Maldon	Crick, George E.
Malton	Buckle, James.
Malvern	Mander, Alfred.
Manchester, etc.	Kemp, Harry.
Mansfield	Patterson, Douglas J.
March	Davies, Peter H., jun.
Margate	Harvey, Wm. Sutton.
Market Harborough	Maynard, Henry R.
Melton Mowbray	Wing, Geo. N.
Merthyr Tydvil	Harris, Evan W.
Middlesborough	Robson, J. Crosby.
Montrose	Davidson, Alexander.
Morecambe	Fell, John James.
Morpeth	Schofield, Fredk. E.
Newark	Cherrington, Geo. W.
Newcastle-on-Tyne	Clague, Thomas M.
Newcastle, Staffs	Poole, Weston.
Newport (Mon.)	Garrett, Thomas P.
Newton Abbot	Bibbings, John Henry.
Newtown	Owen, Edward.
Northampton	Bingley, John.
Northwich	Humphreys, Griffith.
Norwich	Sutton, Francis.
Norwood	Birch, Henry C.
Nottingham	Bolton, Charles A.
Nuneaton	Iliffe, George.
Oakham	Wellington, James.
Oldham	Bates, Henry.
Oswestry	Evans, John.
Oxford	Prior, George Thomas.
Paisley	MacCowan, R. Thos.
Peebles	Lindsay, Robert.
Penrith	Cowper, Joseph.
Penzance	Symons, Netherton H.
Perth	Donald, David.
Peterborough	Heanley, Marshall.
Peterhead	Tocher, James F.
Petersfield	Edgeler, William B.
Plymouth	Hunt, Freeman W.
Pontypridd	Arnott, Daniel.
Portobello	Stenhouse, Robert.
Portsmouth, etc.	Brewis, Thomas.
Ramsgate	Baily, Edward.
Reading	Bradley, Charles.
Reigate	Woodward, Moses M.
Rhyl	Lawrence, G. Richard.
Richmond (Surrey)	Parrott, John.
Ripon	Senior, William F.
Rochdale	Highley, William.
Rothesay	Duncan, William.
Ryde	Pollard, Henry Hindes.
Rye	Waters, Wm. Allen.
Saffron Walden	Gilling, John.
St. Albans	Ekins, Arthur, E.
St. Andrews	Kermath, William R.
St. Austell	Binks, Burcham.
St. Helens	Wallbridge, J. George.
Salisbury	Atkins, Wm. Ralph.
Scarborough	Whitfield, George.
Sevenoaks	Pain, Edwin.
Sheffield	Ward, William.
Shrewsbury	Cross, William Gowen.
Southampton	Dawson, Oliver R.
Southport	Righton, James.
South Shields	Noble, John.
Spalding	Bell, E. Wightman.
Stafford	Averill, John.
Stirling	Shairp, William.
Stockport	Orton, Wm. Billing.
Stockton-on-Tees	Brayshay, Thomas.
Stoke-on-Trent	Adams, Frank.
Stone, Staffs	Jacks, Frederick.
Stonehaven	Wood, A. Lyon.
Stonehouse (Devon)	Maitland, Frank.
Stourbridge	Selleck, William R.
Stranraer	Ker, Richard.
Stratford-on-Avon	Hawkes, Richard.
Streatham	Shacklock, J. H.
Sunderland	Ranken, Charles.
Swaffham	Bell, Frederick R.
Swansea	Grose, Nicholas M.
Tain	Fowler, Donald.
Tavistock	Doble, Richard D.
Teddington	Stacey, Peter.
Tiverton	Havill, Paul W.
Torquay	Shapley, Charles.
Totnes	Morse, Charles H. S.
Tottenham	Tanner, Alfred E.
Truro	Carter, Benjamin.
Tunbridge Wells	Hobbs, Alfred E.
Twickenham	Peake, Henry F.
Ventnor	Littlefield, Wm. H.
Wakefield	Chaplin, John Henry.
Walthamstow	Saunders, Arthur.
Warrington	Greenough, Hugh F.
Warwick	Pratt, Henry.
Waterloo	Pearson, William.
Watford	Chater, Edw. Mitchell.
Wednesbury	Gittoes, S. James.
West Bromwich	Bourne, Chas. M. K.
Weymouth	Gregory, William.
Whitehaven	Kitchin, Archibald.
Wick	Banks, John.
Wigan	Phillips, Jonathan.
Wimbledon	Spencer, Wm George.
Winchester	Chaston, Alfred Edw.
Windsor and Eton	Oldham, William.
Wolverhampton	Gibson, Frederic John.
Woodbridge	Betts, Alick Stephen.
Worcester	George, Henry.
Worthing	Cortis, A. Brownhill.
Wrexham	Caldecott, Clement G.
Yeovil	Wright, Alfred.
York	Sowray, Joseph.

GENERAL INDEX

TO THE

PHARMACEUTICAL JOURNAL.

A general index for the seventeen years ending June 29, 1895—including volumes VIII. to XXV. of the 3rd series—is in course of preparation, and will be printed by subscription if a sufficient number of orders are received. The subscription price is fixed at one guinea, and—if the work is to be proceeded with—orders should be addressed without delay to the Editorial Department, "Pharmaceutical Journal," 17, Bloomsbury Square, London, W.C.

Special Issue of the Journal.

The annual Colonial number of the *Pharmaceutical Journal* will be published on November 27. Those of our readers who have any announcements to make to the wholesale and retail trade throughout Australia, New Zealand, Tasmania, China, Japan, India, Ceylon, Straits Settlements, South Africa, and the West Indies will find this a splendid opportunity. The names and addresses of the Colonial chemists have been taken from the most recent sources of information, and great care will be exercised in order to make the distribution as comprehensive as possible.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

NOVEMBER 4, 1897.

Business has been rather quiet during past week, disappointment having been freely expressed that there was so little doing. Quinine is again firmer, and is expected to be dearer, while there are also rumours of a possible move in Cocaine in the immediate future. Citric Acid is weaker. Tartaric dull, and Cream of Tartar again lower. Iodine and Iodides, Quicksilver, and Mercurials unchanged. Atropia firm. Lithia steady at unaltered value. Opium firm. Morphia weak and lower. Codeia in good demand at firm prices. Menthol dearer. Peppermint Oil dull. Borax and Acid Boracic dull. Cascara Sagrada firm, and expected to be higher. Sulphate of Ammonia very firm and dearer in price. Phenacetin and Sulphonal quiet. Cod-liver Oil rather firmer, with higher prices looked for ere long. Glycerin quiet. Acid Carbolic firm and in good demand. Senna continues in demand; stock on 31st ult. was smaller than has been the case at this time of the year for some years past. The following are particulars of prices actually ruling for articles of chief interest:—

ACETANILID.—Market is quiet at about previous prices, say 1s. 3d. to 1s. 4d. per lb., according to quantity.

ACID BORACIC—Unchanged at 24s. per cwt. for *crystals*, and 26s. per cwt. for *powder*.

ACID CARBOLIC.—In good demand at 6¾d. per lb. for 35-36° ice crystal in quantity and bulk packing; other qualities in proportion. *Crude* 60 per cent., 2s. 1d.; 75 per cent. 2s. 6d. per gal. *Liquid*: 95 per cent., pale colour, 1s. 2d. per gal. in 40 gallon casks.

ACID CITRIC.—*English* is lower at 1s. 1¼d. to 1s. 1½d. per lb.

ACID OXALIC—Steady at 3½d. to 3¾d. per lb. according to package.

ACID TARTARIC—Is dull of sale. *English* still quoted 1s. 1½d. per lb. on the spot, and *foreign* 12¾d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is a very firm and dearer market. Grey prompt 24 per cent., London, £8 7s. 6d.; Hull prompt £8 6s. 3d.; Leith same price. *Sal ammoniac*: Unchanged at 33s. 6d. down to 31s. 6d. for sublimed firsts and seconds; crushed for batteries 35s. and 33s.; powder 36s. and 34s. per cwt. *Muriate*: 98 per cent., free from metals, 27s. per cwt. *Bromide*: Steady at 2s. 2d. per lb. *Iodide*: Unchanged at 14s. 6d. per lb. *Carbonate*: 3d. to 3½d. per lb., according to package.

ARRAROBA.—Nothing is yet known as to the quality of the parcel just arrived, and importers of really good quality are firm at 3s. per lb.

ATROPINE—Firm at previous figures, viz., 12s. 6d. for the *Sulphate*, and 2s. 6d. per oz. more for the *pure*. Good Belladonna Root remaining as scarce and dear as hitherto.

BISMUTH—Unchanged at 5s. per lb. for the *metal*, and 4s. 10d. for the *subnitrate* in 5-cwt. lots.

BLEACHING POWDER.—Unchanged at £7 10s. to £7 15s. per ton landed.

BORAX—Is quoted lower, and even at the reduction business is difficult; *crystals* can now be had at 14s. and *powder* at 14s. 6d. per cwt.

CASCARA SAGRADA—Is very firm, and from all appearances the article will be decidedly dearer in the near future; on the spot the price is 18s. 6d. per cwt., whilst to arrive some lots can be got at 17s. 6d. per cwt. *c.i.f.*

CINCHONIDINE SULPHAS—Is again dearer. English makers now ask 9d. per oz. in tins and 10d. per oz. in vials.

CINCHONINE—Is also dearer. *Sulphas* being quoted 5½d. per oz. in bulk and 6½d. in vials. *Muriate*: 6d. in bulk and 7d. per oz. in vials.

CLOVES.—In auction of 314 bales of *Zanzibar*, 300 bales sold, fair at 2¾d. *Penang* bought in at 6¾d. to 7½d., except 4 cases good picked, which sold at 7½d. Privately *Zanzibar* are in renewed demand at an advance on last week's prices. Sales of January to March delivery at 2 27/32d. to 2⅞d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: 2s. 4d. per gallon. *Benzole*: 50 per cent. 2s. 2d.; 90 per cent. 2s. 1d. *Crude Naphtha* 1s., *solvent naphtha*, 95 per cent. at 160° C., 1s. 11d. per gallon.

COCAINE.—The market for this article appears to be decidedly firmer, and it is stated that makers of brands most in favour will no longer accept 8s. 6d. per oz. for 100-oz. lots. In view of the very low figure ruling, buyers would probably do well to secure a fair supply before price further advances, and the more so in that looking at actual value of the raw material the probability, not to say the possibilty, of price further receding would appear at least somewhat remote.

CODEIA.—Market is firm at 11s. 3d. per oz. for quantity, it being stated that in view of the fact of the near approach of season of year when the article is chiefly in demand, any alteration in price will probably be in an upward direction.

COD-LIVER OIL.—A fair business is being done, and makers are becoming more pressing for higher rates. For best brands of non-freezing Norwegian oil 75s. per barrel is now demanded, with small sales thereat, but there are some brands which can be obtained below this figure.

CREAM OF TARTAR.—Quotations are again lower owing to absence of demand, and first white French *crystals* can be obtained at 75s. per cwt. with *powder* 2s. to 2s. 6d. per cwt. more.

GINGER.—*Cochin*: Continues dull, of rough kinds 510 bags sold, largely without reserve, common small wormy washed 20s., fair medium 27s. 6d.; 40 cases Native limed sold, small part cut 29s. to 30s., medium and small part cut 32s. 20 bags limed *Japan* sold at 14s. *Jamacia* all bought in, low middling to middling bright washed 74s. to 82s.

GLYCERIN—Remains quiet, not having so far benefited by the anticipated better demand which naturally sets in with the advent of colder weather. Good brands are offering at 55s. to 60s. per cwt., according to quantity and packing, for best white double-distilled chemically pure 1260 quality; there are even offers below these prices, but not of very reliable makes.

IODINE—Steady at 7½d. per oz., *Iodides* remaining in good demand at unaltered prices, say 9s. 9d. for *Pot. Iodide* in 2-cwt. lots, and other preparations in proportion.

KOLA NUTS.—3 cases West Indian sold in the spice sales at 6d. to 7d. per lb.

LIME JUICE.—50 packages Dominica have been sold at 8d. per gallon.

MENTHOL—Is firmer at 7s. 9d. to 8s., according to quantity, for good dry white crystals, the price to arrive is also quoted dearer at 8s. per lb. *c.i.f.*

MERCURIALS.—Makers have so far made no alteration in their prices, which remain at 2s. 2d. for *corrosive sublimate* and 2s. 6d. for *calomel* in 10-cwt. lots. It is, however, considered in some quarters that a further rise in price of *quicksilver* is not improbable, which might very possibly mean an advance in the price of *mercurials*.

MORPHIA—Is weak at about 4s. 3d. per oz. for the *hydrochlorate* salt in powder, while for large contracts it is possible that makers would accept even less than this figure.

NITRATE OF SILVER—Is somewhat unsettled, in face of the fluctuations in value of the *metal*, price for *crystals* being 1s. 6d. to 1s. 6½d. per oz., according to quantity. The fact of silver being offered cheaper for delivery next year than price actually ruling for spot would tend to the belief that we shall also see a lower price for the *nitrate* later on.

NITRATE OF SODA.—Steady at £7 10s. to £8 per ton, according to quality.

OILS (ESSENTIAL).—*Cassia* is rather more inquired for, and sales of 60 per cent. have been made at 5s. 3d. per lb., while for arrival 70 to 75 per cent. has been done at 5s. *c.i.f.* *Citronelle* in fair demand, sales on the spot having been made at 1s. 4½d. per lb. both for drums and tins. *Pimento* dearer at 10s. per lb. for *English*. *Peppermint* quiet at 5s. 10½d. to 6s. per lb. for *H.G.H. Japan*, 40 per cent., 4s. 9d.; ditto, dementholised, 3s. 3d. per lb. Wayne County, 3s. 9d. per lb. nett for quantity.

OILS (FIXED) AND SPIRITS.—*Linseed*: The market is dull and easier, especially for forward; on the spot, pipes, £14 10s.; barrels, £15. *Rape* remains unchanged at last quotations of £26 5s. for ordinary brown on the spot in barrels; *refined*, £27 15s. *Cotton* quiet, but without actual alteration; *refined*, on the spot, £14 10s. to £15 10s., according to make. *Olive*: *Spanish*, £32; *Levant*, £31 10s. to £33. *Cocoanut*: *Ceylon*, on the spot, £22; October to December, £21, *c.i.f.* Cochin, spot nominal, near at hand, £28 10s. *c.i.f.* *Palm*: Lagos on the spot unchanged

at £21 15s. *Turpentine*: Again lower and very dull at the reduction; American on the spot, 23s.; December, 21s. 1½d. per cwt. *Petroleum oil*: Quiet and unchanged at 4¼d. per gallon for Russian, and 4½d. for American; waterwhite, 5⅝d. *Petroleum spirit*: American, 6d. per gallon; deodorised, 6¼d. per gallon.

Opium—Is firm at unchanged prices, a good business having been done in *soft shipping* kinds up to 11s 9d. per lb. *Persian*: Quiet at about late rates.

Phenacetin—Is steady at unaltered prices, say 4s. to 4s. 3d. per lb., according to quantity.

Potash Compounds.—*Chlorate* is dull, but unchanged at 3⅞d. per lb. on the spot. *Prussiate* quiet at 5½d. to 6d. per lb., according to make. *Bichromate* steady at 4⅝d. per lb. *Iodide*: A good demand at 9s. 9d. to 10s. 3d. per lb. *Bromide* unchanged at 1s. 10d. per lb., quantity less. *Bicarbonate* unchanged at 30s. per cwt. for *powder*. *Permanganate* is rather lower at 67s. 6d. per cwt. for small *crystals*, and 72s. 6d. for large. *Oxalate* steady at 4¼d. to 5d. per lb.

Quicksilver.—Importers are strong at £7 per bottle, whilst 1s. less would be taken by second-hand holders.

Quince Seed.—Cape seed is selling privately at 1s. per lb.

Quinidine Sulphas—Is dearer at 1s. per oz. in bulk and 1s. 2d. per oz. in vials.

Quinine.—The market has assumed a decidedly firm tone during past few days, and prices are again tending upwards. 1s. 3d. per oz. has been freely paid for best brands in quantity from second hand, and a further advance in value is confidently anticipated. The supplies of bark show a very tangible reduction, and it is believed that the results of bark sales held to-day in Amsterdam, which had not become known at the time of going to press, will show an active demand at enhanced prices. Many people think that while 1s. 6d. per oz. for quinine is only a question of the near future, we may ere long see value again nearer 2s. per oz. than it has been for a long time past. German makers' price is still nominally 1s. 2d., but they state that they are not selling at this or, in fact, at any figure.

Saffron.—The first arrivals of the new crop may be expected in the course of the next week or two, and somewhat lower prices may then be expected to rule. There appears to be very little old crop offering, quotations of genuine Valencia range from 37s. to 42s. per lb.

Sal Prunella—Is lower, *balls* being quoted 40s. per cwt., *small balls* 70s. per cwt.

Senna.—There is a fair private demand for *Tinnevelly*, but there is very little to be had. Stocks are at present lower than they have been for some years past at this period of the season. The "Britannia" s.s. due here this week brings 260 bales leaves, and 24 bales pods only.

Shellac.—The supplies at the auctions on Tuesday were on a larger scale than for some little time, but less than originally advertised. A good demand prevailed throughout, and about two-thirds found buyers at irregular but on the whole slightly dearer rates, fair *TN* being now fully 63s. per cwt. A total of 1065 cases offered, and 732 cases sold. *Fine Orange*: Of 98 cases 45 sold, *G* in double-triangle fair of the mark at 80s., with one lot at 81s. *Second Orange*: Of 837 cases 648 cases sold, partly without reserve, good bright flat free at 64s. to 65s.; middling to fair at 61s. to 63s., ordinary red flat at 58s. to 60s.; more or less cakey and blocky, good bright at 62s. to 63s., fair at 58s. to 59s. *Garnet*: 10 cases offered and sold without reserve, *JB*, *G* hard block at 51s. *Button*: Of 120 cases 29 sold without reserve, pure stamped at 67s. to 80s., according to quality, palish hard block at 62s., weak glassy seconds at 56s. to 58s., cakey dark at 43s., very common ditto at 33s. to 35s. For arrival 200 cases *TN Orange* have been sold, October to December steamer at 62s. per cwt. *c.i.f.* being rather firmer. Calcutta market firm and dearer. For delivery the market closes, buyers of *TN* November delivery at 64s. 6d., and December at 65s. per cwt.

Soda Compounds.—*Crystals* unchanged and firm at 52s. 6d. per ton ex ship terms. *Bicarbonate* rather easier at £7 10s. per ton for the 99 per cent, but steady for the free-from-monocarbonate quality at 18s. per cwt. *Hyposulphite* quiet, and prices nominal, 5s. 9d. to 6s. per cwt. *Bromide* firm at 2s. 2d. per lb. *Iodide* unchanged at 11s. 7d. per lb. *Nitrate*: Ordinary on the spot, £7 10s.: refined, £8 per ton.

Spices (Various).—*Black Pepper*: Penang bought in at 3¾d. to 3½d.; 31 bags small Lampong sold at 3⅜d.; Singapore bought in at 3¾d.; fine Wynaad bought in at 4⅛d. *White Pepper*: Penang bought in at 5⅞d.; 25 bags Siam sold at 6½d., the greater part being bought in at 6⅝d. *Long Pepper*: a few bags sold at 24s. *Chillies*: Zanzibar bought in at 37s. 6d. to 41s.; a few cases very fine bright red Japan sold at 55s. *Capsicums*: Bombay bought in at 25s. and Natal at 60s. to 75s. *Cassia Lignea*: 20 cases old sold at 47s., broken bought in at 23s. to 33s. *Mace*: 6 cases Penang sold, broken pickings, 1s. 4d.; middling, partly wormy, 1s. 6½d.; 11 packages West India sold at 1s. 3d. to 1s. 8d. *Nutmegs* flat. *Cinnamon chips* bought in at 3d. to 3¼d. *Pimento*: 80 bags sold without reserve at 3½d., the bulk being bought in at 3⅝d. to 3⅞d.

Sulphate of Copper.—On the spot £16 10s. to £17 per ton, according to brand.

Sulphonal.—The two principal makers have so far made no alteration in their prices, which remain nominally 7s. 3d. per lb. It is positively stated, however, that this figure not only shows the manufacturer no profit, but actually leaves a loss, and the natural assumption would therefore be that moderate purchases should be quite safe.

MONTHLY STATEMENT OF DRUGS, ETC., WAREHOUSED IN LONDON.

November 1, 1897.

		October.		Stocks, Oct. 30.	
		Arrivals.	Deliveries.	1897.	1896.
Aloes (all kinds)	packages	131	538	4,821	6,615
Balsams ,,	,,	77	92	413	702
Bark, Cinchona	,,	1,272	1,816	19,630	23,047
Quinine Sulphate	ounces	62,896	18,048	1,476,944	1,444,784
Beeswax	packages	1,021	611	3,077	1,930
Camphor	,,	94	243	11,475	13,851
Cardamoms	,,	103	368	494	392
Cochineal	,,	165	281	1,906	2,008
Colombo Root	,,	124	142	59	113
Cubebs	,,	—	—	472	549
Dragon's Blood	,,	6	13	94	101
Galls (all kinds)	,,	198	750	4,590	9,211
Gum, Ammoniacum	,,	—	—	32	43
Arabic, all kinds	,,	1,772	2,168	13,444	14,223
Asafœtida	,,	—	58	438	447
Benjamin	,,	66	386	2,911	2,929
Galbanum	,,	—	—	—	1
Gamboge	,,	19	64	296	180
Guaiacum	,,	4	—	82	53
Kino	,,	—	2	19	28
Mastic	,,	—	1	3	9
Myrrh	,,	142	63	583	640
Olibanum	,,	—	344	1,189	3,350
Tragacanth	,,	410	723	3,268	3,898
Ipecacuanha	,,	61	83	299	469
Jalap	,,	48	14	358	330
Nux Vomica	,,	—	192	150	653
Oils, Castor	,,	351	290	461	823
Olive	,,	268	176	890	996
Aniseed	,,	35	12	132	28
Cassia	,,	16	18	96	20
Rhubarb	,,	252	120	889	537
Saltpetre	tons	503	1,548	2,888	3,463
Sarsaparilla	packages	69	81	224	306
Senna	,,	1,224	1,036	1,373	2,530
Shellac	,,	1,795	4,140	50,928	36,481
Terra Japonica, Gambier	tons	581	338	1,298	859
Cutch	,,	140	149	1,451	1,658
Turmeric	,,	—	144	490	1,000

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns

MANCHESTER CHEMICAL REPORT.

November 3, 1897.

A fair amount of business is passing in heavy chemicals, but for contracts over next year there does not appear to be the usual activity. For Bleaching Powder the figure for prompt delivery, soft wood casks,

varies from £6 2s. 6d. to £6 7s. 6d., and for forward over the next twelve months £6, while it is said that for a good order £5 15s. would not be refused. For white 70's Caustic the figure varies from £7 2s. 6d. to £7 7s. 6d. In Sulphate of Ammonia, Lancashire makers are fairly well sold, but stray parcels are bringing £8 5s. per ton on rails. Bicarbonate of Soda remains firm, and Ammonia Alkali 58 per cent. is held for £3 17s. 6d. per ton, bags, an rails. Chlorate of Potash is a fraction lower on last week. Bichromate: Unchanged. Pitch is dull, but the current figure of 17s. 6d. per ton *f.a.s.* Manchester Ship Canal ought to stimulate business. Aniline Oil and Salt: 7d. and 6½d. respectively, with little doing. Brown Acetate of Lime is quoted £5 10s. to £5 12s. 6d. Welsh here, and £5 15s. per ton best American *c.i.f.*; imports of the latter continue small. Creosote is strong at 2d. on rails. Benzols and Naphthas are steady and unchanged. Yellow Prussiate is still scarce at 6d. to 6½d. Acids are dull. For Sulphate of Copper £17 10s. per ton is quoted for best brands at station, Manchester, but re-sale lots are obtainable at 10s. to 15s. under this figure.

NEWCASTLE CHEMICAL REPORT.

NOVEMBER 3, 1897.

This chemical market remains well on the steady side with a good consumptive demand, but at unchanged values. Soda Crystals and Caustic Soda still scarce. Prices are:—Bleaching Powder, £6 10s. to £7 10s. Soda Crystals, 42s. 6d. to 57s. 6d. Caustic Soda, 70 per cent., £7 10s. to £7 15s. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £5.

LIVERPOOL REPORT.

NOVEMBER 3, 1897.

During the week good sales of Chilian Honey and Beeswax, both Chilian and West African, have been effected, as well as of Chillies, Kola Nuts, fresh and dry, Egyptian Fœnugrec, and Chilian Quillaya Bark. Castor Oils are easier in price, and so are Cottonseed Oil and Spirits of Turpentine, but Linseed Oil is a shade higher than last week. There has not been much business done in Linseed or Canary-seed, but prices remain unaltered. The chemical business has been slightly brisker, with a firmer tone in Ammonium Carbonate and Sulphate, but a slight fall in Sulphate of Copper.

AMMONIUM SALTS.—*Carbonate* is scarce at 3d. per lb. *Sulphate* is dearer, £8 10s. per ton.

BEESWAX.—5 bags of Chilian at £6 12s. 6d. per cwt., and 15 bags of Gambia at £6 to £6 2s. 6d. per cwt.

BLEACHING POWDER—Is still £6 12s. 6d. per ton *f.o.b.*

CANARYSEED—Is unchanged from last week, the nearest price being for Turkish 26s. 6d. to 27s. 6d. per 464 lbs., though a fair amount of business has been done on private terms.

CHILLIES.—Sales of common Sierra Leone fruit are reported at 25s. per cwt.

COPPERAS—Is still scarce at 39s. and 37s. per ton.

COPPER SULPHATE—Is a degree easier at £16 10s. per ton.

FŒNUGREC.—50 bags Egyptian sold at 9s. 9d. per cwt.

HONEY.—Chilian Pile II. has found buyers at 23s. 6d. per cwt.

KOLA NUTS.—Fresh nuts have been selling at 4½d. per lb., and dried at 2½d. to 2¾d. per lb.

LINSEED—Is steady, but little business is doing.

OILS (FIXED) AND SPIRITS.—*Castor oils* are selling well, but at a slightly easier rate than last week. Calcutta 3 1/16d. to 3¾d. per lb., French 3 15/32d. to 3½d. per lb. *Olive oils* are still very high and as firm in tone as last week. Candia has sold here at £32 5s. per tun. *Linseed oil* of Liverpool make is firmly held at 16s. to 16s. 6d. per cwt. *Cottonseed oil* is quiet at 15s. to 16s. per cwt. *Spirits of turpentine* is lower by 9d. per cwt., and is selling quietly at 24s. per cwt.

POTASH SALTS.—*Bichromate*: 4 5/16d. per lb. *Chlorate*: 3¾d. per lb. *Cream of Tartar*: Quiet at 79s. and 80s. per cwt. *Potashes*: 9s. per cwt. *Pearlash*: 29s. to 30s. per cwt.

QUILLAYA BARK.—2 tons of Chilian sold for £28 per ton.

SODIUM SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: £14 10s. per ton. *Crystals*: £2 17s. 6d. per ton. *Caustic Soda*: 70 per cent., £7 5s. to £7 10s.; 60 per cent., £6 5s. to £6 10s. per ton. *Nitrate*: In moderate demand at 7s. 4½d. to 7s. 7½d. per cwt.

SULPHUR.—Roll, £6 7s. 6d. per ton; Flowers, £7 10s. per ton.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

TUESDAY, NOVEMBER 9.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.
Annual "At Home" (Cockburn Hotel).

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"The Spectroscope," by E. W. Maunder.

WEDNESDAY, NOVEMBER 10.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 8 p.m
Eighth Annual Dinner (Café Royal, East Street)

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION, at 9 p.m.
Social Evening at the Great Northern (Victoria) Hotel.

MANCHESTER PHARMACEUTICAL ASSOCIATION, at 7.30 p.m.
"Stray Thoughts Suggested by the Life and Times of John Dalton," by J. L. Slack.

THURSDAY, NOVEMBER 11.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"A Mathematical Training and its Bearing on a Pharmaceutical Career," by Thos. Thompson.

FRIDAY, NOVEMBER 12.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
"Social Life of Animals," by Mr. J. Wishart.

LATE ADVERTISEMENTS.

Assistants Wanted.

WANTED, a young man (pharmacist preferred) with good experience in pill-coating (sugar). Address full particulars of experience, and state wages required, to "B. P.," care of Thomas Dixon, 16, Great Marlborough St., W.

PILL-COATER. — A first-class hand with experience in sugar-coating. Apply, stating age, experience, and wages, to SUGAR, care of Street & Co., 30, Cornhill, E.C.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books.

'Pharmaceutical Journal,' 75 vols., half calf, complete, from 1842 to 1892. **'Journal de Pharmacie'** 80 vols., complete, from 1809 to 1858, and from 1863 to 1896 inclusive. **'Year-Book of Pharmacy,'** 23 vols., complete, from 1870 to 1892 inclusive. The above for sale, what offers?—"Cascara," 'Pharm. Journ.' Office, 5, Serle Street, W.C.

'United States Dispensatory,' 1892, published at 42s. cloth, offered for 16s., half morocco, clean as new; 'Homœopathic Pharmacopœia,' 1876, 2s. 6d.; 'Pharmacopœia of India,' 2s. 6d.; Kirke's 'Handbook of Physiology,' 15s., for 5s.; 'Year-book of Pharmacy,' 1871-1872, 2s. each, the two 3s. 6d., clean as new; White's 'Veterinary Art,' 21s., for 5s.; Periera's 'Materia Medica,' 3 vols., 69s., for 10s.; 'All the Year Round,' new series, Vols. 1 to 16, half lf, 25s.—Fowler, Little Lever, Bolton.

OFFERED—*(continued).*

'Pharmaceutical Journals,' 1st and second series complete; 3rd series 11 vols.; half bound calf. Offers requested.—S. H., 177, Regent Street.

Pharmaceutical 'Magazine,' 'Times,' and 'Journal,' from 1841 to 1886.—M. Hamilton, Bron Wylfa, Mold.

Miscellaneous.

Patents Slightly Soiled. What offers? 1x13½d., 1x2/9 Krampton's Pill; 1x13½d. Barlow's Powders; 1x13½d. Rowan's Powders; 2x13½d., 1x2/9 Dillar's Plasters; 1x13½d., 1x2/9. Hibbert's Medicine; 2x13½d. Hibbert's Lotion; 4x13½d. Watson's Pills; 4x13½d. Dennis's Pills; 1x13½d. Hunt's Pills; 1x2/9 Davis' Killer.—Shaw, Chapeltown Road, Leeds.

Opportunity! "The Gem" Soda-water Machine, in good working order; 75 doz. large, 150 doz. small; cost £28; price only £14.—Spa Co., near Diss.

OFFERED—*(continued).*

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

WANTED.

Advertiser is open to buy Chemical Apparatus, Laboratory Fittings, Balances, Flasks, Burners, Stoppered Bottles, Pure Chemicals, etc.; cheap for cash.—Particulars to Chemist, 34, Avondale Road, Chorley.

4-gallon Carboys, a pair.—Jenkins, Chemist, 372, Cowbridge Road, Cardiff.

4-gallon Carboy, pear-shaped, old-fashioned squat-shape; state greatest circumference and height to lip, price.—Whyte, Chemist, Arbroath.

Rectification of the Register

In accordance with the Pharmacy Act, 1868.*

We are requested by the Registrar of the Pharmaceutical Society to publish the following list of persons whose names will be erased from the Registers of Pharmaceutical Chemists and Chemists and Druggists unless they communicate with him, stating their present address, on or before December 30 next :—

Those marked with an asterisk are Pharmaceutical Chemists.

Abell, James	6, West Street, Fleetwood, Lancs.
Allen, Joseph John William	344, Caledonian Road, London, N.
Archibald, David	High Street, Linlithgow.
Askew, John Robert	54, High Street, Sunderland.
Aslin, John	163, High Street, Sunderland.
Astrop, Henry	730, Old Kent Road, London, S.E.
Atkinson, John	82, Regent Road, Leicester.
Aubrey, Henry James	148, Parade, Leamington.
*Auchinachie, Peter	172, Finborough Rd, West Brompton, London, S.W.
Barker, Alfred Albert	4, Montague Street, Edinburgh.
Barritt, Alfred	9, Falmouth Road, London, S.E.
Bates, Edward	11, Edward St., St. Peter's Rd., Mile End, London, E.
Bathe, Frederick James	8, Upton Lane, Forest Gate, London, E.
Baugh, Richard	Llanymynech, Montgomery.
Baxter, John Newsome	65, Part, Street Southport.
Belbin, Harry Ashley	166, Ecclesall Road, Sheffield.
Boll, George	20, Crystal Street, Spring Bank, Hull.
Bell, John Henry	Graham Place, Welshpool.
Bennett, George	Market Place, Romford.
Bird, John	77, Cheetham Hill Road, Manchester.
Birrell, David	Detroit.
Blackhurst, Thomas	72, Bridge Street, Birkenhead.
Bollans, Edward	32, Clement Street, Leamington, Warwickshire.
Booth, James Valentine	42, Broadway, Salford.
Brangan, Henry	1, Wells Street, Wellclose Square, London, E.
*Bray, Frederick Richard	1, Mount Pleasant, Bishop Auckland.
Breese, John	84, Great Barr Street, Birmingham.
Brew, John Archer	10, Church Street, Great Malvern.
Britten, John	20, Graham Road, Dalston, London, N.E.
Brodie, John Dallas	12, Montague Street, Edinburgh.
Broom, George Alfred Charles	Market Street, Llanelly.
Brown, Horace	111, Cirencester Street, Westbourne Sq., London, W.
*Bulmer, Bethel	Birchip, Victoria.
Campbell, William	19, Topley, Manchester.
Chamberlain, Edward Tracy	64, Queen Street, Hull.
Chapman, Ingram William	Market Place, Ripley, Derbyshire.
Chipchase, Charles Herschel	43, Lyal Road, North Bow, London, E.
Chislett, Herbert Oakley	55, Kingsland Road, London, N.E.
Clark, Roger Chapman	Sharow, near Ripon, Yorks.
Clark, Shadrach	Ridgway, Plympton, Devon.
Clarkson, Simon	40, Wormgate, Boston.
Coley, William Henry	3, West Street, Blandford.
Collier, Thomas	79, South Street Moor, Sheffield.
Cooper, Edwin	3, Cecil Square, Margate.
Corfe, Henry	53, Swanmore Road, Ryde, Isle of Wight.
Cowie, Peter	40, West Preston Street, Edinburgh.
Crookes, Joseph	48, Stanley Road, Liverpool.
Cryer, Joseph	High Street, Neston, Cheshire.
Cullingford, Louis James	Broad Street, Seaford, Sussex.
Davies, John	2, Elliot Square, Boston, Mass., U.S. America.
Davies, John Richards	74, Lumley Road, Skegness.
Day, Arthur	320, Regent Street, London, W.
Deane, Joseph Pepperday	16, Nightingale Road, Clapton, London, N.E.
*Dickson, James Currie	Castlebank House, Dumfries.
Dickson, William	East Linton, N.B.
Dickson, William	12, Bonham Road, Brixton, London, S.W.
Dobie, James Turner	17A, New St., Vincent Sq., Westminster, London, S.W.
Downing, Frederick George.	20, Courtnell Street, Paddington, London, W.
Driver, Arthur Silvester	Bird Street, Lichfield.
Drummond, George	Edinburgh.
Duckett, George	Hope Cottage, Garden Walk, Ashton-on-Ribble.
Dupont, John Munro	North Terrace, Grantham.
Dyke, Charles James	49, Chelsea Gardens, London, S.W.
Edwards, Walter	15, Deronda Road, Hern Hill, London, S E.
Eedes, John Westmacott	Lenham, Kent.
Elworthy, Edward	Witheridge, Devon.
Emett, Thomas	10, Marsh Terrace, Darwen.
Emmerson, George John	9, Upper Market Place, Leyton, London, E.
Evans, Ralph James	14, Camberwell New Road, London, S.E.
Evans, Robert Nanney	94, Edward Street, New Cross, London, S.E.
Everett, Henry	3, Albion Place, Moore Park, Fulham, London, S.W.
Evison, William	Waltham, Grimsby.
Faircloth, William Henry	Wells, Norfolk.
*Flint, Charles Bruce	Victoria Cross, Dowanhill, Glasgow.
Ford, William Frederick	27, Eign Street, Hereford.
Francis, John	2, King Street, Llandilo.
Fulcher, Henry Ashton	124, High Street, Tewkesbury.
Fuller, Frederick	28, Dacre Park, Lee, London, S.E.
Gedge, Horatio William Turner	53, Clapham Road, London, S.W.
George, Edward Robert	Market Place, Aylsham, Norfolk.
Gilbert, William	Enfield Highway, Middlesex.
Gill, William Sharpe	199, Lord Street, Southport.
Goodall, John Edward	26, Tontine Street, Hanley.
Goodchild, Thomas Archibald	1, South Parade, Waterford.
Graham, William Richard	Victoria Terrace, Mount Florida, Glasgow.
Gray, Charles	Kibworth-Beauchamp, Leicestershire.
Gray, John Johnstone	2, Gower Street, Swansea.
Green, Robert	Willow Grove, Beverley, Yorks.
Gunn, Daniel	9, Shelden Street, London, W.
Hackney, William Francis	4, Chesterfield Street, London, W.C.
Hall, John Gilbert	10, Falmouth Road, Borough, London, S.E.
Hall, Joseph	Market Square, Wellington, Salop.
Harbin, George Albert	46, Herbert Street, Mile End, Portsmouth.
Hardman, William	Ebor Villa, Bridlington Quay.
Harrison, Charles William	16, Rushey Green, Catford, London, S.E.
Harrison, John William	Otley Road, Headingley, Leeds.
Haynes, Edward	5, Station Parade, Acton, London, W.
Henderson, Thomas Cuthbert	La Fayeth P. O., Indiana, U.S.A.
Heron, John	13, Willowbank Crescent, Glasgow.
Hickley, Arthur Mackenzie	Meltham, Huddersfield.
Hill, John	Red Lion Street, Aylesham.
Hingston, Andrew Holland	16, Keppel Street, London, W.C.
Hobbs, Daniel	44, Camberwell Road, London, S.E.
Holmes, Charles Newman	New Southgate, London, N.
Holmes, John	Colwyn, North Wales.
*Horton, Thomas	32, Hotspur Street, Tynemouth.
Howard, Nathaniel	Pier View, Freemantle, Southampton.
Humphrey, Thomas Brigstocke	14, Ludwick Road, New Cross, London, S.E.
Ingham, Thomas	Williamstown, Victoria.
Isaac, Augustus Thomas	Orange, New South Wales.
Jackson, Jonathan	Jumbo, Alkrington, Lancs.
Jackson, William John Thompson	55, Fishergate, Preston.
Jesser, Alfred Henry	15, Dunster Gardens, Brondesbury, London, N.W.
Job, Nathaniel	Ysceifiog, Holywell, Flints.
Jones, Driver Fitzherbert	235, North End Road, Fulham, London, S.W.
Jones, Henry John	3, St. John's Square, Cardiff.
Jones, Tychicus Glynne	Rhewl, Mostyn, Flints.
Keall, Edward Skinner	14, Strand, Bideford, Devon.
Kenney, George William	46, Bessborough Gardens, Vauxhall, London, S.W.
Kidd, Andrew	161, Albert Street, Dundee.
Kiddle, Richard Neller	Bideford, Devon.
Knapp, Charles Ricketts	4, Cornwallis Avenue, Clifton, Bristol.
Lambert, George Pitt	Calabria House, Underwiek Road, Hornsey, London, N.
Latham, Robert	Worksop, Notts.
Leadbeater, Charles Worral	99, Summer Hill, Dublin.
*Lear, William Morrell	7, St. Stephen's Road, London, W.
Leppard, James	20, Thames Street, Kingston-on-Thames.
Lewis, David Griffith	Farmer's Arms, Cardigan.
Lewis, Lewis	Dolwen, Llanerfyl, Welshpool.
Lock, James	100, Montgomery Street, Edinburgh.
Lodge, Arthur William	6, Spring Bank W., Hull.
Long, Frank	Brighton.
Longman, Samuel Hurman	94, High Street, W. Cowes.
Lowe, Thomas	60, Gt. Moore Street, Bolton.
McConnal, Alan	5, Newgate Street, Bishop Auckland.
McCowan, John	21, West Maitland Street, Edinburgh.
McCurrie, John	Main Street, Kelty, Fifeshire.
MacEwan, Archibald	64, Cambridge Drive, Kelvinside, Glasgow.
McLeod, John Peter	7, Sciennes, Edinburgh.
Mantle, John	14, Grange Court Rd., Manor Park, Stoke Newington, London, N.
Marsden, Charles Edwin	14, Denman Street, New Radford, Notts.
Marten, Frederic	29, Parker's Row, Bermondsey, London, S.E.
Matthews, Frederick William	18, Norton Folgate, London, E.
*Maunder, William Henry	105, Guilford Street, London, W.C.
Mayne, Charles	Chew Magna, near Bristol.
Medd, Frank Edward	27, Frederick Street, London, W.C.
Melhuish, John	74, Dartmouth Park Hill, London, N.
Middleton, James	9, Kimberley Terrace, Yarmouth.
Millar, John	43, Princes Street, Port Glasgow.

* X.—"It shall be the duty of the Registrar to make and keep a correct Register, in accordance with the provisions of this Act, of all persons who shall be entitled to be registered under this Act, and to erase the names of all registered persons who shall have died, and from time to time to make the necessary alterations in the addresses of the persons registered under this Act; to enable the Registrar duly to fulfil the duties imposed upon him, it shall be lawful for the Registrar to write a letter to any registered person, addressed to him according to his address on the Register, to inquire whether he has ceased to carry on business or has changed his residence,—such letter to be forwarded by post as a registered letter, according to the Post Office regulations for the time being; and if no answer shall be returned to such letter within the period of six months from the sending of the letter, a second, of similar purport, shall be sent in like manner; and if no answer be given thereto within three months from the date thereof, it shall be lawful to erase the name of such person from the Register, provided always that the same may be restored by direction of the Council of the Pharmaceutical Society, should they think fit to make an order to that effect.'

Mills, Arthur	67, Duddeston Mill Road, Vauxhall, Birmingham.
Minshull, Major	22, Clarence Street, Wolverhampton.
Morris, Eleanor	26, Deansgate, Bolton.
*Morris, Thomas Edmunds	2, Derby Street, Mayfair, London, W.
Morris, Thomas James	15, Belgrave Road, St. John's Wood, London, N.W.
Morris, William	26, Deansgate, Bolton.
Moyse, Arthur	Abbey Road, Torquay.
Munkman, Robert Allen	98, West Street, Boston, Lincs.
*Munro, John Morrison	6, Norman Road, Southsea.
Naish, Robert Elwell	Elm Grove, Southsea.
Newcombe, Thomas	23, St. Mary Street, Liscard.
Norman, William Francis	37, Warwick Street, Leamington.
Northen, Charles	47, Blackfriars Road, London, S.E.
Norval, Thomas Leishman	Kinross, N.B.
Organ, Edward	92, Winchcombe Street, Cheltenham.
*Parker, John Samuel	271, High Street, Camden Town, London, N.W.
Parrott, Joseph	44, Camberwell Road, London, S.E.
Parry, Alfred	421, King's Road, Chelsea, London, S W.
Paterson, William	High Street, Romford.
Pitt, Charles Day	Sandgate Road, Folkestone.
Pope, Albert Harry	13, Baker Street, London, W.
Porrett, Geo. Woodhouse	Belgrave Square, Scarborough.
Potts, Edward	163, High Street, Sunderland.
Powell, David	St. Thomas, Swansea.
Prentice, Charles William	Fortune's Well, Portland, Dorset.
Pritchard, Frederick	Hodnet, Salop.
*Rew, Walter	224, High Street, Exeter.
Richards, Richard Henry	10, Adelaide Road, Richmond, Surrey.
Riddiough, Fred.	Keighley, Yorks.
Rigden, Hubert	11, Queen Square, Wolverhampton.
Roberts, Anthony Tucker	21, Buckingham Road, Brighton.
Roberts, Thomas	1914, Farrell Street, Philadelphia, U.S.A.
Robertson, George	White House Station, Aberdeenshire.
Robinson, William Shakespeare	5, Bertie Road, Milverton, Leamington.
Robson, William Robert Longstaff	35, Avondale Rd., South Byker, Newcastle-on-Tyne.
Roc, Alfred	85, Alexander Street, Newcastle-on-Tyne.
Royal, Andrew	15, Crown Street, Aberdeen.
Rugman, Albert Thomas	61, Gurney Street, Borough, London, S.E.
Russon, Henry Albert	30, Sun Street, Birmingham.
Russon, Samuel Tonks	30, Sun Street, Birmingham.
Scowby, Joseph Newsome	31, Sunderland Road, Forest Hill, London, S E.
Senior, George	13, Schofield Street, Radcliffe, Manchester.
Shepherd, Charles William	16, Redburn Street, Chelsea, London, S.W.
Simpson, Alexander Henderson	140, Listerhills Road, Bradford, Yorks.
Smith, Edgar	17, Eldon Street, Manchester.
Southwood, Joseph	27, Park Square, Leeds.
Spence, Ann	Helensburgh, Dumbartonshire.
Spencer, Joseph	14, Westfield Terrace, Pollard Lane, Bradford, Yorks.
Stevenson, James Ross	8, Oxford Street, Edinburgh.
Stibbs, James	Fore Street, Newlyn West, Cornwall.
Stokes, Mary Ann	12, Linwood Road, Handsworth, Birmingham.
*Strickland, George Hodgson	Yarm, Yorks.
Strickland, Henry	Yarm, Yorks.
Stroud, James	22, Charlotte Street, Landport, Hants.
Sutherland, John George	214, Northwoodside Road, Glasgow.
Sutton, George	Inglefield, Sunny Gardens, Hendon, London, N.W.
Swaine, Charles Henry	Christchurch, Canterbury, New Zealand.
Swift, Philip Dickerson	5, Lordship Terrace, High Road, Tottenham.
Tatler, Albert Edward	5, Linacre Road, Litherland, Liverpool.
Tattam, Richard	Lower Tottenham.
Taylor, Alfred King	31, Cottenham Road, Holloway, London, N.
Taylor, James	Hobart Town, Van Dieman's Land.
Taylor, Josiah Ellison	Royal Hospital, Salford.
*Taylor, Thomas	4, Burchell Rd., Queen's Rd., Peckham, London, S.E.
Thickitt, Robert	32, Rufford Road, Abbeydale, Sheffield.
Thomas, Thomas	4, Llandough Street, Cathays, Cardiff.
Thompson, Robert Greig	33, Montgomery Street, Edinburgh.
Thomson, John Meikle	151, High Street, Dumbarton.
Thomson, William	13, Havelock Street, Wellingbrough.
Thorneley, Thomas	Castle Street, Bolsover.
Thrower, Edward Arthur	36, Talbot Road, Bayswater, London, W.
Tiernan, Robert	62, Tithebarn Street, Liverpool.
Tothill, John	14, Romilly Road, Finsbury Park, London, N.
Tritton, Charles Edmund	6, Gold Street, Tiverton.
Trotter, Samuel	71, Knowsley Street, Preston, Lancs.
Tuck, George Frederick	The Bridge, Harrow.
Twinberrow, James Kimberley	80, Wigmore Street, London, W.
Varder, John Lavington	West Street, Ashburton, Devon.
Vinall, Eliza	120, Seymour Street, London, N.W.
Waddington, John Alfred	41, Alexandra Road, Blackburn.
Waddington, John William	2, Vincent Street, Bradford, Yorks.
Waite, William	136, Oxford St., Collingwood, Melbourne, Australia.
*Watts, George William	2, Roderick Road, Gospel Oak, London, N.W.
Wharmby, Walter Frederick	45, Lonsdale Square, London, N.
White, Frank	21, Rodney Street, Liverpool.
White, William John	46, Canongate, Edinburgh.
Whiteley, John William	210, North Hill Street, Princes Road, Liverpool.
Wilcox, William	One-Mile Dispensary, Gympie, Queensland.
Wilkinson, George Henry	17, Holte Road, Aston, Birmingham.
Williams, Richard John	25, St. Agnes Place, Kennington, London, S.E.
Wilson, Robert Webster	33, Bayswater Avenue, Roundhay Road, Leeds.
Wilson, William Wallace	164, Dumbarton Road, Glasgow.
Wood, Frederick	18, Clarence Street, Cheltenham.
Wright, John Charles	4, Mount Pleasant Road, Tottenham.
Wright, Walter	27, High Street, Chelmsford.
Younger, Robert Edward	12, Cromwell Avenue, Highgate, London, N.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

A general meeting of this Association was held at Plymouth on Wednesday, November 10, Mr. JAMES COCKS, President, in the chair, and there was a large attendance of members.—The PRESIDENT commenced the proceedings by saying that, for the benefit of those gentlemen who are not on the Committee, he would briefly explain the cause of that evening's meeting. Last month they received the official report of the meeting of the Federated Associations, held at Glasgow in August last, which contained suggested subjects for the discussion of local associations. On considering the matter at the last monthly Committee meeting, the paragraph referring to membership of the Pharmaceutical Society seemed so important that a sub-committee was appointed to draft proposals for an amendment of the Pharmacy Act, 1868, the same to be discussed at a special general meeting of their Association, and for that purpose they had met that evening. As they would see by the notices sent out, it was thought desirable, in the best interests of pharmacy, that the Council of the Pharmaceutical Society of Great Britain should, without delay, take the necessary steps to introduce a Bill into Parliament, providing—

"(1) That pharmaceutical students should, on registration as such, be eligible for election as 'Associates of the Pharmaceutical Society';

"(2) That there should be an interval of three years between registration and presentation for the 'Minor' or 'Qualifying' examination;

"(3) That registered pharmaceutical students should, on passing the 'Minor' or 'Qualifying' examination, be entitled to assume the title of 'Pharmacist' or 'Pharmaceutical Chemist,' and be eligible for election as 'Members of the Pharmaceutical Society';

"(4) That registered pharmacists should, on passing the 'Major' or 'Honours' examination, be eligible for election as 'Fellows of the Pharmaceutical Society.'"

If those proposals were agreed to the Plymouth, Devonport, Stonehouse and District Chemists' Association should pledge itself to do its utmost locally to support the Council of the Pharmaceutical Society in the endeavour to secure the passing of such a Bill, and also commend the matter to the Federation of Pharmaceutical Associations as being worthy of immediate and careful consideration by the constituent Associations.

A further suggestion was that it should be intimated to the Pharmaceutical Council—

"(5) That in the opinion of this Association the action of the Poor Law authorities in recognising dispensing by unqualified men constitutes a danger to the public, and is a moral evasion of the Pharmacy Act." There was also another suggestion which had not been placed on the agenda paper, but on account of its importance it might with profit be discussed with that object in view. That suggestion was to the following effect:—

"(6) That with a view to placing elementary pharmaceutical education on a uniform and satisfactory basis throughout Great Britain, it is desirable that a conference should be called to deal with the matter, in accordance with the views expressed in the *Pharmaceutical Journal* of October 23 last, and that the President of the Pharmaceutical Society should be requested to preside at that conference."

The Committee also thought that whether the members adopted these proposals, or in their wisdom deemed it advisable to make any alterations, the best way to further the object in view would be to get as many as possible of the craft in Devon and Cornwall to sign the same and forward it to the Secretary of the Federation of Pharmaceutical Associations, urging him to ask other associations to do likewise, collecting the results and finally forwarding to the Pharmaceutical Council. As the matter was of such importance, he would beg of those gentlemen taking part in the discussion to stick to the text of the proposed resolutions, and not to generalise on the subject of the Pharmaceutical Society, but to keep to matters directly bearing on the questions at issue. He would now ask for discussions on the propositions, taking them in order, and proposed that they should take a vote at the end of each discussion.

PROPOSED AMENDMENTS OF THE PHARMACY ACT.

—Mr. JOHNSTON moved that the first proposition be amended as follows :—

"That students on passing the Preliminary examination or its equivalent should be eligible for election as Associates of the Pharmaceutical Society and be registered as such."

—Mr. ROPER seconded.—Mr. KELLY objected to a student being allowed to assume the title of Associate on passing the Preliminary examination. The title Associate of the Pharmaceutical Society should follow when he has taken a more important position, but prior to passing the Minor examination.—Mr. PARK said the suggested change would be a great help to the Society and engender a feeling of loyalty to the Society and get young men to take more interest in the doings of the same.—Messrs. NETTING, BARGE, and HUNT also supported the proposition, which was carried unanimously.—Mr. U'REN proposed and Mr. WEARY seconded that the next proposition should read as follows :—

"That there should be an interval of not less than three years between registion and presentation for the Minor examination, and that the term 'registration' shall mean the date of acceptance by the Pharmaceutical Society of the student's certificate of having passed the First examination or its equivalent."

This also was carried unanimously.—Mr. TURNEY then proposed and Mr. ROPER seconded—

"That students on passing the qualifying or Minor examination be entitled to assume the title of chemist and druggist and be eligible for election as members of the Pharmaceutical Society."

Mr. PARK, in supporting, said that as Minor men are greatly in the majority and contribute largely to the funds of the Society, they should be eligible for membership, so as to have direct representation on the Council if they think it desirable.—Messrs. READE, ROPER, and W. H. WOODS also supported.—The fourth proposition was not considered, but Mr. G. BREEZE moved, and Mr. BARGE seconded—

"That this meeting is of opinion that in future legislation provision should be made exempting all members of the Pharmaceutical Society from jury service."

Mr. U'REN supported the motion, which was carried unanimously.

THE LOCAL GOVERNMENT BOARD AND DISPENSERS.

—Mr. O. A. READE then proposed that the following expression of opinion should be forwarded to the Council of the Pharmaceutical Society :—

"That in the opinion of this Association the action of the Local Government Board in recognising dispensing by unqualified men constitutes a danger to the public, and is a moral evasion of the Pharmacy Act."

He said this proposition had nothing whatever to do with the Pharmacy Act, but was merely an expression of opinion to be forwarded to the Pharmaceutical Council to strengthen their hands in protesting against what he was sure all present would agree was a great and crying evil. The history of the matter was, briefly, as follows : On June 7, 1895, an order was promulgated by the Local Government Board, permitting the appointment of army compounders as Poor Law dispensers. This watering of the qualification virtually placed army compounders on an equal footing, for this purpose, with chemists qualified under the Pharmacy Act. The Pharmaceutical Council was not slow to recognise the danger of the step, and first through the President, and afterwards by a memorial from the whole Council, presented remonstrances and protests to the authorities ; so far the replies have been unsatisfactory, and in July a question on the subject was asked in the House of Commons. The reply to this, however, was equally unsatisfactory. He was sure it would require little argument on his part to cause those present to give their unanimous support to this proposition, and show the Pharmaceutical Council that they have that Association at their back in protesting against the employment of men with such inadequate qualification under the sanction of the Local Government Board. What that qualification really was had been fully exposed in the *Pharmaceutical Journal*, and he could only re-echo one of the remarks therein made, and say, "why should pharmacists learn so much science if so little will suffice for accurate compounding and dispensing." It was certainly deplorable that a public department should take such a retrogade step and then shelter itself under a verbal quibble in the Act and say, in effect, "These men do not sell, they only dispense poison to the sick poor." The question affects every qualified chemist, because everything that affects or attacks the qualification chemists hold is a reflection upon every person holding that qualification, and if the dispensing of poisons be done under the sanction of a Government department by men not holding a legal qualification, chemists would very soon find these men competing with them in the retail, and be told that the safety of the public is not endangered, because they have for years been dispensing poisons under the sanction of a government department.—This proposition was seconded by Mr. ROPER and carried unanimously, and a vote of congratulation was passed to the President of the Pharmaceutical Society on the acceptance of the Jubilee Medal.—The proposal with reference to an educational conference was not discussed on this occasion.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

At the first meeting of the season held at the Victoria Hotel, Manchester, on Wednesday evening, Mr. J. L. SLACK read an able paper on "Stray Thoughts Suggested by the Life and Work of John Dalton," bringing in by way of appropriate addendum reference to another Manchester worthy in the shape of Dr. Joule. Mr. Slack divided his paper into three divisions, the first having reference to the mode in which chemical knowledge has advanced, commencing with earliest historic ages ; secondly, an attempt to state what Dalton did in the realm of science, and thirdly a brief sketch of his personal character. Under the head of what Dalton did, he said that he achieved much, as shown by the fact that two statues had been erected to his memory in public positions in Manchester. He established the truth of what is known as the atomic theory as applied to chemical science. His predecessors seem to have thought only of "size" as applied to atoms, the idea introduced by Dalton was the idea of "weight." Up to this time no one had troubled to ask himself what is the weight of the atoms—of the substances which chemists call "elementary bodies." Dalton seized upon this idea and based upon it a number of experiments and illustrations, which practically re-modelled the accepted idea of the science of chemistry. In regard to his personal character Mr. Slack said he was a man of simply blameless character, indomitable perseverance, with a gift of concentrating every grain of his powerful intellect in the direction of scientific truth. His Quaker origin combatted any doubt in belief of "the one great cause," and applying a short stanza from the poet Cowper, we may rest assured that Dalton did not fail to trace

In Nature's most minute design,
The signature and stamp of power divine.

He could not, said Mr. Slack, close his paper without some reference to another great discoverer, also a Manchester man—the late Professor Joule. The vestibule of the Town Hall contained two marble statues—Dalton and Joule. Had they not been men of somewhat equal calibre they would not have been placed conspicuously facing each other. In some respects they were much alike—indeed, since the death of Dalton Manchester has lost no such discoverer as Joule. He was born in Salford in 1818. In one sense, like his prototype, he was self-educated, for although his father had ample means, the natural bent of his mind towards the study of science was so marked and strong as to render elaborate instruction less essential than usual. Joule worked year after year with great earnestness, and no man enjoyed a more pure and enviable fame than this modest and renowned investigator. He died at Sale, Cheshire, where he had lived many years, in October, 1889, aged seventy-one. As one of our poets sings, "The strongest minds are often those of whom the noisy world hears least."

ULSTER PHARMACEUTICAL ASSOCIATION.

On Wednesday, November 3, a lecture entitled "From Mont Blanc to the Matterhorn" was delivered by Mr. W. Lamond Howie, F.C.S., of London, in the Minor Hall of the Y.M.C.A., Wellington Place. Professor WHITLA, M.D., presided, and introduced Mr. Howie, who was warmly received. The lecture and views were very loudly applauded. Mr. Hogg, of Messrs. Lizars's establishment, manipulated the lantern. On the motion of Dr. FIELDEN, seconded by Mr. R. W. M'KNIGHT, a vote of thanks was enthusiastically passed to Mr. Howie.

NEW IDEAS AND TRADE NOTES.

Messrs. Thomas Christy & Co., 25, Lime St., London, E.C., send samples of "Deco" bungs and shives. The material consists, apparently, of fragments of cork compressed into a solid mass. It marks a great stride in the cork industry, and is claimed to be much superior to cork in its natural state. Deco," is said to keep its condition for any length of time, neither boiling in water nor immersion in acid solutions affecting it. A "Deco" bung renders a bottle hermetically sealed, as it is air-tight. The shives and bungs are made from 1 to 24 inches in diameter, and from any thickness up to 2 inches. The prices of these are naturally much below those of cork bungs of good quality, and only slightly higher than the lowest class of pickle bung, and in lots of 100 gross and over they will compete favourably with any quality. The shives and bungs have the same characteristics and appearance in all sizes.

Mr. Herbert W. Seeley, of Halifax, is issuing a beautiful calendar for next year which is as chaste in design and attractive as anything of the kind that we have seen.

Messrs Ross & Co., 111, New Bond Street, W., manufactnring opticians, have been awarded a Grand Prix, a Diploma of Honour, a Gold, a Silver, and a Bronze Medal Diplomas for their exhibit at the Brussels International Exhibition, 1897.

NEWS IN BRIEF.

Glasgow and West of Scotland Pharmaceutical Association.—The annual "At Home" was held at the Cockburn Hotel, on the 9th inst., when about 200 members and lady friends, on an invitation from the President (Mr. W. L. Currie) and Council of the Association, were entertained. Apologies for unavoidable absence were received from Messrs. Hyde, Hills, Laidlaw Ewing, and others. After tea, the President on behalf of the Kinninmont Prize Committee, presented the prize this year to winner James Murdoch, with an average marks of 91 per cent. The prize consisted of eight selected books. Mr. Currie then extended a hearty welcome to all present, and afterwards tea was partaken of, followed by music and songs by the Misses Macadam, Messrs. Murray, McKellar, Laing, and a humorous cinematograph show by Mr. Hubner. A very successful and enjoyable entertainment wound up with votes of thanks to Messrs. Currie and McKellar. Dancing was afterwards kept up till midnight by the younger members. This was the first meeting of the winter session. The Association, of which Mr. David Watson, 558, Cathcart Road, is now the Hon. Secretary and Treasurer, has begun the session in the most auspicious circumstances, the membership being now 181, or 26 more than a year ago, while the balance in hand is £59 19*s.* 4*d.*, an increase of £9 14*s.* 9*d.* on the year. It is said that the membership is higher than that of any other local pharmaceutical association in the Kingdom. On Tuesday 23rd inst., there will be a discussion on the question "that registered chemists shall be eligible for membership of the Pharmaceutical Society," "modified examination for assistantship," and "the legal 'seller,' where there is absence of indication." Mr. W. L. Currie and Mr. Alexander Boyd will open the discussion. On December 7 Mr. J. Anderson Russell, the ex-secretary, will read a paper on "The Society and Pharmaceutical Organisation," and the programme for the other nights is as follows: December 21, lecture by Mr. Alexander Scott, "From Doune to Killin, *viâ* Callander, Trossachs, and Lochearnhead"; illustrated by over 150 limelight views; January 11, short papers by members; January 25, "Pharmacography," illustrated with the optical lantern, by Mr. John Lothian; February 8, annual social meeting; February 22, short papers by members; March 8, "Drug Journals and their Advertisers," by Mr. Arthur McKellar; March 22, short papers by members; the session finishing on April 5 with a business meeting.

Mr. J. A. Steward, chemist and druggist, Worcester, has been elected to fill the office of Sheriff for that city.

Carbolic Acid was taken in mistake for camphor water by Elizabeth Smith (72), and the case terminated fatally at the Royal Free Hospital, London, where the patient was conveyed after the accident occurred. It appears that the poison was kept in a ginger-beer bottle which bore no label, and was placed on a sideboard next to a camphor-water bottle. The jury returned a verdict of "Death by misadventure," and the Coroner remarked upon the folly of keeping carbolic acid in bottles bearing no labels indicative of their contents.

Scenting Danger.—French newspapers are suggesting a new system for the prevention of marine accidents, which proposes to place strongly smelling chemicals in floating receptacles to be attached to the existing light buoys and bell-buoys. Cliffs and dangerous shoals are very often hidden by thick fog, which does not allow light to penetrate nor sound to be heard until too late, while the strong smell of some chemical substances would be carried far away, and would indicate to the seafarer with a keen olfactory sense at great distance that he is nearing a dangerous coast.—*Daily Mail.*

An Overdose of Laudanum taken by Ellen Keedy (64), of Leeds, proved fatal last week. It was stated at the inquest that deceased had suffered from painful internal disease, and a verdict of "Accidentally poisoned" was returned.

Pharmaceutical Education in Exeter.—The following prizes offered by members of the Exeter Association of Chemists and Druggists, have been awarded to students of the School of Pharmacy at the Exeter Technical and University Extension College. A prize of one guinea offered by Mr. H. Gadd, J.P. (Vice-President of the Association), to that student who should do best in the advanced chemistry course, has been awarded to Mr. G. Rae. A prize of one guinea offered by Mr. J. H. Lake (President of the Exeter Association of Chemists and Druggists), to the student who should do best in pharmacy and materia medica, has been awarded to Mr. Jordan, who recently passed the Minor examination from the College. The prize of one guinea offered by Mr. Stocker to that student who shall collect the best herbarium of British plants within a radius of ten miles of Exeter has been awarded to Mr. Bernini Palmer. The prize of one guinea offered by Mr. P. F. Rowsell (Hon. Sec. of the Exeter Chemists and Druggists' Association) to that student who should do best in the elementary chemistry course has been awarded to Mr. Berg. An extra prize of half a guinea has been given by Mr. J. H. Lake to Mr. H. Pellow, who worked extremely well at elementary chemistry during the session. Mr. Stocker has also made a donation of one guinea towards the maintenance of the materia medica collection at the College. These results show that the School of Pharmacy recently started by Mr. Clayden, the Principal of the College, and conducted by Mr. Alan Ware, Ph.C., is already doing much good for the cause of education in the Exeter district, and reflects great credit on all concerned.

Midland Chemists' Assistants' Association.—A meeting was held at the Exchange Rooms on Wednesday, November 3, Mr. W. R. Hedges, Jun., occupying the chair. A very pleasant evening was spent. Songs were contributed by Messrs. Armstrong, Firkin, Chrimes, Hirst, Jones, Ricketts, Taylor, and Walker, and Mr. Rogers also gave two banjo solos, which were much appreciated. Mr. Tracy James was an able accompanist. At the conclusion a vote of thanks was passed to Mr. Hedges for his kindness in presiding; he suitably replied, wishing the Association every success.

The Annual Smoking Concert of the students attending the School of Pharmacy will be held on Tuesday, November 23, at the Holborn Restaurant, when Professor Norman Collie is expected to take the chair. Mr. T. Edward Lescher, 17, Bloomsbury Square, W.C., is the Honorary Secretary, and will be glad to receive applications for tickets, price 1*s.* 6*d.* each, as early as convenient. Any surplus from the proceeds of the "smoker" go to the benefit of the Pharmaceutical Cricket and Football Club. A strong company of professional artistes has been engaged, and it is hoped that many old students, as well as others, will make an effort to be present.

The First "Cinderella" Dance of the season in connection with the Chemists' Assistants' Association will be held at the Dorset Hall, Portman Rooms, Baker Street, W., on Thursday, November 18. Tickets may be obtained from the Hon. Secs., Mr. F. Cooper, 48, Baker Street, W., and Mr. H. H. Robins, 59, Capel Road, Forest Gate, E.

The Royal Society will elect its President and Council for the year 1898 at the anniversary meeting on Tuesday, November 30, and the following is a list of those who have been recommended for the various offices:—President—Lord Lister, F.R.C.S.,

D.C.L. Treasurer — Sir John Evans, K.C.B., D.C.L., LL.D. Secretaries—Professor Michael Foster, M.A., M.D., D.C.L., LL.D.; Professor Arthur William Rucker, M.A., D.Sc. Foreign Secretary — Sir Edward Frankland, K.C.B., D.C.L., LL.D. Other members of the Council—Professor Wm. Grylls Adams, M.A.; Professor T. C. Allbutt, M.D.; Sir Robt. Stawell Ball; Rev. Thomas George Bonney, D.Sc.; Professor John Cleland, M.D.; Professor Robert Bellamy Clifton, M.A.; Professor James Alfred Ewing, M.A.; Alfred Bray Kempe, M.A.; John Newport Langley, D.Sc.; Joseph Larmor, D.Sc.; Professor Nevil Story Maskelyne, M.A.; Professor Raphael Meldola, F.C.S.; Professor Edward B. Poulton, M.A.; William James Russell, Ph.D.; Dukinfield Henry Scott, M.A.; Professor Walter Frank Raphael Weldon, M.A.

Mr. L. A. J. Hutchin, chemist and druggist, has sold his business at 116, Fitzroy Street, Cambridge.

The Shop of Messrs. C. A. Critchley & Co., chemists, 10, King William Street, Blackburn, was recently broken into and entered by George Varey (11), who also stole 3*s*. The boy was charged at the police court, but the case was withdrawn, as it was understood he is to be sent to an industrial school.

Mr. W. R. Cook, pharmaceutical chemist, Faringdon, Berks, was installed Worshipful Master of the Vale of White Horse Lodge, No. 1770, on the 4th instant.

A Sweet Nitre Case was brought before the Peterborough magistrates on Wednesday, November 3, the defendant being John G. Sturton, pharmaceutical chemist, Peterborough. The Chief Constable gave evidence as to purchasing 3 ozs. of sweet nitre from defendant on September 27, and James Baynes, borough analyst of Peterborough, produced a certificate showing that the spirit was not of full strength. Defendant was fined £7 1*s*., including costs.

Rat Poison was mixed in a glass by Charles Hall, attendant at the temporary isolation hospital, Vine Farm, Ore, and poured down a sink where rats were in the habit of coming up the pipe. Instead of immediately cleansing the glass it was placed on a table, and was afterwards used by the man to obtain a drink of water from a pail, he being under the impression that it was a beer glass. He drank the contents, with a fatal result. "Death by misadventure" was the verdict of the jury.

The "Poison" Labels on two empty bottles of "Chlorodyne" found in the pockets of a man who, it was afterwards ascertained, had swallowed a sufficient quantity of their contents to cause death, were the subject of some strong comments by a Hull jury, the members of which were of opinion that the "poison" label was inadequate on account of the small type employed, and they suggested that the use of a more distinctive label should be made compulsory. There was no evidence of suicide, and a verdict of "Death by misadventure" was returned.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

November 11, 1897.

Business has been somewhat quiet during the past week, and there are no changes of any great importance to report. Quinine is firm, with higher prices expected. Cocaine is also dearer, a further rise in value being thought very probable. Cream of Tartar lower. Citric and Tartaric quiet and dull of sale. Bromides, Iodides, Quicksilver, and Mercurials unchanged. Menthol and Thymol firm. Acid Carbolic dearer. Acid Boracic and Borax very dull. Shellac firm. Cod-liver Oil steady. Glycerin quiet, Nitrate of Silver unsettled. Morphia dull. Codeia firm. The following are the prices ruling for the articles which are of chief interest :—

Acetanilid—Is dull at nominally unchanged price, viz., 1s. 3d. per lb. in quantity.

Acid Carbolic.—Market is decidedly firmer at 6⅞d. to 7d. for the 35-36° C. *ice crystal*, 39-40° C. 7½d. to 7¾d., and 39-40° C. detached crystal 8½d. to 8¾d., all for quantity and bulk packing. *Crude*: 60° C., 2s. 1d., 75°, 2s. 7d. per gallon. *Liquid*: 95 per cent. pale colour, 1s. 2d. per gallon in quantity and 40-gallon casks.

Acid Citric.—Dull and quiet at 1s. 1¼d. to 1s. 1½d. per lb. on the spot.

Acid Tartaric.—Unchanged at 1s. 1½d. per lb. for *English* and 12¼d. per lb. for *foreign*.

Ammonia Compounds.—*Sulphate* is again dearer at £8 10s. per ton for grey prompt 24 per cent., London. *Bromide*: 2s. 2d. per lb. for ordinary smaller quantities. *Sulphocyanide*: Schering's is quoted 1s. to 1s. 1½d. per lb., according to quantity. *Sal ammoniac*: Sublimed firsts 33s. 6d. per cwt., seconds 31s. 6d. per cwt., crushed for batteries 33s. to 35s. per cwt.; powder 34s. to 36s. per cwt.

Bleaching Powder.—Steady at £7 5s. per ton on the spot.

Borax.—Very dull at 14s. per cwt. for *crystals* and 14s. 6d. per cwt. for *powder*.

Bromides.—Prices are firm at 1s. 10d. for *Potash* and 2s. 2d. for *ammon.* and *soda*, with a reduction of 1d. per lb. for cwt. lots.

Cantharides.—*Russian* are rather easier at 1s. 10d. to 1s. 11d. per lb. on the spot. *China*: The stock of these seems to be quite exhausted, none having been offered for some time past.

Cocaine.—This article has taken a very decided turn for the better, and while some makers would possibly sell limited quantities at 9s. per oz. in 100-oz. lots, others say that they are not selling, and, in fact, decline even to mention a price. It is stated that a supply of *crude* has practically all been bought up by the makers of the refined article, and that they are now endeavouring to come to an arrangement whereby the late excessive competition, which has led to such low figures being accepted, will cease to exist. This may quite easily mean a further considerable advance in price.

Cloves.—Privately *Zanzibar* are in strong demand at higher prices. Business done includes November delivery at 3d.; December to February at $3\frac{1}{32}$d.; January to March, $3\frac{3}{32}$d.; February to April, $3\frac{5}{32}$d.; and March to May at $3\frac{3}{16}$d. In auction *Zanzibar* all bought in. Of *Penang* 7 cases fair picked sold without reserve at 7¼d.

Coal Tar Distillation Products.—*Toluol*, 2s. 5d. *Benzole*: 50 per cent., 2s. 2d.; 90 per cent., 2s. 1d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 1s. 1d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 11d. per gallon.

Codeia.—Market is very firm at 11s. 3d to 11s. 6d. per oz. for quantity and bulk packing.

Cod-Liver Oil—Remains quiet, with only a moderate business doing, the best brands of non-congealing *Norwegian oil* being quoted 75s. per barrel. In *Newfoundland* there is practically nothing doing, price being nominally 2s. to 2s. 6d. per gallon.

Cream of Tartar—Is very dull of sale, and quotations are lower at 74s. 6d. per cwt. for first white *crystals* and 76s 6d. to 77s. for *powder*.

Ginger.—*Cochin*: dull and lower; 790 bags rough kinds sold, low and common lean, small and ends, partly wormy, 17s. to 19s.; ordinary small, 20s. 6d. to 21s.; medium and small brown, 26s. to 26s. 6d. 53 cases sold, small and ends limed native, part cut, 28s. to 28s. 6d.; medium, 39s. to 39s. 6d. Of *Jamaica*, only 10 barrels sold, low middling dull, at 70s.

Glycerin—Is quieter than might have been expected at the season of the year. Quotations for the best brands remain, however, unchanged at 56s. to 62s. 6d. per cwt. for best white double distilled chemically pure, 1260 in tins and cases.

Iodine—Is in good demand at 7½d. per oz., the demand for *Iodides* being also active at unchanged figures.

Lycopodium—Is dearer at 1s. 3½d. per lb. on the spot.

Menthol.—Is firm at 7s. 6d. per lb. on spot and 8s. to arrive for best dry white crystals.

Mercurials.—Price remains unchanged at 2s. 2d. for *corrosive sublimate*, and 2s. 6d. for *Calomel* in 10-cwt. lots.

Morphia—Very quiet at unchanged value, say 4s. 3d. to 4s. 6d. for the *Hydrochlorate Salt* in powder, according to quantity, etc.

Nitrate of Silver—Remains unsettled in sympathy with the fluctuations in value of the *metal*. Nearest price for *crystals* would be 1s. 6d. to 1s. 6¾d. per oz. in bulk packing, according to quantity. *Sticks* dearer in proportion.

Oils (Fixed) and Spirits.—*Linseed*: After touching lower prices than those quoted

last week sellers now ask more money; pipes on the spot, £14 7s. 6d. to £14 10s.; barrels, £14 17s. 6d. to £15. *Rape* quiet and rather lower at £26 for ordinary brown on the spot, and £27 10s. for *refined* in the same position. *Cotton* quiet and lower at £14 5s. to £15 5s. for spot, according to make. *Olive* unchanged. *Spanish*, £32; *Levant*, £31 10s. to £33. *Cocoa-nut* unchanged. *Ceylon* on the spot, £22. *Cochin* near at hand, £28 10s., *c.i.f.* *Palm*: Lagos on the spot, £21 15s. *Turpentine* quiet and rather easier; American on the spot, 22s. 10½d. per cwt.; December, 23s.; January to April, 23s. 6d. *Petroleum Oil* quiet and unchanged. *Russian*: 4¼d. per gallon on the spot. *American*: 4½d.; Water white: 5⅝d. *Petroleum Spirit* quiet and unchanged; American, 6d. per gallon; deodorised, 6¼d.

Phenacetin—Is unchanged at 4s. to 4s. 3d. per lb.; it is, however, stated that the price is not remunerative, and that an advance is not improbable.

Opium.—Market is quiet at 9s. 3d. to 10s. 6d. for druggists,' 11s. to 12s. 6d. for soft shipping, the only quality in demand being *Persian*, for which holders are firm at 10s. 9d. to 11s. per lb.

Potash Compounds.—*Chlorate* quiet and unchanged at 3⅞d. per lb. on the spot. *Bicarbonate* quiet at 30s. per cwt. for powder. *Bromide*: In good demand at 1s. 10d. per lb. *Cyanide* quiet at 11½d. to 1s. per lb. for the 98 per cent. *Iodide* unchanged at 9s. 9d. to 10s. 3d. per lb. *Permanganate* quiet at 67s. 6d. and 72s. 6d. per cwt. for small and large crystals respectively. *Oxalate* unchanged at 4¼d. to 5d. per lb. for the neutral. *Prussiate*: Yellow continues quiet at 5¼d. to 6d. per lb.; red, 1s. 1d. per lb.

Quicksilver.—No change has yet taken place in this, importers still asking £7, whilst second hand holders would accept £6 19s.

Quinine.—Contrary to expectation, the anticipated further advance has so far not taken place. Makers' prices for *Sulphate* are nominally 1s. 3½d. per oz. and upwards, but they are not free sellers at this, or, in fact, at any figure, and the general opinion remains that we shall inevitably see distinctly higher values in the near future. There are a few sellers of the brands less in favour at 1s. 3¼d. to 1s. 3½d. per oz., but little is, however, obtainable at these figures, while any parcels of the favourite brands, such as *B & S* and *Brunswick*, which may be offered are promptly secured.

Shellac.—With strong advices from Calcutta the market here for arrival remains firm, but no business has transpired; prices are therefore nominal, second *Orange*, November to January steamer, at 63s. per cwt. *c.i.f.* On the spot the demand continues slow, with small sales of *TN Orange* at 62s. to 63s. per cwt.

Soda Compounds.—*Crystals* steady at 55s. per ton ex ship terms. *Bicarbonate*: The commercial 98 per cent. is steady at £7 5s. to £7 10s. per ton, and 18s. per cwt. for the free from mono-carbonate quality. *Bromide* steady at 2s. 2d. per lb. *Iodide*, 11s. 7d. per lb. *Caustic*, lump, 5½d. per lb.; sticks, 6½d. per lb. in quantity. *Hypo-sulphite*, 6s. to 8s. per cwt. according to make. *Salicylic*, unchanged at 2s. per lb. for the *powder*, 2s. 6d. per lb. for *crystal*, and 3s. 10s. per lb. for the *physiologically pure*.

Spices (Various).—*Black Pepper* all bought in, Singapore at 3¾d., Penang at 4⅛d. *White Pepper* also mostly bought in, Singapore 6¾d. to 7¼d., and Java at 7¼d.; 20 bags Penang sold at 5¾d., and 7 cases very fine bright Singapore at 9½d. *Cayenne Pepper*: Natal bought in at 1s. 6d. *Chillies*: Zanzibar bought in at 37s. 6d. to 40s. *Capsicums*: 1 bale mixed Natal sold at 60s. *Cassia Lignea*: 14 cases sold at 46s., 100 bales broken bought in at 35s. *Cassia Vera*: 7 bags coarse bought in at 25s. *Nutmegs*: Dull and rather easier. *Mace*: 5 cases Penang sold, good heavy bold 2s. 2d. to 2s. 3d.; 4 packages West India sold at 1s. 5d. to 1s. 8d. *Pimento*: 151 bags sold at 3⅜d. for ordinary to 3¾d. for good.

Sulphate of Copper.—Quiet at £16 10s. to £17 per ton, according to brand.

Sulphonal.—Maker's price remains nominally 7s. 3d. per lb.; they will not, however, sell any very large quantity at the price, and then only for immediate delivery. It would appear more than probable that a tangible advance in price may be announced at any moment, and the more so in that the present price is unjustifiably low, while it is also asserted that same not only is not remunerative but actually shows a loss to the manufacturers.

Thymol.—Market is firmer at 6s. 6d. to 7s. for best makes in quantity.

To-day's drug auctions went off at fairly steady prices and with a moderate amount of activity, the following being the particulars of prices realised, etc.:—

Aloes.—Good hard bright *Cape* held for 21s. 6d. to 22s. per cwt., drossy and inferior selling at 15s. to 19s. For 30 kegs good *Socotrine* 80s. per cwt. was required.

Annatto Paste.—18 cases of *Ceylon* were held for 2s. 6d. per lb.

Asafœtida.—In all 94 cases were offered, a portion being out of late arrivals; quality was not of the best, except in one case, which realised 70s. per cwt. for good soft pinky block. Holders are evidently willing to take lower prices, in view of late arrivals, but buyers with the same view before them hope to do better by waiting.

Balsam Tolu.—2 cases old of good quality were taken out at 3s. 3d. per lb.

Cactus Flowers.—12 bags small *grandiflora* held for 9d. per lb.

Camphor.—19 cases *Japan* refined in small blocks sold at 1s. 4d. per lb., a very fair price.

Cardamoms.—Only 183 cases were offered, and the demand being not quite so active as of late, prices fell away about 2d. per lb. Good bold pale *Mysores* realised 3s. 8d. to 4s. per lb., small ditto 2s. 10d. to 3s. 6d. per lb. *Seeds*: 3s. 7d. to 3s. 8d. per lb.

Castor Oil.—Fair *firsts* were held for 4½d. per lb., ditto *seconds* for 3⅞d.

Celery Seed.—5 bags of fair quality were bought in at 40s. per cwt.

Chillies.—5 bales fair bright *Zanzibar* sold without reserve at 35s. per cwt.

Civet.—3 horns good fair were bought in at 18s. per oz.

China Bark.—Of 99 packages *Crown Bark* part sold at 5d. up to 9d. per lb., remainder being held for 8½d. to 10½d. 42 bales *Yellow Bark* part sold previously, part taken out at 1s. 6d.

Coca Leaves.—A miscellaneous assortment, consisting partly of *Truxillo* of fair colour and partly of brown *Huanoco*, were all withdrawn, there being absolutely no demand.

Cod Liver Oil.—15 casks *Norwegian* imported last year were offered without reserve and sold at 45s. per barrel.

Colocynth.—Of 9 cases fair *Turkey* part sold at 1s. per lb. 4 cases broken and seedy *Spanish* were held for 6½d.

Colombo Root.—10 bags washed pickings sold at 40s. per cwt., 18 bags fair sorts at same figure, while 10 bags good picked realised 60s., which shows a dearer market.

Croton Seeds.—10 bags of poor quality were taken out at 40s. per cwt.

Cubebs.—22 bags fair *Singapore* were held for 27s. per cwt., 5 bags low *East Indian* selling at 20s.

Cumin Seed.—53 bags fair *Malta* were held for 31s. to 32s. per cwt.

Cus Cus Root.—4 bales fair cleaned were held for 30s. per cwt.

Cuttlefish.—20 mats good bold pale were held for 3½d. per lb.

Dragon's Blood.—Fine quality is much wanted, but none comes forward. In sale 8 cases dull seedy lump sold cheaply at 70s. per cwt.; one lot at 75s. Good bright scedy lump also sold at about 5s. per cwt. lower at £5 15s. per cwt. Dark-coated slabs of dull colour held for 80s. per cwt.

Ergot of Rye.—22 bags fairly bold sound *Russian* held for 10d. per lb., fair grey *Continental* for same price, good bold but weevily *Spanish* sold cheaply without reserve at 6¾d. per lb.

Galangal Root.—For 23 bales fair quality 25s. per cwt. was price required.

Galls.—3 bags good *Blues* were taken out at 60s. per cwt., low mixed *Turkey* selling without reserve at 27s. to 49s.

Gentian Root.—36 bales bought in at 24s. for good fair, up to 27s. for good thin quality.

Golden Seal Root.—6 bags bought in at 2s. per lb.

Guinea Grains.—4 bags of good quality sold at 33s. per cwt.

Gum Arabic.—3 cases good picked white were taken out at £14, grain at £7, 1 case yellow picked selling at £5, hard sorts at 65s. per cwt.

Gum Benjamin.—6 cases inferior *Siam* were held for 80s. per cwt., a bid of 75s. being declined, 1 case blocky rather dark selling at £6 10s. A new lot of 70 boxes sold well for small to medium free almondy, 38 boxes realising £15 10s. to £16 7s. 6d.; 18 boxes blocky small sold £7 2s. 6d., and 3 cases fine bold, free were held for £25. *Palembang*, 42 cases barky thirds sold without reserve at 19s. to 20s. per cwt.; fair seconds *Sumatra* sold at £5 5s. down to 80s. for ditto good centres, but dark sides.

Gum Chicle.—10 bags were bought in at 1s. 3d. per lb.

Gum Elemi.—8 cases of dark colour held for 20s. per cwt.

Gum Euphorbium.—9 serons sold at 9s. per cwt. subject to approval.

Gum Galbanum.—16 packages low, part blocky and woody, held for 9d. per lb., good blocky for 1s., only 10d. being bid.

Gum Kino.—2 cases *African* bought in at 4s. 6d. per lb.

Gum Myrrh.—2 bales low siftings sold without reserve at 24s. per cwt. Good pale native picked held for 85s., pale pea siftings realising 55s. 22 barrels fair pale Aden picked held for £6.

Gum Olibanum.—15 cases fair picked were bought in at 52s. 6d. per cwt.

Honey.—18 packages medium to fair *Jamaica* sold at 21s. to 23s. 6d. per cwt.

Ipecacuanha.—Of *Rio* quality only 20 bales were offered. These sold readily at an advance of fully 2d. per lb. at from 6s. 3d. to 6s. 5d. per lb. *Carthagena* was in small supply; part sold at 5s. 2d. per lb., a very full price.

Jalap.—29 bales small heavy held for 6½d. per lb.

Juniper Berries.—20 bags fair *Italian* were held for 9s. 6d. per cwt.

Kola Nuts.—18 bags were held for 7d. per lb. for good, 6d. for fair, and 4d. for cut.

Liquorice Root.—20 bales rough *Persian* were taken out at 9s. 6d. per cwt.

Musk.—1 tin *Tonquin* pile 3, thin skin blue several broken held for 45s. per oz., and 2 tins *ditto* old fashioned for 25s., thin skin grey small to bold few broken fairly dry for 65s.

Olive Oil.—10 cases finest guaranteed pure *Italian* were held for 6s. per gallon.

Oils (Essential).—*Star Aniseed* quiet; 7s. 9d. per lb. asked, but no buyer above 7s. 6d. per lb. *Lemon-grass* firm and dearer at 4d. per oz. *Citronella* quiet at 1s. 4½d. per lb. *Cajeputa*: 2 cases in sale realised the high price of 4s. 1d. per bottle. *Nutmeg* held for 3d. per oz. *Peppermint*: *H.G.H.* on the spot is held for 5s. 9d. per lb.; *Japan*, with 40 per cent. menthol, held for 5s. 3d. per lb. *Eucalyptus*: In fair supply, but all bought in at from 1s. to 1s. 11d. per lb., according to quality.

Orange Peel.—Of 28 packages, part sold at 6½d. per lb. for very dark; for 29 packages good new bright thin cut, 9d. was the price, and 7d. to 7½d. for dark thin cut; dark thick cut fetching 4d.

Orris Root.—Fair to good *Florentine* was held for 40s. to 45s. per cwt., 2 bags dull *Verona* selling without reserve at 22s.; 14 bags good *Mogador* were taken out at 45s.; 28 cases *East Indian* held for 10s. 6d. per cwt.

Rhatany Root.—13 bales fair quality were held for 6½d. per lb.

Rhubarb.—1 case good bold orange coated round *Shensi* slightly greyish held for the high price of 4s. 6d. per lb., only 3s. being bid, and 1 case medium ditto, but rather rough, taken out at 2s. 6d. One case medium to smallish ditto selling at 3s.; good bold round *Canton* held for 1s. 4d. to 1s. 6d.; medium ditto for 1s. 2d. to 1s. 3d. 1 case small, part rough, realising 1s. 1d.; flat *Canton* bought in at 1s. 1d. to 1s. 8d.; 1 case pickings round and flat mixed, sold at 10½d. *High-dried* bought in at 1s. 4d. to 1s. 10d. for good bold round, and 1s. 6d. to 1s. 8d. for ditto flat; 3 cases common rough horny selling at 7d. per lb.

Sandal Wood Chips.—279 bales were all bought in at £9 to £22 per ton, according to quality; in logs a good business has been done privately up to £45 per ton, holders of good quality now ask £50 to £55.

Sarsaparilla.—15 bales *Jamaica* part sold at 1s. 8d. per lb. down to 1s. 4d. for rough; balance held for 1s. 10d., a bid of 1s. 9d. being refused. 3 bales red native sold at 1s. 16 bales *Lima* part sold at 1s. 3d. to 1s. 4d., rest being bought in at 1s. 6d.

Senna.—The demand for *Tinnevelly* continues unabated, stocks being small, and arrivals so far decidedly short of even moderate expectations. At to-day's sales only 288 bales were offered, the quality on the whole being inferior. Prices were again very high for anything of fair to good to good quality. 1 bale good bold leaf of fair colour realised 9d. per lb. Small spotty leaves fetched 1¾d. to 2¼d. per lb. Arrivals are coming in very slowly, and the offerings at the next auction will be small. *Alexandrian*: 133 packages were offered, the whole being bought in; no fine green leaf was offered.

Sticklac.—145 bags *Siam* bought in at 46s. per cwt.

Squills.—45 bags of fair quality were held for 3d. per lb.

Tartar.—7 casks fair *Greek* bought in at 67s. 6d. per cwt.

Tonquin Beans.—1 cask good *Angostura* held for 8s. 6d. per lb., and 8 cases *Para* of dark colour, part foxy, for 1s.

Vanilloes.—Owing to the large quantity offered (962 tins) this portion of the sale will be held to-morrow.

Wax.—3 bales *China* were taken out at £9 per cwt., *North American* at £6 15s., *Morocco* at £5 10s. to £6. For 1 case *Bombay* a bid of 70s. was declined. 2 cases *Calcutta* sold at £6 2s. 6d. 7 packages good *Jamaica* sold at £7 5s., fair *Madagascar* sold at £5 7s. 6d., fair *Zanzibar* held for £5 5s.

NEWCASTLE CHEMICAL REPORT.

November 10, 1897.

This market, although fairly busy, finds a slackening down of Baltic business now that the shipping season that way is rapidly drawing to a close. Prices very steady and unchanged. Bleaching Powder, £6 10s. to £7 10s. Sulphur, £5. Alkali, 52 per cent., £5 5s. Soda Ash, 52 per cent., £4 5s. Soda Crystals, 42s. 6d. to 57s. 6d. Caustic Soda, 70 per cent., £7 10s. to £7 15s. per ton.

LIVERPOOL REPORT.

November 10, 1897.

The market has been rather better this week, with a good tone generally prevalent and a somewhat larger list of articles offering than usual. South American produce, in the shape of Carnauba Wax, Honey, Quillaya Bark, and Beeswax has been selling in good style at fair rates. A large consignment of Coca Leaves from the west coast of South America, amounting to 100 bales, was sold on the fifth at 6¼d. to 6½d. per lb. Beeswax, Cochineal, and Guinea Grains are among the African staples which found buyers, in addition to which dried Kola Nuts changed hands at slightly better prices than those of last week. The position of Oils generally is practically unaltered, French Castor Oil being a turn easier. Olive Oils of all kinds extremely dear and in short supply, whilst Spirits of Turpentine is lower by 3d. per cwt. So far as chemicals are concerned, trade has been rather quiet, with lower rates for Sulphate of Copper and Bleaching Powder.

Ammonium Salts—Are without change from last week's report.

Beeswax—Has been making good prices, 6 packages of Loanda selling for £5 15s. per cwt., and 5 lots of Peruvian for £6 12s. 6d. to £6 17s. 6d. per cwt.

Bleaching Powder—Is cheaper, the price ruling here at present being £6 10s. per ton *f.o.b.*

Canaryseed—Is quiet and unchanged at the nominal price of 26s. 6d. to 27s. 6d. per 464 lbs. for Turkish, with a rather better inquiry for spot lots.

Carnauba Wax.—About 100 bags of various kinds have been sold, grey making 35s. per cwt.

Cochineal.—10 bags of black grain Teneriffe sold at late rates.

Coca Leaves.—100 bales of West Coast of South America leaves sold at 6¼d. to 6½d. per lb.

Copperas—Brings 39s. per ton for Lancashire and 37s. per ton for Welsh.

Copper Sulphate—Is weaker at £16 10s. per ton.

Guinea Grains.—20 bags of Winnebah sold at 17s. per cwt.

Honey.—20 barrels of Chilian, Pile X, found buyers at 27s. 6d. to 28s. 6d. per cwt.. Prices are now: Pile X, 28s. to 30s. per cwt.; Pile 1, 25s.; Pile 2, 24s.; Pile 3, 23s. per cwt.

Kola Nuts.—70 packages of dried found purchasers at 2¾d. to 3¼d. per lb.

Linseed—Is very firm, with only a small amount of business doing in Turkish at 35s. 6d. per 416 lbs.

Oils (Fixed) and Spirits.—*Castor oils* are steady and in good demand, Calcutta at 3 1/16d. per lb., and French at the lower rate of 3 7/16d. per lb. *Olive oils* continue to maintain an extremely firm market; sales of Candia are reported on private terms. *Linseed oil* of Liverpool make is steady at last week's quotation, 16s. to 16s. 6d. per cwt. *Cottonseed oils* Liverpool refined, are quiet at 15s. to 16s. per cwt. *Spirits of Turpentine*: After a fall of 6d. per cwt., 23s. 6d. per cwt., has risen to 23s. 9d., at which figure it is steady and in fair demand.

Potash Salts, including Cream of Tartar, are unchanged from last week.

Quillaya Bark.—Chilian is firmly held here for £29 per ton, but so far no sales have been reported at this figure.

MANCHESTER CHEMICAL REPORT.

'November 10, 1897.

The export returns for the past month are the most favourable that have been published for some time past, but this does not explain a rather extraordinary state of things in this district. Late on Friday somewhat of a sensation was caused on 'Change by a rumour that Bleaching Powder was being offered over next year at £4 17s. 6d. by one firm, and that this example was being followed by the United Alkali Co., but so far as can be ascertained, the latter part is incorrect, and

that their lowest figure is £5 5s. Caustic Soda is very steady, and is quoted at £7 per ton for white 70 per cent. Soda Ash, Ammonia Alkali, and Soda Crystals are well maintained. Welsh Brown Acetate of Lime is scarce at about £5 12s. 6d., and best American is firm at £5 15s. *c.i.f.*, though likely to go higher on account of rise in freights. Yellow Prussiate has advanced to 6½d. per lb. for best Lancashire make. Pitch is still dull at 17s. 6d. per ton *f.a.s.*, Manchester Ship Canal. Alum is steady at £4 17s. 6d. to £5 per ton for loose lump, and £5 10s. ground in bags on rails. Benzols firm, but Naphthas rather easier. Green Copperas scarce. Aniline Oil and Salt quoted 6½d. Peroxide of Manganese: £12 15s. to £13 15s., and Battery Manganese, £9 5s. to £9 17s. 6d. No change in Glaubers and Epsom Salts. Sulphate of Copper easier at £17, delivered Manchester, best brands.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Edmund Hargreaves and W. B. Caley, Surgeons, Apothecaries, and Accoucheurs, 2, Eyre Street, and 76, Surrey Street, Sheffield. Debts will be received and paid by Edmund Hargreaves.

Hastings and Anderson, Physicians and Surgeons, Birchin Lane, E.C.

Barnes and Wilshaw, Physicians, Surgeons, and Apothecaries, Bolton.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

John Orme (lately trading as J. Orme & Co., at 65, Barbican, E.C.), Scientific Apparatus Manufacturer, 6, Cross Street, Finsbury, and residing at Panama House, Leytonstone.

Dr. Herbert Tibbits, Eastbourne Terrace, Paddington, W.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

TUESDAY, NOVEMBER 16.

PHARMACEUTICAL SOCIETY.
Evening Meeting at 8 p.m., President in the Chair. "Suppositories," by Messrs. J. O. Braithwaite and Edmund White; "Pharmacy in Some American Universities," by Professor J. Reynolds Green. Also an Exhibition of Emetine Salts and other Products.

ROYAL PHOTOGRAPHIC SOCIETY, at 12, Hanover Square, at 8 p.m.
"A Review of Triple Printing Methods," by E. Sanger Shepherd.

WEDNESDAY, NOVEMBER 17.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Lecture by B. Lomax.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9.15 p.m.
"For and Against Official Standardisation," by A. Wathes (Exchange Restaurant, Stephenson Place).

NEWCASTLE-UPON-TYNE AND DISTRICT CHEMISTS ASSOCIATION, at 8 p.m.
"From Mont Blanc to the Matterhorn," by W. Lamond Howie (Church Institute, Hood Street). Visit of the Sunderland Association to this Meeting.

ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.
Ordinary Meeting.

SUNDERLAND CHEMISTS' ASSOCIATION, at 8 p.m.
Visit to the Newcastle Association to hear Mr. Howie's Lecture.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON), at 6.30 p.m.
Annual Dinner (Café Royal).

THURSDAY, NOVEMBER 18.

CHEMICAL SOCIETY, at 8 p.m.
"On the Decomposition of Camphoric Acid by Fusion with Potash or Soda," by A. W. Crossley and W. H. Perkin, jun.
"Experiments on the Synthesis of Camphoric Acid," by W. H. Bentley and W. H. Perkin, jun.
"The Action of Magnesium on Cupric Sulphate Solution," by Frank Clowes and R. M. Caven.
"Properties and Relationships of Di-hydroxy tartaric Acid," by H. J. Horstman Fenton.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 7.30 p.m.
"Cinderella" Dance (Portman Rooms).

LINNEAN SOCIETY, at 8 p.m.
"On *Pontobolbos manadrensis*," by Professor A. Dendy.
"On Haddonia, a New Genus of *Foramenifera*," by F. Chapman.

FRIDAY, NOVEMBER 19.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
Debate: "Does the Eye or Ear Afford the More Amusement?" by Messrs. Wallace and Watt.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
"The Ethics of Pharmacy," by Archibald Currie.
"What is a Poison?" "Botanical Notes," "Laboratory Notes," by J. Rutherford Hill.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
"The History of the Microscope in Medical Science," by Dr. Wilkinson.

GENERAL INDEX to the PHARMACEUTICAL JOURNAL.

A general index for the seventeen years ending June 29, 1895—including volumes IX. to XXV. of the 3rd series—is in course of preparation, and will be printed by subscription if a sufficient number of orders are received. The subscription price will not exceed one guinea, and—if the work is to be proceeded with—orders should be addressed without delay to the Editorial Department, "Pharmaceutical Journal," 17, Bloomsbury Square, London, W.C.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Christmas.—Glass frost for decorations, under 1 lb. posted, 1s. 6d., under 2 lbs. 2s. 10d.; clean used club playing cards, 1s.; card counters, imitation guineas, metal, 2s. per 100.—Foster, 80, Navigation Street, Birmingham.

OFFERED—*(continued).*

Opportunity! "The Gem" Soda-water Machine, in good working order; 75 doz. large, 150 doz. small; cost £28; price only £14.—Spa Co., near Diss.

Books.

'Pharmaceutical Journal,' 1859-1879, 20 vols., half leather; 'Year-Book Pharmacy,' 1870, 1871, 1873; cash, offers wanted.—"Gazette" Office, Canterbury.

Shop Fittings.

Brass Counter Bar, with 8 projecting gas jets, 2 mahogany counters 6 feet long, 1 deal ditto with 6 large drawers for dry goods, 8 feet long, handsome automatic still, waterwheel.—West, Chemist, Barrow.

OFFERED—*(continued).*

WANTED.

'Journal of the Chemical Society,' 1863 to 1870, inclusive; 'Journal of the Society of Chemical Industry' for 1895, also September, October, November, and December, 1888, and January, 1887; 'Chemist and Druggist' for 1860 to 1863, inclusive.—Price to J. P., 16, Chaucer Street, Leicester.

Wanted, Whiteley's 'Chemical Calculations,' Ince's 'Latin Grammar,' Wills' 'Analysis.'—Hermann Ruoff, Reading.

Advertiser is open to buy Chemical Apparatus, Laboratory Fittings, Balances, Flasks, Burners, Stoppered Bottles, Pure Chemicals, etc.; cheap for cash.—Particulars to Chemist, 34, Avondale Road, Chorley.

NEWS IN BRIEF.

School of Pharmacy.—As announced last week, the annual smoking concert in connection with the Pharmaceutical Football and Cricket Club will be held on Tuesday, November 23, at the Holborn Restaurant, Professor Collie in the chair. Mr. T. Edward Lescher, 17, Bloomsbury Square, W.C., is the Hon. Secretary, and will be glad to receive applications for tickets, 1*s.* 6*d.* each. A good company of professional artistes has been engaged, and it is hoped that many old students as well as others will make an effort to be present.

Mr. J. W. Knapman, Librarian to the Pharmaceutical Society, is to be congratulated on the success of his son, H. Knapman (Rugby School), who has won a mathematical scholarship at Emmanuel College, Cambridge, of the value of £80.

Mr. David Rees, A.P.S., headed the poll at the recent election of members to the four vacant seats on the Llanidloes Town Council.

Football.—Pharmaceutical F.C. *v.* Muter's F.C.—This match was played on Saturday last at Balham, and resulted in a win for the first-mentioned team by 5 goals to none.—Northern School of Pharmacy *v.* Manchester School of Pharmacy.—These two teams met at the Manchester Trinity Ground on Saturday last, and a very interesting game took place, ending in a brilliant victory for the "Northern" by 7 goals to none.

Nottingham and Notts. Chemists' Association.—The second meeting of the session will be held at the Albert Hotel, Derby Road, on Wednesday, November 24, chair to be taken at 9 p.m. prompt. Subject: "The Proposed Amendment to the Pharmacy Act" (see *Pharm. Journ.* of November 6 and 13). Mr. Beilby will open the discussion.

The Lord Mayor of Manchester (Mr. R. Gibson, Ph.C.), has, we are given to understand, signified his pleasure at receiving the invitation of the local chemists to a banquet, and January 26 is the day fixed for the function, of which we are promised full particulars shortly. In the meantime inquiries should be addressed to the Hon. Sec. to the Committee, Mr. Harry Kemp, at Chorlton-cum-Hardy, Manchester.

Bradford and District Chemists' Association.—This Association held a successful social evening at the Great Northern Victoria Hotel, on Tuesday evening, the 16th, when there was a good attendance of members, their wives, and friends. Mr. Waddington presided in the absence of the President (Ald. Henry Dunn). The programme, which was a taking one, consisted of duets by Mr. and Mrs. J. A. Mitchell; songs by Mr. and Mrs. J. A. Mitchell, Mr. and Mrs. J. O. Moulson, Mr. Silson, Mr. A. Hanson; banjo solos by Mr. J. O. Moulson; and violin solo by R. Silson, jun. The Chairman, who drew attention to the new syllabus, remarked that he hoped the ladies would be even in greater evidence at many of these lectures, as a most interesting course of lectures, etc., had been arranged. The Chairman proposed, and Mr. Carson seconded, a vote of thanks to the visitors, which was carried with acclamation.

Brighton Junior Association of Pharmacy.—On Wednesday, Nov. 10, the eighth annual dinner was held at the Café Royal, Brighton, the President (Mr. C. A. Blamey) in the chair, and a goodly company of members and friends sat down to an excellent menu, very well served, after which a brief toast list, interspersed with songs, etc., occupied their attention. Amongst those present were Drs. E. G. Whittle, F. J. Paley, and C. Chepmell, Mr. Wallis, Messrs. H. A. Costerton, W. H. Gibson, J. R. Gwatkin, A. P. Nosworthy, C. G. Yates, W. H. Andrews (Hon. Sec.), etc., etc. In the toast list, Mr. H. A. Costerton proposed "The Medical Profession."—Dr. Whittle, in reply, said that he was very glad to see the harmonious way in which the two professions were working together. The medical man of Brighton knew very well that no matter what he ordered in a prescription, it would be dispensed faithfully and well. He was very glad that the practice was dying out for doctors to do their own dispensing; he was very sure the public would be better served in that respect by the chemist than they ever were by the doctor.—Dr. C. Chepmell proposed "The Pharmaceutical Society," and spoke of the Pharmaceutical Council as a more active body than the General Medical Council, and went on to speak of the advantages which the pharmacist had obtained through its agency. He made special reference to the Benevolent Fund, and hoped that it would receive the support it deserved.—Mr. Yates responded for the Society, enlarging on the objects of the Society and exhorting them all to do their best to give it the support it has a right to expect.—Mr. Geo. Long proposed "The Brighton Associations of Pharmacy," Mr. W. H. Gibson responding for the Senior Association, and Mr. C. A. Blamey for the Junior Section of the Association.—Mr. A. P. Nosworthy proposed "The Guests and Visitors," Mr. Wallis and Dr. F. J. Paley responding.—Votes of thanks to the chair, Committee, etc., brought a very pleasant evening to a close.

The Royal Society Medals for this year have been duly awarded, the Copley Medal going to Professor Albert von Kölliker, the Royal Medals to Professor A. R. Forsyth and Lieut.-General Sir Richard Strachey, the Davy Medal to Dr. J. H. Gladstone, and the Buchanan Medal to Sir John Simon.

Mr. William Robert Maud, J.P., chemist and druggist, has been elected Mayor of Pontefract.

MARRIAGE.

Landor—Sharp.—On November 10, at St. John's Church, Ladywood, Birmingham, by the Rev. A. R. Moss (Vicar), William Ernest, eldest son of Wm. Landor, Bradford House, Ladywood, to Gertrude, second daughter of Wm. Sharp, Sunnyside, Edgbaston.

Market Report.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

November 18, 1897.

Business has been somewhat quiet during past week, the chief event having been a further rise in value of Cinchona Bark, which is confidently expected to be the forerunner of a further rise in the price of Quinine. Ipecacuanha, Podophyllin, and Sal Ammoniac also dearer. Vanilloes went cheaper at last Friday's sale in consequence no doubt of large quantity offered. Opium and Morphia quiet. Codeia firm. Acid Citric and Tartaric easier. Cream of Tartar dull. Sulphate of Copper weaker. Iodine and Iodides, Quicksilver and Mercurials unchanged. Castor Oil, Cod-Liver Oil, Glycerine, and Shellac dull. Menthol firm. Thymol steady. The following prices rule for articles of principal interest:

Acetanilid—Is weak at 1s. 2½d. to 1s. 4d. per lb. according to quantity, but even this low price does not bring consumers on the market.

Acid Acetic.—The demand is fairly steady, and prices remain unaltered at 14s. 3d. to 15s. 3d. per cwt. for B.P. 33 per cent., 23s. 6d. for 60 per cent., and 36s. 3d. to 39s. 3d. per cwt. for the glacial, according to quantity.

Acid Boracic—Is quiet, *crystals* are quoted at 24s. to 25s., and *powder*, 26s. to 27s. per cwt. according to quantity.

Acid Carbolic.—Very firm at 7d. to 7¼d. for 35-35° C. *ice crystal* in bulk packing, other qualities and packing in proportion. *Crude*, 60°, 2s. 1d.; 75°, 2s. 6d. per gallon. *Liquid*, 95 per cent., of pale straw colour, 1s. 2d. per gallon in 40-gallon casks.

Acid Citric—Very quiet at 1s. 1d. to 1s. 1¼d. per lb. for crystals on the spot.

Acid Oxalic.—For deliveries this year the old prices rule, but for delivery over 1898 prices have been reduced to 3½d. per lb. for quantities under 2 tons.

Acid Tartaric—Is dull and a shade weaker. *English*, on the spot, 1s. 1½d. per lb. *Foreign*, 12½d. to 12¾d. per lb. Small crystals and powder, ¼d. per lb. more.

Ammonia Compounds.—*Sulphate* is a very strong market at again higher values. Grey prompt 24 per cent. London £8 17s. 6d. per ton. *Chloride* rather easier at 23s. 6d. to 25s. 6d. per cwt. for the 98 per cent. free from metals, and 30s. to 32s. for the chemi-

cally pure in small crystals. *Oxalate*: 6¼d. per lb. *Sulpho-cyanide*: 10d. to 11d. per lb. for ordinary, whilst Schering's is still quoted 1s. to 1s. 1½d. per lb. *Sal ammoniac* dearer; sublimed firsts, 35s. 6d., seconds, 37s. 6d. per cwt., with usual differences for crushed and powder.

ATROPINE—Is firm at 12s. 8d. for the *sulphate* and 2s. 6d. per oz. more for the *pure*, good raw material remaining still scarce and dear.

BELLADONNA ROOT—Continues very scarce at 40s. for fair quality up to 46s. for really good, which latter is, however, hardly procurable.

BLEACHING POWDER.—A fairly steady demand at £7 5s. to £7 10s. per ton.

BORAX—Continues dull with competition among sellers, quotations range from 14s. to 15s. 6d. per cwt. for *crystals*, and 14s. 6d. to 16s. for powder according to quantity and make.

CAFFEINE—Is steady at 18s. 6d. for the *pure*, and 14s. 6d. for the *citrate P.B.*

CAMOMILES—Are firmer, and from Belgium we hear that holders ask 36s. per cwt. for good white flowers and 32s. to 33s. per cwt. for fair ditto.

CASCARA SAGRADA—Firm at 18s. per cwt. *c.i.f.*, and 18s. 6d. to 19s. on spot.

CINCHONA BARK.—A further rise of values took place on Tuesday at the monthly sales here, when a much larger quantity was offered than for some time past, amounting to 3986 packages, against 1307 packages at the previous sale. Competition was very keen, manufacturers being exceedingly anxious to obtain fresh raw material in view of the demand for Quinine, especially for barks rich in Cinchonidine. We estimate the advance on the last Amsterdam sales to be fully 10 per cent., the unit rate being 1¾d. to 2d. *Ceylon*: Of 799 packages offered 622 packages sold, according to analysis: *Succirubra*, stem chips, ordinary to fair at 2¾d. to 4⅝d.; shavings, fair to good at 4d. to 5⅜d.; root, ordinary to fair at 2¾d. to 4⅞d.; quill, ordinary to good at 2⅞d. to 5⅜d.; renewed chips and shavings, fair to good rich from 4d. to 7⅜d. *Officinalis* chips and shavings, ordinary to good at 2⅞d. to 5½d., branch at 2d. to 2⅝d.; renewed chips and shavings, ordinary to fine at 3¼d. to 8d. *Ledger* stem chips at 6¼d. *East Indian*: Of 718 bales 146 cases and 58 bags offered 489 bales 14 cases and 18 bags sold, red stem chips and shavings at 2¾d. to 5⅝d.; quill 4⅝d. to 5¾d. split 3¾d., renewed chips and shavings at 4⅛d. to 6d. *Officinalis*, chips and shavings, ordinary to good at 3¼d. to 6d.; quill, renewed split at 9d., natural mossy at 8½d., broken 5⅝d., renewed chips and shavings 5¾d. to 8⅝d. All other kinds: *Ledger*, stem chips 3½d. to 5⅛d., stem and branch at 5⅛d. to 5¼d. Hybrid, renewed at 6d., stem and branch at 4⅛d. *Java*: 267 bales, 117 cases, and 112 bags offered, and 267 bales, 54 cases, and 112 bags sold; *Ledger*: Natural stem chips at 6⅛d. to 6¼d., branch at 7⅞d. to 10¼d., quill 4½d. to 7¼d., broken ditto 3½d. *South American*: Of 717 bales *Bolivian Calisaya* offered about 300 bales sold at and after the sale; quill, fair to good 5d. to 9¼d., broken 4½d. to 6¾d., twigs at 2¼d. to 3¼d. *Cuprea*: Of 495 packages 294 sold, old import from 1½d. to 2⅞d. *Columbian*: 17 bales soft bought in at 5½d. 29 bales flat *Carthagena* offered and 14 bales sold at 6d. *African*: Of 511 bales 456 sold' quill, fair to good at 5d. to 8½d., broken ditto 4¾d. per lb. The following dates have been fixed for the auctions next year:—Jan. 25, Feb. 15, March 15, April 26, May 24, June 21, July 19, Aug. 16, Sept. 13, Oct. 11, Nov. 8, and Dec. 13.

CLOVES.—Privately *Zanzibar* have fluctuated, and are lower than last week, closing firmer, though quiet, January to March delivery, 2$\frac{15}{16}$d. to 2$\frac{31}{32}$d. At auction 34 cases fair picked *Penang* sold without reserve at 6½d.; also 2 cases good picked at 8½d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: 2s. 5d. per gallon. *Benzole*: 50 per cent. 2s. 3d.; 90 per cent. 2s. *Crude naphtha*: 30 per cent. at 120° C. 1s. *Solvent naphtha*: 95 per cent. at 160° C. 2s. per gallon

COCAINE.—The anticipated rise continues, makers now quoting 10s. to 10s. 6d. per oz. in 100-oz. lots, while manufacturers of the brands most in favour state that they are sold out, and that they have none to offer even at the advanced figure. A further advance in value is considered practically certain.

CODEIA—Is very firm at 11s. 3d. to 11s. 6d. per oz.

COD-LIVER OIL.—There is not very much doing, price of best non-freezing *Norwegian* varying from 70s. to 75s. per barrel, according to brand. *Newfoundland*: Nominally 2s. per gallon, demand being, however, practically *nil*.

COLOMBO ROOT—Continues in active demand, and even at present high values holders are not ready sellers.

CREAM OF TARTAR—Is exceedingly dull, and business is very difficult at the moment. First white *French crystals* are quoted 73s. 6d. to 74s. per cwt. *Powder*: 76s. to 77s. per cwt.; 99 per cent. is scarce, and 80s. per cwt. is the nearest quotation for *crystals*.

GENTIAN ROOT.—Quiet at 23s. to 24s. per cwt.

GINGER.—*Cochin* continues dull at still declining rates. Only 240 bags sold; rough small and medium, part lean and wormy, 17s. to 19s.; fair washed, 22s. 6d. 18 cases cut bought in; B, 75s.; fine bold, 110s. 100 bags *Japan* bought in at 16s. *Jamaica* dull; 58 barrels bought in, low middling to middling, 70s. to 82s.

GLYCERIN—Is quiet, the continued mild weather having apparently checked the demand, which is as a rule brisk at this season of the year. Price of best white double distilled chemically pure, 1260 quality in tins and cases varying from 55s. to 60s. per cwt.

GUM EUPHORBIUM.—The sale at 9s. "subject to approval," which we advised in our last, was not confirmed, and brokers now hold for 11s. 6d. per cwt.

IODIDE.—Unchanged at 7½d. per oz. *Iodides* remaining in good demand at unchanged values.

IPECACUANHA.—Since last week's auctions further sales have taken place, and importers now ask 6s. 9d. per lb. for *Rio*. The *Carthagena* variety has been practically cleared at 5s. 6d. per lb.

LITHIA—Is steady at 9s. 9d. for the *carbonate* in smaller quantity, down to 9s. 4d. per lb. for 2-cwt. lots.

MENTHOL.—Market is firm at 7s. 6d. to 7s. 9d. per lb. for best dry white crystals on spot and 8s. to arrive, general opinion being that we shall see a further advance in value of this article.

MERCURIALS—Without change at 2s. 2d. for *corrosive sublimate* and 2s. 6d. for *calomel* in 5-cwt. lots.

MORPHIA—Quiet at 4s. 3d. to 4s. 6d. per oz. for the *hydrochlorate powder* according to quantity and packing.

NITRATE OF SILVER—Remains somewhat unsettled in common with the metal at 1s. 6d. to 1s. 6½d. per oz. for *crystals*, price of *sticks* being higher in proportion.

NITRATE OF SODA—Quiet at about previous value, say £7 10s. to £8 5s. according to quality, quantity and packing.

OILS (ESSENTIAL).—*Cassia*: Quiet, 75 to 80 per cent., 5s. 9d.; 60 to 65 per cent., 5s. 3d. *Cajeputa* still very strong at about 4s. 6d. per bottle. *Peppermint*: H.G.H. steady at 5s. 10½d. per lb. *Wayne County*, 3s. 9d. *Japan* dementholised, 3s. 1½d.; 40 per cent., 4s. 9d. *Star Aniseed* rather easier at 7s. 6d. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed* dearer, closing quiet at £14 15s. to £14 17s. 6d. for pipes, and £15 2s. 6d. to £15 5s. for barrels. *Rape* unchanged for ordinary brown at £26, whilst refined is steady at £27 10s. on the spot. *Cotton* quiet at £14 5s. to £15 5s. for refined on the spot, according to make. *Olive*: No change; Spanish, £32; Levant, £31 10s. to £33. *Cocoanut* quiet but steady. *Ceylon*, on the spot, £22. *Cochin*, on the spot, £30. *Palm*: Lagos, on the spot, £21 15s. *Turpentine* firmer and in better demand; American on the spot, 23s. to 23s. 1½d. per cwt.; December, 23s. 3d. per cwt. *Petroleum*: Russian spot, 4¼d.; American, 4½d. per gallon; water white, 5⅛d. per gallon. *Petroleum Spirit*: American, 6d.; deodorised, 6¼d. per gallon. *Castor*: Prices remain high, with but a small inquiry. *Calcutta*: Firsts, 4½d.; seconds, 3⅞d. per lb. *French*: Water white, 4d. per lb. *Italian*, 5¼d. per lb.

OPIUM—Market is steady at a nominal advance, both here and on the other side, of 3d. per lb; druggists' quality being quoted 9s. to 10s. 9d.; soft shipping at 11s. to 12s. 9d., and *Persian*, 10s. 6d. to 11s. per lb.

PHENACETIN—Steady without change in value at 4s. to 4s. 3d. per lb., Bayer's make still commanding the fancy price of 14s. 3d. per lb. for quantity and bulk packing.

PODOPHYLLIN.—In consequence of the active demand, combined with scarcity and dearness of good root, makers have advanced their prices, the *American* being now held for 10s. 6d. to 11s., while *English* and *Continental* manufacturers require 11s. 6d. to 13s. 6d., according to quantity and make, a nda further advance in value would appear not improbable.

POTASH COMPOUNDS.—*Chlorate* steady at 3⅞d. per lb. on the spot. *Bicarbonate* quiet at 30s. per cwt. for powder. *Bromide*: Steady at 1s. 10d. per lb. *Cyanide* dearer at 1s. to 1s. 0½d. per lb. *Permanganate* quiet at 67s. 6d. to 72s. 6d. per cwt. for small and large crystals respectively, and as to quantity. *Prussiate*: Yellow firm at 6d. to 6½d. per lb. Red, 1s. 1½d. to 1s. 2½d. per lb.

QUICKSILVER—Remains unchanged at

£7 per bottle from importers, and £6 19s. from second hands.

Quinine.—Howard's price has been fixed at 1s. 6d. per oz. in oz. vials, these makers state however that they are not at all anxious to effect sales at this, or in fact for the moment at any figure. The chief German makers are practically holding off the market, no definite price appearing to have been fixed, it is thought, however, in view of the further rise in value of Bark, that a not inconsiderable further rise in price of quinine is inevitable. From second hand quite limited quantities of the favourite brands, viz., B. & S. and Brunswick, are still obtainable at 1s. 3d. per oz. in 100-oz. tins and for lots of 1000 oz. and upwards.

Resorcin—Is steady at 6s. 6d. to 7s. per lb. for *recryst.* according to quantity.

Saffron.—Holders of old crop seem anxious to sell in consequcnce of the arrival of new crop. Prices of the new crop have not yet becn fixed, but there seems every probability of lower rather than higher rates ruling. Quotations at the moment are nominal at 37s. 6d. to 44s. per lb. for Valencia.

Scammony Resin—Is lower at 6s. 6d. to 6s. 9d. per lb. for *English*.

Shellac.—The demand privately has been practically lifeless, with sales of quite a retail character. The shipments from Calcutta during the first half of November were as follows:—To the United Kingdom 5300 cwt., against 4900 cwt. same time last year; to the United States 600 cwt., the same quantity as last year; and to the Continent 1500 cwt., against 1100 cwt. last year. The supplies at the fortnightly sales met with a fair demand, the bulk of the offerings consisting of block and blocky, which qualities sold at rather dearer rates. A total of 1137 cases offered and 635 cases sold. *Second Orange*: Of 1026 cases 609 sold, fair to good bright *SM* in circle at 73s. to 78s., weak palish *SSO* in diamond at 70s., fair to good bright *TN* at 62s. to 63s., fair flat red at 61s., ordinary reddish livery at 59s. to 60s.; all more or less cakey and blocky, good bright 61s. to 62s., fair red 59s. to 61s., ordinary dark red 58s. to 59s., hard block at 56s. to 59s., ditto worked at 55s. to 56s. *Garnet*: Of 33 cases 21 sold, matted *JB*, *G* at 59s. *Button*: Of 78 cases 5 sold, low dark at 36s.

Soda Compounds.—*Crystals* unchanged at 55s. per ton ex ship terms. *Acetate*: The ordinary refined is quoted 13s. to 14s. per cwt., whilst for the chemically pure, 32s. 6d. to 35s. is asked. *Hyposulphite* dull of sale at 5s. to 8s. per cwt., according to quantity and brand. *Bicarbonate*, £7 5s. to £7 10s. per ton is asked for the 98 per cent. and 18s. per cwt. for the fully bicarbonated. *Bromide* firm at 2s. 2d. per lb. *Iodide* unchanged at 11s. 7d. per lb.

Spices (Various).—*Black Pepper* quiet; Lampong bought in at 3⅞d. to 3½d.; a few bags Singapore sold at 3½d. to 3⅝d. *White Pepper* also quiet and mostly bought in; Penang, 5⅞d.; Singapore, 6⅝d. to 6¾d.; good, 7d.; very fine bold, 10d.; extra fine bold, 11d. *Chillies* dull and lower: 80 bales fair red Zanzibar sold at 35s.; 12 bags fine Japan bought in at 55s. *Capsicums*: 16 bales sea-damaged East Indian sold at 20s. *Cassia Lignea*: 150 bales broken sold at 25s. *Cassia Vera*: 7 bags coarse quill sold at 23s. 6d. *Mace*: 14 cases Penang bought in at 1s. 4d. to 1s. 7d.; 4 cases Banda sold at 1s. 4½d.; 1 box West India sold at 1s. 5d. *Pimento* dull at previous rates, only 60 bags fair sold at 3⅝d.

Sugar of Lead—Is unchanged; ordinary *crystals* 24s. 3d. per cwt., *powder* 30s. per cwt., whilst chemically pure in *crystals* can be had at 32s. 6d. per cwt.

Sulphate of Copper—Rather easier at £16 5s. to £16 15s., according to brand.

Sulphonal—Remains in *statu quo*, that is, maker's price is still 7s. 3d. per lb., the possibility, not to say probability, of a decided change in an upward direction is, however, strongly suggested, makers declining to do more than supply the from-hand-to-mouth requirements of their regular customers.

Thymol—Is steady at 6s. 6d. to 7s. per lb., according to make and quantity.

Vanilloes.—At the auctions last Friday the 862 tins offered met with a good general demand, and practically the whole of the new arrivals were disposed of. Prices were rather irregular, and on the average marked a decline of from 2s. to 3s. per lb., owing, no doubt to the large quantity offered. The bulk of the offerings were *Seychelles* variety, which sold at 26s. to 28s. for 8 to 8½ inch, 22s. to 25s. for 7½ to 8-inch, 21s. to 23s. 6d. for 6 to 7½-inch, 20s. to 21s. 6d. for 6 to 7-inch, 19s. 6d. to 20s. 6d. for 5 to 6 inch, down to 11s. to 19s. per lb. for common.

NEWCASTLE CHEMICAL REPORT.

November 17, 1897.

Heavy chemicals, if anything, are a shade stiffer in tone, with some articles still on the scarce side. Some contracts for next year's supply are spoken of at late figures, and for prompt delivery values go unchanged. Prices are:—Bleaching Powder, £6 10s. to £7 10s., according to market. Soda Crystals, 42s. 6d. to 57s. 6d., according to markets. Caustic Soda, 70 per cent., £7 10s. to £7 15s. Soda Ash, 52 per cent., £4 5s. Alkali, £5 5s. Sulphur, £5. Ammonia Alkali, 58 per cent., £3 17s. 6d. Sulphate of Ammonia, Hull, Leith, London, £8 15s.; Liverpool, £8 17s. 6d. to £9. Pitch, 17s. 6d. per ton.

LIVERPOOL REPORT.

November 17, 1897.

There are few changes to note in this week's prices, and such as there are, are very slight, being mostly in oils and chemicals. Canaryseed and Linseed are both at practically the same quotations as last week, the latter being very firmly held for high rates. Among the miscellaneous sales worthy of note are Egyptian Fœnugrec Seed, Gambia Beeswax, and a large lot of Borate of Lime.

Ammonium Salts.—*Carbonate*, 3d. per lb. and scarce. *Sal ammoniac*, 33s and 31s. per cwt. *Sulphate* very slow of sale at £8 18s. 9d. to £9 per ton.

Arsenic.—Lump, £29 15s. per ton. Powdered, £22.

Beeswax.—30 packages of Gambia brought from £6 2s. 6d. to £6 3s. 9d. per ton.

Bleaching Powder—Is dull at £6 10s. per ton, *f.o.b.*

Borate of Lime.—1775 bags sold *ex* quay at auction on private terms.

Canaryseed—Is somewhat scarce, but Turkish, which has sold to the extent of 150 bags only, brings from 26s. to 26s. 6d. per 464 lbs.

Copperas—Is still dear and scarce at 39s. per ton for Lancashire, and 37s. for Welsh.

Copper Sulphate—Is quiet at the easier rate of £16 5s. per ton.

Fœnugrec.—50 bags of Egyptian sold *ex* store at 10s. per cwt.

Linseed—Is very firm, and sales have been confined to Turkish seed, of which 1050 bags changed hands at from 35s. 6d. to 35s. 9d. per 416 lbs.

Oils (Fixed) and Spirits.—*Castor oils* are in good demand, with only limited quantities offering, Calcutta "good seconds" sells at 3½d. to 3⅝d. per lb., and French first pressure at 3⅜d. to 3⅞d. per lb. *Olive oils* are high in price. Candia and Levant oils are quoted at £32 10s. per tun; Seville at £31 10s. to £32. *Linseed oil* of Liverpool make, is very firm, and likely to rise, at present it is selling at 16s. to 16s. 6d. per cwt. *Cottonseed oil*: Liverpool refined is dull at 15s. to 16s. per cwt. *Spirits of Turpentine* has risen 6d. per cwt., and holders are asking 24s. 3d. per cwt. now.

Potash Salts.—*Bichromate* is lower in price, 4⅛d. per lb. *Chlorate*: 3¾d. per lb. *Potashes* are very slow of sale at 18s. 6d. to 18s. 9d. per cwt. *Pearlashes*: 29s. to 30s. per cwt. *Cream of Tartar* is offering at 76s. to 77s. per cwt.

Sodium Salts.—*Bicarbonate*: £6 15s. per ton. *Borax*: £14 10s. per ton. *Caustic*: 76 to 77 per cent., £8 12s. 6d. to £8 15s.; 70 per cent., £7 5s.; 60 per cent., £6 5s. per ton. *Crystals*: £2 17s. 6d. *Nitrate* is firm and in good demand at 7s. 6d. to 7s. 9d. per cwt.

MANCHESTER CHEMICAL REPORT.

November 17, 1897.

Matters in the chemical trade are somewhat unsettled, and few contracts are being negotiated over next year owing to the uncertainty which prevails as to the course prices will take owing to increasing competition. Meantime the figure quoted for Bleaching Powder over the coming twelve months may be taken at £5 5s. per ton, and for prompt delivery £6 per ton, in soft wood casks on rails. Caustic Soda is firm, both for prompt and forward, and for Soda crystals makers decline to quote over next year. The rise in Yellow Prussiate of Potash 6½d. is well maintained. Coal tar products, except perhaps Pitch or Creosote, are rather quiet, and Miscible Naphtha has a downward tendency. Benzoles are about a penny per gallon higher than last week. Green Copperas still scarce for prompt delivery, but without change in price. Aniline oil and salt, 7d. Acetic Acid has been advanced £2 per ton. Salt cake, 20s. to 21s. 6d. per ton, in bulk on rails. Alum steady at £4 17s. 6d. per ton, for loose lump, £5 per ton lump in tierces, and £5 10s. per ton ground in bags, all on rails Manchester.

NEW BOOKS AND NEW EDITIONS.

"Oxford English Dictionary": A New English Dictionary on Historical Principles. Edited by Dr. James A. H. Murray. Series 2, Part III., Field-Frankish (volume iv.), by Henry Bradley. 13½ by 10¾ in. Pp. 193 to 512. 12s. 6d. Oxford: Clarendon Press. 1897.

"Familiar Wild Flowers." Figured and described by F. Edward Hulme, F.L.S., F.S.A., with coloured plates. Five volumes. 7¾ by 5½ in., 160 pp. each. 3s. 6d. London: Cassells.

"First Principles of Electricity and Magnetism." By C. H. W. Biggs, Editor of the 'Electrical Engineer.' Illustrated with about 350 diagrams, etc. 7½ by 5¼ in. Pp. 496. London: Biggs. 1897.

"Electric Power in Workshops." By Ernest Kilburn Scott, A.I.E.E. Illustrated. 7½ by 5¼ in. Pp. 137+x. 2s. London: Biggs. 1897.

"Lumen." By Camille Flammarion. Authorised translation from the French by A. A. M. and R. M., with portions of the last chapter written specially for the English edition. Pp. 244, 8vo. 3s. 6d. London: Heinemann. 1897.

"Elements of the Comparative Anatomy of Vertebrates." Adapted from the German of Dr. Robert Wiedersheim by W. N. Parker. Illustrated. Second edition. Pp. 16+488, 8vo., cloth. 12s. 6d. net. London: Macmillan. 1897.

"Manuale del Chimico e dell' Industriale." By Dr. Luigi Gabbe. 8vo. Pp. 442. Milan. 1897. Hoepli & Co. 5.50 lire.

"Memorials and Botanical Correspondence of Charles Cardall Babington, M.A., F.R.S., Fellow of St. John's College, Cambridge." 9 by 6 in. Pp. xciv. + 476. Cambridge. 1897. Macmillan & Bowes. 10s. 6d. net.

'The Origin of Disease," especially of Disease resulting from Intrinsic, as opposed to Extrinsic, Causes. By Arthur V. Meigs, M.D. 9¼ by 6¼ in. Pp. xiv. + 229. London and Philadelphia. 1897. Lippincott. 21s. net.

"The Elements of Hypnotism," by Ralf H. Vincent. Sec. ed., with 17 illustrations, 7½ by 5¼ in. Pp. vi.+271. London. 1897. Kegan & Paul. 5s.

"Electric Light: Its Production and Use," by J. W. Urquhart, electrician. Sixth edition, revised, with additional chapter. With numerous illustrations, 7½ by 5 in. Pp. xvi.+428. London. 1898. Lockwood. 7s. 6d.

"The Story of Germ Life—Bacteria," by H. W. Conn. Pp. 212. Post 8vo., cloth. 1s. London: Newnes. 1897.

"Fresenius' Quantitative Analysis," by Charles E. Groves. Vol. II., part 5. Illustrated. Pp. 95. 8vo., paper. 2s. 6d. London: Churchill.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Clegg Brothers, Aërated and Mineral Water Manufacturers, Heath Street, Golborne, Lancs. Debts will be received and paid by John Gibson Clegg.

Cunningham & Marsh, Surgeons, Oldbury, Worcs.

Pearson & Fowler, Mineral Water Manufacturers, 140, Alexandra Road, Wimbledon.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Joseph Henderson Martin, Surgeon, 144, Melbourne Road, Leicester.

James Furniss (lately trading as James Furniss and as Reuben Kenning, and now as Edward Rixham), late 80, South Street Park, Sheffield, Druggist and Grocer.

LATE ADVERTISEMENTS.

Assistants Wanted.

IMMEDIATELY. A qualified JUNIOR, with laboratory experience. Apply personally to G. JOLLEY & Co., 13, Curzon St., Mayfair, W.

ASSISTANT. Aged 22. Six years' good experience. Part-time. Birmingham or district preferred. ALLAN GOODWIN, Partney Mill, Spilsby, Lincs.

Business for Disposal.

IMMEDIATE Purchaser with £120 can buy BUSINESS which has returned £380 - £400. Patents almost nil. No opposition. At present under management. Population 10,000. Main thoroughfare. Business can be doubled by qualified man. Fullest inquiry courted. Address, A. GALE, 7, High Town Rd., Luton.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SATURDAY, NOVEMBER 20.

PHARMACEUTICAL FOOTBALL CLUB v. HON. ARTILLERY CO., at the latter's headquarters at Finsbury. Kick off at 3 p.m.

MONDAY, NOVEMBER 22.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
"Four Years Exploration in Central Asia," by Dr. Sven Hedin. (University of London, Burlington Gardens, W.)

ALBEMARLE HOTEL, SCARBOROUGH, at 3 p.m.
Meeting of chemists to discuss P.A.T.A. and form local association.

TUESDAY, NOVEMBER 23.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p m.
"Photographs of the Optical Projections in Space Produced by the Aerial Graphoscope."
"Probable Projection Lightning Flashes" (illustrated by experiments and photographs), by Eric Stuart Bruce. (12, Hanover Square, W.)

SCHOOL OF PHARMACY.
Annual Smoking Concert of the Pharmaceutical Students' Cricket and Football Club. (Crown Room, Holborn Restaurant.)

WEDNESDAY, NOVEMBER 24.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Sharp Practice (Short Speeches).

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION, at 9 p.m.
Discussion on "the Proposed Amendments to the Pharmacy Act," to be opened by Mr. A. E. Beilby. (Albert Hotel.)

THURSDAY, NOVEMBER 25.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION.
"Cinderella" Dance.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"Urine Analysis," by E. W. Lucas.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.
Discussion on (1) Local Pharmaceutical Organisation; (2) The Proposed Modified Examination or otherwise; (3) The Necessity of a Company Exhibiting the Name of the Pharmacist who Transacts Sale of a Drug. (Grand Hotel.)

PHARMACEUTICAL SOCIETY.
Executive of the North British Branch, Annual Dinner at 6.30 p.m. (Royal Hotel, Princes Street, Edinburgh.)

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

1 lb. Jules Denoual's Santal Oil Capsules, 12s. (about 48 go to the ounce).—W. J. Rugg, Chemist, Whitehorse Road, Croydon.

Well-made upright ebonised show-case, 2 ft. by 2 ft. 5 ins., three sides fitted with shelves, looking-glass back enclosed by plate-glass panelled doors, body forming refrigerator, the whole surmounted by brass gallery, noble plate-glass show-case resting on top; also 5 dozen stoppered rounds.—3, St. George's Circus, Southwark.

Best cash offer, 100 ozs. original tin Howard's Quinine.—Endle, Chemist, Boscombe.

Dental Chair (Owen's) for sale, good condition, price £6.—"Dentist," 1, Baron's Court Road, West Kensington.

OFFERED—*(continued).*

Christmas.—Glass frost, very best, special quality, under 1 lb posted, 1s. 6d., under 2 lbs., 2s. 10d.; clean used club whist playing cards, 1s.; bezique pair, 1s. 6d.; Hunt's cards, old extinct firm, quaint faces, double heads, ecarté, eucre, piquet, 1s. 3d., pair for bezique, 2s. 6d.; card counters, metal imitation guineas, 2s. per 100.—Foster, 80, Navigation Street, Birmingham.

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d.—Tully, Chemist, Hastings.

Optical and Photographic.

Photographic Mounts, cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000. Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s. 100. Samples free.—Peck, East Dereham, Norfolk.

OFFERED—*(continued).*

Books.

Jones' 'Practical,' 1s. 3d.; Jago's 'Inorganic,' 1s. 3d.; Fleischer's 'Volumetric,' 2s. 9d.; Edmond's 'Botany,' 1s. 6d.; Wills' 'Pharmacy,' 3s. 6d.; Martindale, 7th, 3s. 6d.; Ganot's 'Natural Philosophy,' 4s., post free, cash.—Whittaker, 37, Camden Street, Belfast.

WANTED.

Latest Editions.—Green's 'Botany,' Vol. I.; Attfield's 'Chemistry'; 'British Pharmacopœia'; 'Selecta e Prescriptis'; Wills' 'Pharmacy'; Wills' 'Materia Medica,' small edition; state condition and lowest prices.—Wilkinson, 28, Finsbury Road, Leeds.

Advertiser is open to buy Chemical Apparatus, Laboratory Fittings, Balances, Flasks, Burners, Stoppered Bottles, Pure Chemicals, etc.; cheap for cash.—Particulars to Chemist, 34, Avondale Road, Chorley.

'The National or U.S. Dispensatory,' recent edition; 'Year-Books of Pharmacy' for 1880-81, '91, '93, '94, '95, and '96.—Grier, 14, St. Bees Street, Moss Side, Manchester.

NEW IDEAS AND TRADE NOTES

VINOLIA VASES AND CASKETS.

Messrs. Blondeau et Cie have a large selection of articles suitable for Christmas presents. Their hand-painted Porcelain Shaving Vases (for which refills are supplied) are just the thing for ladies to give their male acquaintances, and they are often at a loss to know where to find articles both useful, artistic, and not too expensive. Then there are the Vinolia Perfume Caskets for presents to ladies, and a series of beautifully-chased Silver Cases (hall-marked), the prices ranging from 18s. 6d. to 29s. 6d. These are all detailed in Messrs. Blondeau's Price List, which appears in our advertisement pages, and numbers in all forty-two pages—a record newspaper advertisement addressed to chemists and druggists. Messrs. Blondeau et Cie intimate that the diplôme d'honneur, which is one grade higher than the gold medal, has been awarded to Vinolia soap for toilet purposes at the International Exhibition at Brussels. It will be recollected that it was to Vinolia soap the Sanitary Institute awarded its medal, which is probably the highest scientific award in the world ever given to soaps, and no one who has employed the attractively perfumed Toilet Vinolia soap or other varieties will doubt that the distinction is well deserved.

CHRISTMAS NOVELTIES.

Messrs. Barclay and Sons, Ltd., 95, Farringdon Street, E.C., have introduced a number of new lines this season which should make a very profitable addition to the chemist's Christmas trade. Pot Pourri or Sachet Powder is now put up in wide-mouthed screw-capped bottles with descriptive labels, to retail at 6*d.*; wholesale price, 3*s.* 9*d.* per dozen. There are pretty Boxes for perfumes, padded and got up very tastefully with violets on the outside, thus being especially suitable for Violette de Parme. A Pocket Toilet Mirror, with bevelled edged glass, and a neat little comb in a leather case, should sell readily, the price being 4*s.* per dozen. Sachet bags can be obtained in party or racing colours, and make an attractive display, there is also a new sixpenny line of sachets in three odours, heliotrope, roses, and violets at 3*s.* 6*d.* per dozen. This year Messrs. Barclay are introducing a new style of get-up for the Mel Rose Tablets for prevention of chapped hands, redness and roughness of the skin; they are mounted on showy-red cards, holding twelve on each, and each packet is wrapped in honey-coloured paper, to be sold at 1*d.*, and the price is 8*d.* per dozen. They are also putting up a new form of Camphor Cream Ice in 1*d.* and 2*d.* tins, very presentable and attractive at 7*s.* 6*d.* and 15*s.* per gross. Perfumery is to be procured in all odours, styles and prices, ranging from a penny per bottle to a guinea. Then there are new and striking lines in a great many articles, such as shaving mugs, tooth brushes, puff-boxes, sprays, washing-gloves, etc., much too numerous to mention. Messrs. Barclay's 50*s.* hand camera is still very popular, and they have on view a series of excellent photos taken with one by a chemist on his holidays in the north of Ireland, and another series taken by a clergyman in Devonshire. In connection with photography there is a very useful photographic sink, with divisions in front for developing dishes or bottles of chemicals, etc. It is also provided with flaps at the ends, so that any drains from plates may run into the sink, and should prove very useful for amateurs or the dark room.

MAW'S CHRISTMAS NOVELTIES.

Messrs. S. Maw, Son & Thompson, 7 to 12, Aldersgate Street, London, E.C., have a large and varied assortment of new goods for the winter season, some of which are especially suitable for presents. There are Perfumery Flasks of cutglass with silver-mounted tops, at 8*s.* Beautifully Tinted Sprays may be obtained in all shades of colour and designs. A very pleasing and novel design is that of the Tomato Spray, while equally pretty are the Floral and Rainbow Sprays at prices ranging from 1*s.* 9*d.* to 8*s.* each. Perfumes of the highest quality are put up in fancy boxes holding one, two, and three bottles at from 30*s.* to 90*s.* per dozen. Sixpenny Sachets are offered at 4*s.* per dozen, while others run to 10*s.* 6*d.* per dozen. In celluloid goods there are many new and useful articles. Especially noticeable is a pretty soap case in half-a-dozen different colours at 12*s.* per doz.; also a very useful toilet rack for tooth brushes, etc., and a similar rack made up for hair and clothes brushes. Then there are celluloid tooth brushes to imitate shell; also a transparent brush, both at 6*s.* per dozen. The "Comilo" is a sanitary tooth brush, which, besides being a very elegant article, is always clean, as no stain or dirt adheres to the material forming the head and handle. It is put up in half dozen boxes at 7*s.* Washing Gloves, made of cuttings from dressing gowns and such-like articles at 4*s.* per doz. pairs. Also a line of Loofah Turco Gloves at 3*s.* per doz., while a Loofah Turkish Bath Strap at 7*s.* 6d. per doz. should sell readily at 1*s* The "Disinfecting Dew-Drop Diffuser" (patented) is a wonderful little apparatus, somewhat similar to a garden syringe, sold at a moderate price, and is applicable for many different purposes. A use-apparatus is the Freck Prescription Tablet Machine, capable of turning out 25,000 tablets per day, sold at 50*s.* A small useful Box Sieve has recently been introduced, and can now be obtained at 1*s.*; there is also a larger size of the same article.

MORE CHRISTMAS NOVELTIES.

Messrs. F. Newbery & Sons, of King Edward Street, London, E.C., have some very dainty novelties for the Christmas trade in their St. Paul's Perfumes. Their Spray Casket, which retails at 7*s.* 6*d.* affords a handsome profit (about 50 per cent. on the outlay) to the retailer. It contains a handsome tinted cut-glass, gilt-mounted bottle and rubber spray, with continuous double-action bellows, and a large bottle of perfume fitted in a hinged cardboard box. Other perfumes in this series are put up some in silk-lined fancy cases containing one, two, or three cut-glass stoppered-bottles, others in fancy cardboard boxes, many of them with various devices and greetings for Christmas and the New Year. The prices ranging from 6*d.* to 15*s.* The St. Paul's Floral Bouquet series are also supplied in 6*d.* and 1*s.* bottles, with sprinkler tops. The perfumes all bear labels with the trade-mark "St. Paul's," and an illustration of the front view of the Cathedral as a guarantee of quality, but most of them are supplied without proprietor's name.

EXPORT LIST OF TINCTURES.

Messrs. C. J. Hewlett & Son, send a copy of their export price list of tinctures, medicinal spirits, fluid extracts, liquors, etc., in bond. The list appears to be very complete, and the terms offered to export customers are most advantageous. This firm claims to be the first wholesale house to have issued a printed price list; this, of course, was many years since.

WINTER PREPARATIONS.

Messrs. Parke, Davis & Co. of North Audley Street, London, offer a pleasant and harmless antiseptic and deodorant under the name of "Euthymol," which contains eucalyptus and wintergreen oils, together with thymol, menthol, boric acid, and fluid extract of wild indigo. It constitutes a valuable toilet accessory and blended with the appropriate bases, it is used with advantage in the preparation of Euthymol Cream for the skin, Euthymol Powder for the nursery, and Euthymol Tablets, and Tooth Paste, all of which are skilfully prepared and likely to be in considerable demand. Anodyne Pine Expectorant is a useful and pleasant combination of astringents, sedatives and stimulating expectorants; Egg Emulsion of Cod-Liver Oil is well-made and apparently inseparable; and Hematic Hypophosphites is a compound syrup on familiar lines. In all these

preparations the formula is given on the label. "Mosquera" Fluid Beef Jelly is a concentrated and savoury bouillon, said to fully represent the extractive substances of beef combined with the albuminous portion, and should be not the least useful of the now well-known "Mosquera" preparations. The gelatin-coated pills of this firm are ovoid in shape, and most artistically finished. Finally, attention must be directed to their small Ammonia Cubes, which appear well adapted for smelling bottles.

DRUGS AND SPIRITS.

Messrs. A. & J. Warren, of Bristol, are retiring from the business carried on by the Warren family for considerably over half a century in Redcliff Street. They have disposed of their stock of drugs and chemicals to Messrs. Evans, Gadd, & Co., of Exeter, by whom orders sent to 23 and 24, Redcliff Street, Bristol, will be executed. Messrs. Evans, Gadd, & Co. do not acquire Messrs. A. & J. Warren's methylated spirit business, but orders for methylated spirit should still be sent to 23 & 24, Redcliff Street, Bristol, for execution.

A HANDY ADVERTISER.

The 'Domestic Year-Book, 1898,' published by Mr. John Davis, 90, Pepys Road, New Cross, S.E., is a very handy publication, illustrated and compiled expressly for chemists' circulation. The illustrations are of a high-class character, and there is a useful selection of literary matter, including "Gardening for the Month," hints for the sickroom, kitchen, toilet, and for accidents and emergencies, health notes, a domestic ready reckoner, and much other useful information. Pages and spaces are left blank in places for the chemist's own announcements.

A NEW SACHET.

Messrs. Ayrton & Saunders, of Liverpool, continue to bring out novelties in sachets, the latest thing of the kind offered by the firm being an elegant Floral Sachet, which is supplied at 4*s.* per dozen or 42*s.* per gross. On the back is printed in gold a calendar, together with postal information, etc., and retailers can have their name and address printed free on orders of not less than one gross. As suggested by the firm, this sachet should be an excellent line for distribution at Christmas time.

TOILET CONCENTRATIONS.

Messrs. Rouse Brothers, of Charlotte Street, Tottenham Court Road, London, direct attention to their Essence of Toilet Vinegar, which serves for the ready production of Toilet Vinegar of high quality at a cost of about twopence per ounce. A 1-oz. bottle of the Essence costs 1*s.* 6*d.* only, and with each bottle are given full directions, as well as neat labels bearing full directions for use, in two sizes—suitable for the ordinary 2 and 4-oz. direct square toilet vinegar bottles. If a 16-oz. bottle be ordered (price 8*s.*), a hundred and fifty labels will be supplied, bearing the retailer's name and address. A Bay Rum Essence is supplied at the same price and makes excellent Bay Rum at a cost of 2*s.* 3*d.* per pint. Labels are supplied for this preparation also.

SACHETS AND CACHETS.

Messrs. Potter & Clarke, of Artillery Lane, London, E.C., have two seasonable novelties. "Sweet Kiss" Japanese Sachets are marvellous productions at the price, being intended to retail at one penny each. The perfume is sweet and lasting, and the Japanese design on the wrapper is in excellent taste. The Sachets are supplied on cards of three dozen. Cachets containing a remedy for headache and neuralgia—apparently an antipyretic—are also put up by this firm in neat half-gross boxes with inner glass lids for display purposes, and sold under the name of "Kapettes," a registered term.

ANTISEPTIC INHALER.

Mr. G. T. W. Newsholme, 27, High Street, Sheffield, has introduced an Antiseptic Inhaler made of plaited straw, light and elegant in shape, intended to cover the mouth and nose for use with antiseptic solutions, such as Eucalyptus Oil, Pine Oil, Terebene, etc., in cases of catarrh, influenza, bronchitis, etc. The Inhaler is sold at 1*s.*

PEARS' ANNUAL.

The Christmas Annual of Messrs. A. & F. Pears, Ltd., this year surpasses all previous issues both as regards quality of paper and printing, as well as the really artistic merits of the illustrations and presentation plates (of English production throughout). The plates are most exquisite reproductions of the well-known "Bubbles" and "Cherry Ripe," by the late President of the Royal Acapemy, Sir John E. Millais, Bart. It is doubtful if such value has ever before been given anywhere for the price at which it is published, viz., one shilling.

GOOD PERFUMERY.

Messrs. H. Labern and Son, Jenner Road, Stoke Newington, and 25, Bouverie Street, E.C., are noted for their high-class perfumery. The perfumes are all of superior quality, and are put up in cut-glass stoppered bottles of the latest and most elegant style and finish. Their Flower of France is exceptionally good, attaining as near to perfection as is possible in a perfume. Enclosed in fancy cases it forms a very pretty and useful present, and is sold at 2*s.* 6*d.*, 4*s.*, and 8*s.* per bottle. That most fashionable perfume, Violette de Parme, is tastefully put up in bottles of varied shape and style, with artistic coloured labels (with or without maker's name), and finished off in the most approved manner. The Carnation Eau de Cologne is a bouquet and toilet water combined, and is retailed in bottles at 1*s.* and 2*s.*, wickers 3*s.* 6*d.* and 6*s.* 6*d.* The other samples of Bouquet Trianm, Rococo, White Rose and Heliotrope, Parfum Wallflower, Extrait Double Maiglockchen, and Extrait Triple Jockey Club are all that can be desired, and should command a ready sale.

VACCINATION SHIELDS.

Mr. W. Cowan, the inventor of the well-known Vaccination Shield, is anxious to ascertain from chemists whether they consider it to their interest that his specialties should be added to the P.A.T.A. list. Will our readers send him a post-card in response to his invitation in our advertisement pages?

PICTET'S ETHYL CHLORIDE.

Messrs. Thomas Christy and Co., of Lime Street, direct attention to the fact that an important alteration has recently been made in the shape of the containers of Pictet's Ethyl Chloride. These are now made so that they will stand upright. Further, an ingenious contrivance in the shape of a curved glass tube inserted in the nozzle and reaching to the bottom of the container, renders its possible to stop the escape of the liquid instantly without replacing the screw tap. The curved glass tube further serves to prevent the capillary opening from getting blocked, which so often happens with ordinary containers. Pictet's containers, with the curved tube, allow the stream of Ethyl Chloride to be used in any and every direction, they are most convenient in operations where the parts cannot be reached by the stream from containers of ordinary shape.

A SKIN PROTECTOR.

Messrs. Westmacott and Son, of Manchester, make an elegant preparation for keeping the skin in order, in Gerrard's Almond Tablet. It is of convenient shape and size, perfumed just enough, and enclosed in an attractive enamelled tin box. There are two sizes, to retail at 6*d.* and 1*s.* respectively.

A STUDENT'S MICROSCOPE.

Messrs. F. Darton & Co., 142, St. John Street, Clerkenwell, E.C., are offering a low-priced Student's Microscope, which is worthy of inspection. It is furnished with an English dividing objective (1-inch, ½-inch, and ¼-inch), live box, forceps, stage forceps, etc., and supplied complete, in a mahogany case, at three guineas.

DISINFECTANT NIGHT-LIGHTS.

Messrs. Palmer & Co., Limited, of Stratford, E., offer a useful night-light for the present season of the year in Dr. Trestrail's Patent Carbolic Disinfectant Night-lights. They appear to contain eucalyptus oil, and should be well adapted for use in cases of whooping cough and other throat and chest ailments.

COMPRESSED DRUGS.

Messrs. Burroughs, Wellcome, & Co., London, send specimens of their new "Soloid" compressed drugs for gynecopathic use. They are intended for the instant preparation of irrigations, and recommended as superior for that purpose to the ordinary powders, as well as more convenient. The new preparations include "Soloid" Zinc and Tannin Compound (zinc sulphate, lead acetate, opium extract, and tannin), "Soloid" Sodium Biborate Compound (sodium biborate and tincture of opium), and "Soloid" Alum Compound (zinc sulphate and alum). One or more solids are dissolved in warm water, and used in the ordinary manner. Messrs. Burroughs, Wellcome and Co. have also added to their list of tabloids, compressed compound phosphates which are claimed to overcome all the objections raised to the syrup or fluid form of that valuable combination of the phosphates of iron, calcium, potassium, and sodium. Each tabloid contains an accurately adjusted quantity of each

ingredient, and chemical food in this form is easily taken, because of its small size and sugar coating. It is said to be suited for continued administration by reason of its portability and compactness, and because it is well borne by those who have sensitive digestive organs, while a marked advantage possessed by tabloid chemical food over similar combinations in fluid form is that it does not stain the teeth. These tabloids are supplied in two sizes, 2½ gr. and 5 gr., representing respectively ½ and 1 drachm of a standard compound syrup of phosphates of iron. Each size is supplied, sugar-coated, in bottles of 25 and 100.

X-RAY INDUCTION COILS.

Anyone interested in radiography visiting the works of Mr. H. W. Cox, electrician, of 10, 11, and 28, Cursitor Street, Chancery Lane, will be able to inspect some of the above apparatus in course of construction and finished, and to see working most satisfactorily 8 in., 10 in., and 18 in. spark coils, the sparks emitted being fast and continuous, which is very important for X-ray work. The contact breaker is fitted with a new spring, which makes and breaks much better than the old form, for which Mr. Cox has applied for a patent. After visiting the workshops and stores, on being shown into a dark room where a coil is connected to a Crookes' tube, if someone stands in front of the tube, by the aid of one of the fluorescent screens the visitor can see the ribs and spine quite distinctly and can easily discern the heart beat, the coil all the time working quietly and very little sparking at contact breaker. The coils are well finished and have a very handsome appearance, and judging by the testimonials from chemists and others, Mr. Cox can be classed with the best coil makers of the day, and one thing is certain—every part is English-made. Mr. Cox makes coils in all sizes, and will be pleased to quote for any length of spark, and his workmanship leaves nothing to be desired. He also supplies Batteries, Screens, Crookes' Tubes, and all kinds of Electrical Apparatus.

NOVELTIES IN CYCLES.

Messrs. Humber & Co , Limited, are at present exhibiting at the Stanley Show two marked novelties in bicycles, both of exceptional merit as regards lightness. The first, and most uncommon, is the "Pedersen Cantilever" cycle, which is constructed on the cantilever principle and marks a more important departure from the methods of construction now in vogue than anything else yet attempted. A noteworthy feature is the saddle. This consists of strings at different degrees of tension, running from the head to a cross steel bar and diverging to give desired width behind, the cross-bar being attached to the saddle-pillar by several spiral springs. The weight of this machine is only eighteen pounds. The second novelty is the "Humber Aluminium" cycle, which resembles the firm's well-known light road-racer in general appearance, but being built almost entirely from tubes of aluminium, weighs no more than twenty-two pounds. This machine has been thoroughly tested before being offered to the public, and it is claimed that strength is not sacrificed in any degree to lightness in its construction.

NEWS IN BRIEF

An Evening Meeting of the Society will take place at 17, Bloomsbury Square, on Tuesday, December 7, at 8 p.m. The chair will be taken by the President at 8 o'clock precisely, and the following paper will be read:—"Note on some of the Official Extracts," by E. H. Farr and R. Wright.

Leicester Chemists' Social Union.—A smoking concert will be held in connection with this movement on Tuesday, November 30, at 8.30 p.m., at the Wyvern Hotel (near Midland Station). A good and varied entertainment has been arranged, and a successful evening is anticipated.

Reynolds & Branson's Cricket Club.—At the annual meeting of this club the following were elected to the various offices: President, Mr. R. Reynolds; Vice-Presidents, Mr. F. Reynolds and Mr. F. W. Branson; Treasurer, G. Jackson; Hon Sec., H. Goodson: Assistant-Sec., J. W. Price; Committee, J. H. Jackson, T. H. Goodson, E. R. Dixon, J. W. Sanderson, E. B. Harrison; Captain, F. Islip; Vice-Captain, H. Hudson. A good list of fixtures has been arranged for next season.

Mr. W. J. Barnes, chemist and druggist, of Dover, has been elected Deputy Mayor of the Borough for the ensuing year. Mr. Barnes is a Justice of the peace for the Borough, and has been a member of the Town Council for twelve years.

Dr. Farquharson, M.P., the author of the 'Guide to Therapeutics,' has withdrawn from the Fellowship of the Royal College of Physicians of London.

Chemists' Club, London.—As the lease of the present premises occupied by the Chemists' Club expires on the 25th proximo, and as the present locality has not been very convenient to many members, the Committee have decided to remove westward, if possible, into the vicinity of Regent Street. The Committee are quite in accord in thinking a much wider sphere of usefulness, both socially and from a business standpoint, will be open to the Club in fresh quarters. It is proposed to place the Club on a much wider basis than at present, particulars of which will be published very shortly.

Plymouth, Devonport, Stonehouse, and District Chemists' Association.—At a committee meeting of the trade section of this Association, held on the 18th inst., Mr. C. J. Park, Mutley Plain, was elected Chairman, and Mr. F. Roper, Holborn Place, Cattedown, Secretary, to whom all communications regarding membership, etc., should be sent. At the monthly committee meeting held on Tuesday, November 23, the following ball committee was appointed:—Messrs. James Cocks, J. H. Bailey, H. C. Cantle, E. W H. Green, J. R. Johnson, J. D. Turney W. H. Woods, F. Maitland. It is proposed to hold the same early in January.

The Bolton Pharmaceutical Association held a meeting on Wednesday evening, November 17, at which it was agreed to hold monthly meetings during the winter months, the next one to be held on December 15, when a circular from the Federation will come under discussion; and it was also decided to make the January meeting into a smoking concert and social. The question of the names of chemists liable to be erased from the Register was also gone into and corrections made to the list.

The Institute of Chemistry of Great Britain and Ireland announces that examinations for the membership of the Institute will be held on Tuesday, January 11, 1898, and three following days. In the event of it being found necessary to hold two examinations, candidates for the final examination will be examined from Tuesday, 4, to Friday, January 7, 1898. Forms of application and an outline of the regulations can be obtained from the Secretary, 30, Bloomsbury Square, W.C. Candidates are required to produce evidence of having passed a preliminary examination in subjects of general education, and of having taken a systematic course of at least three years' study in one of the colleges approved by the Council; or, of having been engaged for two years in the laboratory of a Fellow of the Institute, and for two other years in one of the approved colleges.

A Chloroform Still in Messrs. Duncan, Flockhart's manufactory, weighing a ton and a half, and containing half-a-ton of ingredients, exploded on Tuesday last. Fifteen men were near at the time, and eight were affected by the fumes, one being taken to the infirmary, slightly burnt about the eyes. The still was got out on Wednesday, and on examination showed a crack extending two-thirds round. The men had a miraculous escape, and the damages are estimated at several hundred pounds.

Honour for a Lincoln Chemist-Photographer.—The Eastman Photographic Materials Company, Limited, recently offered a series of prizes, open to all the world, for prints and lantern slides from negatives taken on their films and in their cameras. No less than 25,000 competitors entered from all parts of the world. The fifth prize, value £5 5*s.*, for lantern slides, has been awarded to Mr. G. A. Grierson, F.L.S., chemist and druggist, Lincoln. His entrant depicted "The Childrens' Corner, Bridlington," showing a group of happy children playing on the sands, with the sea-wall, etc., in the background.

Birkbeck Science Society.—The first meeting of this Society was held at the Birkbeck Institution on Saturday evening last, when a large number of past and present students of the Institution were present. The principal of the Institution, Mr. G. Armitage-Smith, M.A., was in the chair, and an interesting inaugural address on "Cavendish and his Work" was

delivered by Mr. J. E. Mackenzie, Professor of Chemistry in the Institution. The Society now numbers over seventy members, and intends to hold meetings fortnightly and to have frequent excursions to places of scientific interest.

THE THIRD INTERNATIONAL CONGRESS OF APPLIED CHEMISTRY is to be held at Vienna in July next year. The Congress will extend over five days. An organising committee has already been formed here, with offices at Schonburgstrasse, 6. At a meeting of this committee a few days ago it was resolved to form a special section for the subject of electro-chemistry, while the sugar industry is also to form a special section, instead of a sub-section as at first decided.

MR. W. J. DIBDIN, the late chief of the staff of the Chemical and Gas Department of the London County Council, has been entertained to dinner at the Holborn Restaurant, London, by his erstwhile subordinates. Their new head, Dr. F. Clowes, late of Nottingham College, presided, and proposed the toast of the evening, in the course of which he referred to the useful work carried out by Mr. Dibdin, which reflected credit both on the Council and himself, concluding with the presentation, on behalf of the officers of the department, of an illuminated address. Mr. Livingston, senior officer of the department, read the document to the company, and spoke of the invariable kindness and courtesy of their late chief and of the growth of the department, both in importance and numbers, during his time, choosing as an example of his public usefulness his successful treatment of the London sewage.

CHEMISTS' ASSISTANTS' ASSOCIATION.—The first of a series of Cinderella dances were held at the Portman Rooms, Baker Street, W., on Thursday, November 18. There were about 120 present: including Messrs. J. C. Umney, Charles Morley, E. W. Hill, T. Morley Taylor (President), A. H. Solomon, C. W. Martin (who acted as M.C.), and others. Bacon's Quadrille Band supplied the music, and dancing was vigorously indulged in until midnight. The new departure, by which the cost of refreshments was included in the price of the tickets, seemed to be generally appreciated.

THE ANNUAL DINNER of the Metropolitan College of Pharmacy will be held in the Royal Venetian Chamber, Holborn Restaurant, on November 27, when Mr. Thomas Tyrer will take the chair, and that of the Westminster College of Pharmacy will be held at the same place on December 3, with Mr. Thomas Skewes-Cox, M.P., as chairman.

THE GENERAL MEDICAL COUNCIL assembled on Tuesday, but as anticipated, Sir Richard Quain was unable to be present. In the absence of the President the chair was taken by Sir William Turner, chairman of the Business Committee, who read a letter from Sir Richard, in which reference was made to the question of disciplinary or penal powers exercised by the various licensing bodies, and to the approaching completion of the new British Pharmacopœia. The question of medical aid associations, it was stated, had received the careful attention of the Committee appointed to consider it. Subsequently, on the motion of Dr. MacAlister, a resolution was adopted announcing that any registered practitioner proved to have employed an unqualified assistant, or to have enabled an unqualified or unregistered person to attend or treat any patient or otherwise engage in medical practice, is liable to be judged guilty of infamous conduct in a professional respect, and to have his name erased from the Medical Register.

AN EXPLOSIVES ACT (1875) CASE was heard at the Oldham Police Court on Saturday, November 13, when Joseph C. Williamson, trading as Hulme & Co., Limited, chemists and druggists, although not on the Register of Chemists and Druggists, was summoned for a breach of the Act by keeping gunpowder at his warehouse in a quantity exceeding that allowed by law. Defendant was fined £5 and costs.

ROYAL INSTITUTION.—Professor Oliver Lodge, F.R.S., will deliver the first of a course of six Christmas lectures (specially adapted to young people), on "The principles of the electric telegraph" at the Royal Institution on December 28, The remaining lectures will be given on December 30, 1897, and January 1, 4, 6, 8.

PERSONALITIES.

MR. JOHN KINSEY JONES, chemist and druggist, is the newly-elected Mayor of Llanidloes.

MR. SETH HARRY, chemist and druggist, was elected to the Okehampton Town Council at the recent municipal contest.

MR. SMITH WARD, chemist and druggist, was returned as a member of the Batley Town Council, representing the East Ward, at the head of the poll.

MR. WILLIAM ALBERT WRENN and Mr. James Kirkpatrick, chemists and druggists, have been elected to the Taunton Town Council.

ALDERMAN C. W. JONES, pharmaceutical chemist, has been appointed Deputy-Mayor of Carmarthen.

COUNCILLOR CHARLES TOWNSEND, chemist and druggist, Bristol, has been raised to the position of Alderman on the Town Council.

MR. WALTER ASTON, pharmaceutical chemist, has been elected to the Worthing Town Council as a representative of the Central Ward.

MR. W. J. BARNES, chemist and druggist, Dover, has been appointed Deputy Mayor for the ensuing year. Mr. Barnes, who is a Justice of the Peace for the Borough, has been a member of the Town Council for twelve years.

MR. STEPHEN HARRIS, chemist and druggist, High Street, Droitwich, after three years' service in the Town Council, has been again elected for another three years, being fourth upon the list of successful candidates.

MR. RICHARD MUMFORD, chemist and druggist, Spotland, Cardiff, has been installed as Worshipful Master of the Lodge of Freemasons No. 1992.

MR. ROBERT WYNNE C. PIERCE, pharmaceutical chemist, Bangor, a former Bell scholar of the Pharmaceutical Society, has passed the M B. Examination of the London University.

MR. CHARLES SHAPLEY, pharmaceutical chemist, M.P.S., has been elected without opposition to a vacant seat in the Torquay Town Council. Mr. Shapley has for many years freely and actively identified himself with Torquay's life and institutions, and his unopposed return has afforded general satisfaction in the town.

MR. W. HARRISON MARTINDALE obtained the degree of Ph.D. at Marburg University on the 18th inst. We hope to publish his "arbeit" (or thesis) on corydaline shortly.

DR. C. O. HAWTHORNE, of Glasgow University, has been presented with a set of Allbutt's 'System of Medicine' by the lady students of Queen Margaret College as an expression of their appreciation of his work as a teacher. Dr. Hawthorne, who is also on the Register of Chemists and Druggists, was afterwards entertained at a complimentary dinner, given by his friends in the medical profession in Glasgow, on the occasion of his leaving for London.

MR. EDWARD BIRCHALL SHERLOCK, pharmaceutical chemist, St. Helen's (Lancs.), whose name appears in the list of candidates who have recently passed the M.B. examination of the London University, is a former Redwood scholar and Pereira medallist.

MR. J. H. B. WILLAN, chemist and druggist, of Cheltenham, has purchased the business of Mr. W. Duglock, Holywell Hill, St. Albans.

MR. JOHN H. SMITH, pharmaceutical chemist, the well-known maker of "Flyodoomo," asks us to mention that the business of Messrs. Pettinger & Son, Newark (where Mr. Robert Gibson, Lord Mayor of Manchester, served his apprenticeship), is now carried on by him.

OBITUARY.—Mrs. Brough, the head of the well-known literary, theatrical, and scientific family, and the widow of Mr. Barnabas Brough, a brewer and colliery owner, of Pontypool—who in 1840 was the chief witness for the Crown in the trial of John Frost, the instigator of the Chartist movement in South Wales—died at her residence at Wandsworth Common on Tuesday, November 23, aged 94. She was the author of 'Hidden Fire' and several other novels, contributed under her maiden name of Frances Whitcside, to the *Welcome Guest*, a magazine edited by her son Robert. Another son was, some years ago, editor of the *Chemist and Druggist*.

MARKET REPORT

LONDON REPORT.

[Specially Compiled for the 'Pharmaceutical Journal.']

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

NOVEMBER 25, 1897.

The course of business during past week has been distinctly disappointing, while the changes in values in either direction have been distinctly unimportant. Opium and Morphia quiet. Acid Citric, Tartaric, and Cream of Tartar dull and weak. Quicksilver and Mercurials, Iodine and Iodides, Bromine and Bromides unchanged. Ipecacuanha, after having been very firm privately during the week, sold at easier rates at to-day's sales. Glycerin and Cod-liver Oil quiet. Cocaine Steady, Sulphonal and Phenacetin unchanged, Borax and Acid Boracic dull and weak. Podophyllin dearer and expected to further advance in consequence of the scarcity of the root. Gentian quiet, Acid Carbolic dearer and very firm. Belladonna Root still scarce and dear. The following are the prices actually ruling for articles of chief interest:—

ACETANILID—Is quiet at 1s. 2½d. to 1s. 3½d. per lb., according to make and quantity.

ACID BORACIC—Is very dull at 24s. to 25s. per cwt. for *crystals*, and 26s. to 27s. per cwt. for *powder*.

ACID CARBOLIC — Remains very firm. Price for the best makes of 35-36° C. *ice crystal*, in 2½-cwt. drums and overcasks, being now 7⅛d. to 7¼d. per lb. Other qualities and packing in proportion. *Crude*: 50°, 2s. 2d.; 75°, 2s. 7d. per gallon. *Liquid*: 95 per cent., of pale straw colour, 1s. 2d. to 1s. 3d. per gallon, in large casks and for quantity.

ACID CITRIC—Very dull and rather lower at 1s. 1d. per lb. on the spot.

ACID OXALIC.—Steady at 3½d. to 3¾d. per lb. for this year's delivery.

ACID TARTARIC—Dull of sale, but values are unchanged at 1s. 1½d. per lb. for *English* on the spot; *foreign*, 12½d. to 12¾d. per lb., same position.

ALOES.—*Curaçao*: New York reports that there is no stock remaining in first hands, and that the arrival season is now over. Stocks there in second hands are firmly held at prices which will not allow of shipments to this side.

AMMONIA COMPOUNDS.—*Sulphate* is quiet but steady; Grey prompt, 24 per cent., London, at £8 17s. 6d. *Nitrate* firm at 45s. per cwt. *Chloride* rather firmer at 23s. 6d. to 25s. 6d. per cwt. for 98 per cent., free from metals, and 30s.-32s. for the chemically pure. *Sal Ammoniac* firm at the late rise. *Sulphocyanide* steady at 10d. to 11d. per lb. for ordinary brands, and 1s. to 1s. 1d. per lb. for Schering's.

BELLADONNA ROOT.—Good quality remains scarce at 44s. to 46s. per cwt.

BLEACHING POWDER.—Fairly steady at last week's quotations, £7 5s. to £7 10s. per ton.

BORAX—Unchanged and very quiet at 14s. per cwt. for *crystals*, and 14s. 6d. for *powder*.

BROMINE—Is unaltered in value at 1s. 11d per lb. in 20-case lots, the late advance in *Bromides* being maintained. Potass. Bromide is quoted 1s. 9d. per lb. for cwt. lots; other salts in proportion.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, 2s. 6d. per gallon. *Benzole*: 50 per cent., 2s. 3d.; 90 per cent., 2s. *Crude Naphtha*: 30 per cent. at 120° C., 1s. 1d. *Solvent Naphtha*: 95 per cent. at 160° C., 2s.; 90 per cent. at 160° C., 1s. 8d.; 90 per cent. at 190° C., 1s. 4d. per gallon.

COCAINE. — Market remains somewhat quiet, many of the larger buyers having taken the opportunity of laying in a good stock at the lowest figure, while those who are not so well supplied hesitate to pay the advanced price of 10s. 6d. per oz. for 100-oz. lots, which is practically now what makers of best brands are asking. It is possible to buy somewhat below this from second hand in limited quantity. In some quarters it is confidently asserted that makers will probably further advance their quotation ere long. One fact is certain, viz., that even at 10s. 6d. per oz. price is still at a very low level compared with prices which formerly ruled for this article.

CODEIA.—Firm and in demand at 11s. 3d. to 11s. 6d. per oz. according to quantity.

COD-LIVER OIL.—Market is steady but quiet, the best non-congealing *Norwegian* being quoted 67s. 6d. to 75s. per barrel, while *Newfoundland* remains practically a dead letter, price being nominally 2s. to 2s. 6d. per gallon.

CREAM OF TARTAR—Is exceedingly dull, and for 95 per cent. French *crystals* 73s. to 74s. per cwt. is quoted in large bulk, with *powder* 76s. to 77s. per cwt.; 99 per cent. on the other hand is scarce and wanted, nominal quotation 80s. per cwt. for *crystals* in large packages.

GENTIAN ROOT.—Very good quality is obtainable at 24s. per cwt., *c.i.f.*

GLYCERIN—Is quiet, the best German brands being quoted 55s. to 57s. 6d. per cwt. for best white double distilled chemically pure 1260 quality in tins and cases.

IODINE—Is firm at 7½d. per oz., *Iodides* remaining unaltered at proportionate prices.

MERCURIALS.—Makers' prices remain unchanged, viz., 2s. 2d. for *Corrosive sublimate* and 2s. 6d. for *Calomel* in 10-cwt. quantities.

MORPHIA.—Quiet and weak at 4s. 3d. to 4s. 6d. for *Hydrochlorate powder* in quantity and in bulk.

OILS (FIXED) AND SPIRITS. — *Linseed*: Lower at £14 10s. to £14 12s. 6d. for pipes on the spot, barrels £15 to £15 2s. 6d. *Rape*: Lower, ordinary brown on the spot £25 10s.; refined same, position being £27. *Cotton*: Lower at £14 2s. 6d. to £14 15s., according to make. *Olive*: Unchanged, *Spanish* £32, *Levant* £31 10s. to £38. *Cocoanut*: Firm at £22 for *Ceylon* on the spot, whilst *Cochin* is rather dearer at £30 to £30 10s. *Palm*: Dearer at £22 10s. for *Lagos*. *Turpentine*: The market has been rather irregular this week, but closes firmer at 23s. 3d. per cwt. for *American* on the spot. *Petroleum oil*: Unchanged. *Russian* spot 4¼d. per gallon; *American* 4½d. per gallon; *Water white* 5⅝d. per gallon. *Petroleum spirit*: *American* 6d.; *deodorised* 6¼d. per gallon.

OPIUM.—Market is nominally 3d. per lb. dearer, but as regards actual business prices remain about same as lately quoted, viz, *Druggists'* 9s. to 10s. 6d., *Soft shipping* 10s. 9d. to 12s. 6d., and *Persian* 10s. to 11s. per lb.

PHENACETIN—Is quiet at 4s. to 4s. 3d. per lb., *Bayer's* article being still quoted at the fancy price of 14s. 3d., for quantity and in bulk packing.

PODOPHYLLIN RESIN—Is very firm, and it would be very difficult to buy any large quantity at the nominal rates now ruling, these being from 12s. to 14s. 6d. per lb., according to make. From America we hear that the *root* is very scarce, and as the consuming season is approaching, still higher prices must probably rule. The crop in the west was a failure, and manufacturers and dealers must rely on southern stock. If this is not enough to last for a year's supply, much higher figures will have to be paid later on.

POTASH COMPOUNDS.—*Chlorate* is a shade easier at 3⅜d. to 3⅞d. per lb. on the spot. *Bichromate* quiet at 4⅛d. to 4¼d. per lb. on the spot. *Prussiate*: English is quoted 6½d. per lb. for yellow, which is rather

dearer; red firm at 1s. 1½d. to 1s. 2½d. per lb. *Bromide* firm at 1s. 10d. per lb. *Iodide* steady at 9s. 9d. to 10s. 3d. per lb. according to quantity. *Permanganate* unchanged at 67s. 6d. to 72s. 6d. per cwt. for small and large crystals respectively and according to quantity. *Bicarbonate* quiet at 30s. per cwt. for powder.

Quicksilver.—Whilst importers are unchanged at £7 per bottle, second hand holders are rather easier at £6 18s. 6d.

Quinine.—The market has assumed a quiet tone, makers' price for good brands being nominally 1s. 4d. per oz. for quantity and bulk packing. It is, however, possible to buy makes less in favour at 1d. per oz. below this figure, while from second hand the best brands can also be bought to a limited extent at 1s. 3d. per oz.

Resorcin.—Price for *recryst.* has been reduced to 5s. 6d. per lb. for 112 lbs. taken in one lot and in bulk packing.

Shellac.—There is a fair demand privately on the spot, with sales of *Second Orange* at firm rates, including ordinary to fair cakey *TN* at 58s. to 60s. per cwt, *SSO* at 77s. to 77s. 6d., and fine *SG* in circle at 82s. per cwt. For arrival the market is steadier with sales of *TN* December to February and January to March steamer at 63s. per cwt., *c.i.f.*

Soda Compounds.—*Crystals* are steady at 55s. per ton ex-ship terms. *Caustic* unchanged at £7 15s. per ton for the 70 per cent. white, and 60 per cent. £6 15s. per ton. *Hyposulphite* very quiet at 5s. to 8s. per cwt., according to quantity, brand and packing. *Bicarbonate*: £7 5s. to £7 10s. per ton for the 98-99 per cent. and 18s. per cwt. for the fully bicarbonated. *Bromide* unchanged at 2s. 2d. per lb. *Iodide*: 11s. 7d. per lb. *Nitrate*: Refined firm, steady, £7 15s. to £8. 5s. per ton.

Spices (Various).—Owing to the foggy weather the spice sales were put off, and we must defer our report until next week. Privately the market for *Pepper* remains steady, although quiet; for arrival a small business has been done in Singapore, January to March steamer, at 3⅛d. per lb., closing with further buyers thereat. *White Pepper*: With a better demand for Penang, more business has been done. January to March steamer at 5$\frac{3}{32}$d. to 6d. per lb., the bulk at the latter price, at which there are further buyers. Singapore remains quiet and inactive, with sellers January to March steamer at 6⅛d. *Cloves*: Prices are steady, and at the close there are sellers January to March at 3$\frac{7}{16}$d., and March to May at 3$\frac{5}{16}$d. per lb.

Sulphate of Copper—Very dull, and the shade easier at £16 to £16 15s., according to brand and package.

Sulphonal. — Nominally unchanged, makers' price being still 7s. 3d. to 7s. 6d. per lb., a price which, it is stated, is not remunerative to the manufacturers.

To-day's drug auctions passed off with an extremely quiet tone, greater part of the lots offering being bought in. Ipecacuanha sold at a decline, as also did Buchu Leaves. The following are the particulars:—

Acid Tartaric.—2 casks *foreign* realised 1s. per lb., under the circumstances a good price.

Aloes.—559 small gourds good livery *Curacoa* were taken out at 25s. to 30s.; 50 kegs good *Socotrine*, part sold at 80s.; 39 cases ditto held for 77s. 6d.; low drossy to fair hard, bright *Cape* for 17s. 6d. to 22s. per cwt.

Ambergris.—3 tins were bought in at 65s., 1 tin dark heavy of weak flavour held at 50s. per oz.

Anatto Seed.—2 bags very dry sold at 3d. per lb.

Aniseeds.—43 bags, all more or less damaged, but otherwise of fair quality, sold cheaply, without reserve, at 12s. 6d. to 12s. 9d. 33 bags fair sound *Spanish* were held for 28s. per cwt.

Antimony.—50 cases *Japan crude* bought in at £20 10s. per ton.

Balsam Copaiba.—1 case fair *Maranham* held for 2s. 2d. 3 cases *Para* for 2s. 43 cases *Carthagena* sold at 1s. 5d. to 1s. 7d. per lb., according to quality.

Balsam Tolu.—Good hard pale of good flavour sold cheaply at 2s. 9d. per lb.

Buchu Leaves.—8 bales part fair green rounds; part yellowish were bought in at 6d.; 2 bales fair longs sold at 6d. per lb., 6 bales rounds selling at 3½d. for yellow, 4½d. for pale, and 5¾d. for good green, these prices showing a decline in value.

Caraway Seeds.—49 bags fair *Russian*; part sold at 16s. 6d., remainder taken out at 17s. per cwt.

Cardamoms.—The supplies to-day were very small, only 37 packages being offered. Demand was quiet and the bulk was withdrawn. Fair, bold, pale, oblong Mysores sold at 3s. 9d. per lb., smaller 3s. 4d. per lb., which prices show no change on last sale.

Cascarilla Bark.—5 barrels siftings taken out at 25s.

Castor Oil.—50 cases good *Calcutta seconds* bought in at 4d. per lb.

China Bark.—23 bags *Maracaibo* held for 4d. to 5d. per lb. 60 bags flat *Calisaya*, all badly damaged, were bought in without mention of price.

China Soy.—25 casks were bought in at 1s. 5d. per gallon.

Chiretta.—5 bales of fair quality were taken out at 2d. per lb.

Cod-liver Oil.—20 casks old *Norwegian* of only fair quality were taken out without mention of price.

Colocynth.—4 cases small to bold mixed *Turkey* held for 1s. 2d. 13 cases *Spanish* pulp for 3s. per lb.

Colombo Root.—23 bags fine picked washed held for high figure of 70s. 1 bag dark sorts sold without reserve at 30s. per cwt.

Cream of Tartar.—2 casks good French *crystals* sold well at 73s. per cwt.

Cumin Seed.—25 bags fair quality taken out at 32s. per cwt.

Cuttle Fish.—55 mats fair bold pale held for 3½d. per lb.

Dragon's Blood.—Fine quality continues scarce, notwithstanding the very high prices which have been paid lately for this grade. Only 15 cases were offered to-day, but only 2 lots fair bright but seedy lump, sold at £5 15s. per cwt.; another parcel rather inferior being held at £7 per cwt.

Ergot of Rye.—3 bags medium *Russian* were taken out at 10d.

Galls.—3 bags blue *Turkey* sold cheaply without reserve at 47s. 6d. per cwt.

Gamboge.—40 cases were offered to-day, but the bulk was withdrawn, no one seeming interested in the article. Good bright pipe slightly mixed and soft held for £8 per cwt. 7 cases good bright slight soft sold without reserve at £8 to £8 2s. 6d. per cwt., being lower.

Guaza.—35 robbins fair green sold at 4d. per lb.

Gum Ammoniacum.—3 cases fair clean, bulk tear, a smaller part dark blocky held for 55s. per cwt.

Gum Arabic.—21 bales fair sorts held for 80s. per cwt.

Gum Bdellium.—5 bales rough were bought in, a bid of 10s. per cwt. being refused.

Gum Benjamin.—Medium to fair *Sumatra* was held for 85s. to 120s., medium to fair *Penang* for 65s. to 80s., *Palembang* for 25s. per cwt., 25 cases selling without reserve at 19s. to 20s. 6d. Four cases *Siam* ordinary brown siftings and block, rather sandy, sold also without reserve at 35s. 4 cases low ditto were bought in at 80s.; good free, small to bold, at £20; ditto, part blocky, at £15; and seedy block at £8 per cwt. Market showed a very dull tone, there being no orders in hand for this article.

Gum Elemi.—8 cases of dark colour taken out at 25s.

Gum Guaiacum.—of 7 packages good bright glassy block sold at 1s. 7d. to 1s. 8d. per lb.; fair ditto, 1s. 3d. per lb., and lower grades down to 7½d. per lb.

Gum Kino.—3 tins genuine *Cochin* were held for 12s. 6d., red *African* for 5s. to 6s. per lb.

Gum Myrrh.—19 barrels all bought in. Fair pale *Aden* picked at £5 5s., ditto half picked at same price, fair pale at 80s., good pale siftings at 35s. to 45s., pickings at 25s. per cwt.

Gum Tragacanth.—25 cases were held for £8 to £13 10s. per cwt., according to quality.

Honey.—5 barrels fair *New Zealand* were held for 30s. per cwt.; medium to fair *Jamaica*, part sold at 21s. to 23s. 6d., balance held for 22s. to 23s.

Ipecacuanha.—Privately the market has been very firm to dearer during the past week, 7s. being the price asked, although we have not heard of anything over 6s. 9d. per lb. being paid. At the sales to-day 37 bales of *Rio* were offered, and there was more disposition to sell, in spite of which, however, only a few bales sold at 6s. 6d. per lb., a decline on private sales of fully 3d. per lb. *Carthagena*: 9 bales of this variety were also offered, part selling at 5s. 5d. per lb.

Jaborandi Leaves.—Of 55 packages pale to dark, only 20 bales sold without reserve at low price of ½d. per lb., "if pay charges."

Jalap.—8 bags fair small heavy tubers were taken out at 8d. per lb.

Kamala.—13 cases of fair quality were held for 5d. per lb., a bid of 4½d. being declined.

Kola Nuts.—6 bags of good quality part rather dull, part fine bright, were held for 8d. per lb., only 5½d. being bid.

Menthol.—1 case *Kobayashi* brand of good dry white crystals, sold cheaply at 7s. 2d. per lb.

Orange Peel.—2 cases old thin cut held for 4d.; good bright new ditto for 8d.

Orris Root.—14 bags good *Mogador*

were taken out at 25s., 30 bales low East Indian at 7s. 6d., 3 serons fair pale *Mogador* sold without reserve at 20s. per cwt.

Quince Seed.—1 bag sold without reserve at 11d. per lb.

Red Bark.—20 cases of this scarce article realised very full prices up to 7s. 3d. per lb. for good quality.

Rhubarb.—Fair medium to boldish round *Shensi* bought in at 2s. to 2s. 3d.: flat ditto small to medium held for 1s. 9d. to 2s.; small to medium round *Canton* for 1s. 4d. to 1s. 8d.; flat ditto for 1s. 6d.; good high dried for 1s. 1d. to 1s. 2d.; rough horny ditto for 8d. per lb.

Sarsaparilla.—4 serons *Honduras* taken out at 1s. 6d. per lb. 46 bales good *Jamaica* sold readily at 1s. 6d. to 1s. 7d. per lb. for first-class damaged to sound. *Red Native* bought in at 1s. 1d., 4 bales selling very cheaply at 9d. per lb.

Seneka Root.—13 bales fair *Minnesota* bought in at 1s. 6d. per lb.

Senna.—The supplies of *Tinnevelly* continue small, and the arrivals in sight are said to be unimportant. At the sales only 250 bales in first hands were offered, the quality on the whole being inferior to the offerings a fortnight ago. The demand was inactive, and prices may be called rather easier. Small yellowish realised 1¾d. per lb.; fair to good green small, 2d. to 2¼d. per lb.; fair bold slight yellowish, 4d. to 4¼d. per lb. *Alexandrian* quality was represented by 7 packages only, no fine leaf being included, none of it sold, a bid of 2¾d. per lb. for siftings being declined. The market for this description is exceedingly dull, and although holders are anxious to make sales even at a reduction, no progress can be made.

Tamarinds.—55 barrels fair *West Indian* taken out as 8s. per cwt.

Thyme Seed.—26 bags bought in at 12s. per cwt., an offer of 8s. being declined.

Turmeric.—10 bags fair finger Madras was taken out without mention of price.

Vanilloes.—About 320 tins were offered, but the greater part of these were withdrawn, holders being very firm in their ideas. The sold portion realised fully last sales' rates.

Wax.—Fair *Jamaica* bought in at £7 7s. 6d. to £7 10s., 2 kegs selling at latter figure, fair to good *Madagascar* part slightly damaged realised £5 7s. 6d. to £5 15s., balance being bought in at £6; fair *Zanzibar* part sold at £5 15s. to £6 2s. 6d., rest held for £6; fair *Australian* for £6, medium *East Indian* for £5 10s., lower quality being held for 80s., a bid of 75s. per cwt. being refused; good *Calcutta* selling at £6 7s. 6d. to £6 15s. 5 bags dark *Carnauba* sold at 38s.; 50 cases good *Japan* held for 39s. per cwt.

MANCHESTER CHEMICAL REPORT.

November 24, 1897.

It is rumoured that the war of prices is over, and as a consequence Bleaching Powder is now quoted at £6 per ton, soft-wood casks on rails for next year. Caustic Soda is perhaps a trifle easier, but Soda Crystals and Soda Ash are unchanged. Ammonia Alkali, 58 per cent., is firm. Sulphate of Copper has receded considerably, and to-day £16 10s. to £16 15s. is quoted for best brands, delivered in Manchester. Coal Tar products are generally dull. Creosote remains at 2d., and Pitch is still quoted 17s. 6d. per ton *f.a.s.*, Ship Canal. Exports continue small. There is news of increased arrivals of Brown Acetate, and there is prospect of lower prices. Alum is dull, and Sulphate of Alumina is at £4 10s. to £4 12s. 6d. per ton *ex* warehouse, Manchester. Yellow Prussiate firm at 6½d. per lb. Green Copperas is still scarce at 34s. per ton *f.a.s.*, Ship Canal. Other articles unchanged.

LIVERPOOL REPORT.

November 24, 1897.

The week's sales have been rather above the average in number, and satisfactory as regards prices. Linseed and cotton-seed oils have taken a turn in buyer's favour, but Olive and Castor Oils remain at last week's rates, and Spirits of Turpentine has risen 3d. per cwt. West African produce has been sold to a considerable extent, rather larger amounts of Kola Nuts, both fresh and dried, having been disposed of, as well as Gambia and Sierra Leone Beeswax, and a fair quantity of Sierra Leone Ginger. Honey of Chilian origin is firmer in price, whilst a good trade has been passing in Californian on private terms.

Ammonium Salts—Are unchanged in price from last week, except Sulphate, which is dearer, the price here being £9 to £9 2s. 6d. per ton.

Beeswax.—5 blocks of Sierra Leone of low grade sold for £5 7s. 6d. per cwt., and 8 bales of Gambia good quality at £6 5s.

Bleaching Powder.—Some heavy contracts have been made for next year, and a firmer tone is the result. Otherwise the quotation is unaltered from last week.

Canary Seed—Is quiet and somewhat neglected at 26s. to 27s. 6d. per 464 lbs. for Turkish seed.

Castor Seed.—206 bags of Maranham seed sold at 11s. 6d. per cwt.

Copperas—Is scarce at 37s. to 39s. per ton.

Copper Sulphate — Varies between £16 5s. and £16 7s. 6d. per ton.

Ginger.—Sierra Leone has been disposed of in small amount at 16s. 6d. per cwt.

Honey.—Chilian is firmer in price; Pile I., 26s. per cwt.; Pile III., 24s. 6d. per cwt., and Pile X., 27s. to 30s. per cwt.; 70 cases of Californian sold privately.

Kola Nuts.—40 bags dried changed hands at 3d. per lb. at auction, and some 50 or 60 baskets of fresh at 3d. to 3½d. per lb.

Linseed.—The stocks here are very low, with little offering. River Plate seed brings 35s. to 35s. 3d. per 416 on the spot, and transactions are said to have taken place at 33s. for delivery during December and January. 450 bags of Turkish made 36s. per 416 lbs., and 250 bags Cyprus 39s.

Oils (Fixed) and Spirits.—*Castor oils* are selling fairly well at last week's rates, which are steadily maintained, Calcutta 3½d. to 3⅝d., French first pressure 3⅞d. per lb. *Olive oils* still bring high rates, which show no signs of abatement. Candia oils have sold during the week at £32 10s., and they are now held for £32 10s. to £32 15s., and Seville oil at £31 10s. to £32 per ton. *Linseed oil* of Liverpool make is easier at 3d. per cwt., and is now selling at 15s. 9d. to 16s. 6d. per cwt. *Cottonseed oil* has also taken a turn lower, and sells at 14s. 9d. to 15s. 6d. *Spirits of Turpentine* sells well and steadily at an advance of 3d., viz., 24s. 6d. per cwt.

Potash Salts—Are unchanged since last report.

Soda Salts—Are also unchanged.

NEWCASTLE CHEMICAL REPORT.

November 24, 1897.

This market is practically unchanged so far as values are concerned. The only special feature is the continued scarceness of Soda Ash and Crystals, both articles being in demand mostly for inland use. Quotations are: Bleaching Powder, £6 10s. to £7 10s., according to markets. Soda Crystals: 42s. 6d. to 57s. 6d. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

FOOTBALL.

Owen's Pharmaceutical Department *v.* Northern College of Pharmacy; played on Monday 22nd, on the Owens Ground. A good game ending in a draw of one goal each.

Teams.—Owens: goal, Drummond; backs, Barlow and Woolley; half-backs, Holt, Moon, Dawson; forwards, Walmsley, Higson, Paget, Morton, Edgar. Northern.—Goal: Bolild; backs, Hughes and Coatos: half-backs, McKenzie, Brayne, Morgan; forwards, Wild, Jones, Brown, Worral, Freer.

Pharmaceutical F.C. *v.* Hon. Artillery Co.—This match, played on Saturday last at Finsbury, resulted in a draw, 2 all. The game was hotly contested throughout, and brought out excellent play from both teams.

Pharmaceutical Team:—Blackmore, goal; Jones and Lescher, backs; Happold, Evans, and Webster, halves; Cardwell, Merrikin, Owen, centre; Durbin and Warren, forwards.

The following football teams met on Saturday, November 20 last, at Hyde Farm, Balham:—Metropolitan College of Pharmacy and South London School of Pharmacy. The ground was rather heavy, but the "Metropolitans" had the best of the game, and finally won by 6 goals to 2.

MARRIAGES.

Simon—Castle.—On November 22, at St. Oswald's Church, by the Rev. E. C. Lowndes, M.A., Vicar, John Simon, Chemist and Druggist, second son of John Simon, M.R.C.V.S., Forgue, Aberdeenshire, to Angie, youngest daughter of John Castle, late of India, I.C.S.

Publications received.

AIR, FOOD, AND EXERCISES: An essay on the predisposing causes of disease. By A. RABAGLIATI, M.A., M.D., F.R.C.S., Edin. xvi. + 220 pp. Price 5*s.* net. London: Baillière, Tindall & Cox, 20 and 21, King William Street, Strand, W.C. From the Publishers.

SICKROOM COOKERY AND HOSPITAL DIET with Special Recipes for Convalescent and Diabetic Patients. By MAUDE EARLE. With Notes on the Feeding of Infants, by Frank C. Madden, F.R.C.S. Pp. 252. Price 3s. 6d. London: Spottiswoode & Co., 54, Gracechurch Street, E.C. 1897. From the Publishers.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

William Thomas and Ernest Raw Thomas (trading as William Thomas and Son), Mineral Water Manufacturers, Boxmoor, Hertford. Debts will be paid by Ernest Raw Thomas.

Edward Beach and Co., Soap, Starch, and Candle Manufacturers, 37, Lime Street, E.C. Edward Tapply retires.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Fawcett and Carabine, Aerated Water Manufacturers, etc., Goole, Yorks.

DIARY FOR THE WEEK.

SATURDAY, NOVEMBER 27.

METROPOLITAN COLLEGE OF PHARMACY, at 6.30.
Fourth Annual Dinner. (Venetian Chamber, Holborn Restaurant.)

PHARMACEUTICAL FOOTBALL CLUB *v.* SWALLOW FOOTBALL CLUB, at Acton, on ground adjoining G.W.R. station. Kick off at 3. Train from Gower Street at 1.57.

TUESDAY, NOVEMBER 30.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.
"Photography and Photographic Materials," by Messrs. Nicholson.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION, at 11 a.m.
Opening Meeting of Session.

LEICESTER CHEMISTS' SOCIAL UNION, at 8.30 p.m.
Smoking Concert. (Wyvern Hotel.)

WEDNESDAY, DECEMBER 1.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Social Evening.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9. p.m.
Musical and Social Evening.

NEWCASTLE-UPON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION, at 8 p.m.
Proposed Amendments of the Pharmacy Acts.

PHARMACEUTICAL SOCIETY.
Council Meeting.

PHARMACY CLUB, at 6.45 p.m.
Dinner at the Café Royal.

THURSDAY, DECEMBER 2.

CHEMICAL SOCIETY, at 8 p.m.
Ballot for the Election of Fellows.
"On Collie's Space-Formula for Benzene," by F. E. Matthews.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
Annual Conversazione. (Portman Rooms, Baker Street.)

LINNEAN SOCIETY, at 8 p.m.
Papers by Professor Arthur Dendy, Messrs. W. and G. S. West. Exhibitions by Professor J. B. Farmer and Mr. Martin Woodward.

NORTH STAFFORD AND DISTRICT CHEMISTS' ASSOCIATION, at 6.30 p.m.
Proposed Amendment to the Pharmacy Act

FRIDAY, DECEMBER 3

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
'Solutions," by Mr. F. J. Hambley.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
"On Some Foraminifera from the Australian Miocene," by G. R. Vine.

WESTMINSTER COLLEGE OF PHARMACY, at 7 p.m.
Annual Dinner. (Venetian Chamber, Holborn Restaurant.)

SATURDAY, DECEMBER 4.

"ALLENBURY'S" CRICKET CLUB, at 8 p.m.
Second Annual Ballard Concert. (Bishopsgate Institute, E.C.)

LATE ADVERTISEMENTS.

Assistants Wanted.

COMPETENT and Qualified ASSISTANT wanted. In-doors. Must have had good experience. Age not under 22. Several assistants kept. Close at 7.30. Apply, giving full particulars and enclosing carte, if possible, to CLAY & ABRAHAM, Chemists to the Queen, Liverpool.

MESSRS. WAITE & CODLING, Cheltenham, require, as Junior ASSISTANT, a gentleman who has been accustomed to a first-class Dispensing business, and whose references are unexceptionable. Applicants to state full particulars of qualification, age height, salary, &c., and enclose photograph.

Engagement Wanted.

MANAGER, with view to Partnership or Succession. Age 35. Provinces preferred. Good references. Disengaged. A. C., "Pharm. Journal" Office, 5, Serle St., London, W.C.

EXCHANGE Offers & Wants

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Shop Fittings.

Handsome large plate-glass show-case combined, with desk and drawers in mahogany cost nearly £30; take £12, or exchange for centre-case for shop.—Francis and Co., Burnley. Full particulars on application.

Miscellaneous.

What offers? About 100 pints Johannis Water Moonseed Bitters in good condition.—Smith, Chemist, Taunton.

Duplicate Silver Coins.—Edward II. penny, Elizabeth's twopence, threepence, fourpence, and sixpence; all good, 1s. each. Lot others.—Mr. Walter, c/o Mr. Maish, Chemist, Bristol.

OFFERED—*(continued).*

Optical and Photographic.

Photographic Mounts, cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000. Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s. 100. Samples free.—Peck, East Dereham, Norfolk.

Books.

Quain's 'Dictionary of Medicine,' two volumes, excellent condition, 10s., post free.—Lownsbrough, 52, Newborough, Scarborough.

OFFERED—*(continued).*

For Sale.—Willcox's No. 2 Gun-metal Pump, used short time for water only, good as new, 25s.; Coal or Coke Slow Combustion Stove, 32 inches high, with elbow and piping, cost 45s., sell 15s.; Fletches' 7-tube Hot-air Gas Stove for bedroom or shop, price 8s. 6d.—Chemist, 34, Avondale Road, Chorley.

WANTED.

'Year-Books of Pharmacy,' 1891, 93, 94, 95, 96. Sutton's 'Volumetric Analysis,' recent edition. Bougie and Pessary Moulds.—James Grier, 14, St. Bees Street, Moss Side, Manchester.

NEWS IN BRIEF

The Brighton Junior Association of Pharmacy.—A meeting was held on Wednesday, November 17, when "Sharp Practice" was the order for the evening, and some very interesting speeches and discussions took place on the most varied subjects. Messrs. Jeeves, Davies, Blamey, Kent, Cupit, Andrews, and Yates taking part.

Glasgow School of Pharmacy.—On Friday evening last, Mr. J. Lothian, Principal of the Glasgow School of Pharmacy, delivered a lecture entitled "A Trip to Paris" to the students and their friends. The lecture, which was illustrated by sixty limelight views of Paris and Versailles, was attended by a large concourse of students and their friends, including a number of the fair sex, the spacious lecture room being filled to repletion.

Misses Lillie and Kathleen Mason, daughters of Mr. A. G. Mason, Bexley Heath, chemist and druggist, at the recent examination held by the University of London obtained the degree of Bachelor of Arts.

Plymouth, Devonport, Stonehouse, and District Chemists' Association.—At a committee meeting held on Tuesday last, the President, Mr. James Cocks, in the chair, Mr. F. Maitland (Chapel Street, Stonehouse) was elected Hon. Secretary of the Ball Committee, and the date of the annual ball was fixed for Thursday, January 7, at the Stonehouse Town Hall. Tickets (single), gentlemen's, 5*s.*; ladies', 4*s.*; double tickets, 8*s.*

Sir Joseph Dalton Hooker, C.B., K.C.S.I., F.R.S., has been awarded the Wilde Gold Medal of the Manchester Literary and Philosophical Society for 1898 in recognition of his eminent services to all branches of botanical science.

Dr. Edward Schunck, F.R.S., has been awarded the Dalton Medal of the same Society for his remarkable series of researches on natural colouring matters.

Metropolitan College of Pharmacy.—The fourth annual students' dinner was held on Saturday, November 27, in the Royal Venetian Chamber, Holborn Restaurant, Mr. Thomas Tyrer, F.I.C., in the chair. The dinner was a decided success, there being a larger attendance of guests and past and present students than at any of the previous dinners. The toast of "The Metropolitan College of Pharmacy" was proposed by the Chairman, who, in the course of an interesting and eloquent speech, dwelt upon the responsibility attaching to the business of a pharmacist, and the necessity for the demand made by the law that he shall be an educated, intelligent man. He went on to advocate a higher standard of education for those about to enter the profession, and urged upon those present not to be content with passing the Minor examination, but to extend their ambition a little further, and to take the Major qualification. In conclusion, he expressed the opinion that Mr. Watson Will is the right man in the right place, and he wished every success to the institution. Mr. Watson Will having replied, Mr. Tyrer then distributed the prizes for the session 1896 and 1897 to the successful students.

The School of Pharmacy Students' Association will hold its opening meeting for the session on Thursday next, the 9th inst., when an introductory address will be delivered by Mr. William Martindale, F.C.S., F.L.S. The chair will be taken by the Dean of the School, Professor Greenish, at 8 p.m., and all past and present students are cordially invited to be present.

Messrs. R. W. Greef & Co.'s offices have been removed to No. 20, Eastcheap, London, E.C., to which address in future all communications should be sent.

A Saccharine Patent Action.—The case of the Saccharin Corporation *v.* Haines, Ward and Co. and others (see p. 501), in which the plaintiffs claim an injunction restraining the infringement of certain letters patent, which has been before the Court on a previous occasion as reported in our columns, was again mentioned to Mr. Justice North in the Chancery Division of the High Court on Friday, November 26. It was arranged that the motion should stand till the trial, the defendants giving an undertaking in the terms of the notice of motion, the plaintiffs, without prejudice to any question, giving an undertaking in damages.

Messrs. Typke & King, Manufacturers of Phosphoric Acid, Hypophosphites, etc., whose works at Rainham, Essex, have unfortunately suffered severely from late floods in the Thames Valley, state that their business has thereby suffered no interruption, as they also have works at Mitcham, in Surrey.

Dr. F. Stanley Kipping, lecturer and assistant in the research laboratory of the Central Technical College, London, has been appointed to the Professorship of Chemistry in University College, Nottingham.

Mr. J. Willesley Douglas, A.P.S., was the solo violinist at the Free Library, Walworth Road, S.E., on Tuesday evening last, and played Rubenstein's "Melodie in F" and "The Dances from Henry VIII." by Ed. German.

ADVERTISEMENT.

An Assistant Wanted on the Editorial Staff of the *Chemist and Druggist*. Special knowledge of the chemical and drug trades necessary. Applicants are requested to state clearly experience and qualifications. Address "A. C. W.," the *Chemist and Druggist*, 42, Cannon Street, London, E.C.

NEW IDEAS & TRADE NOTES

CHLORODYNE AND THE P.A.T.A.

Mr. J. T. Davenport asks us to state that an advertisement of Dr. Browne's chlorodyne has appeared in several chemists' price lists wherein the price quoted is below the P.A.T.A. minimum, in spite of instructions from him to the contrary. This statement is confirmed by a letter from Messrs. A. P. Roberts, Son & Co., who printed the lists.

OLD DREDGE'S ANNUALS.

Messrs. Barclay & Sons, of Farringdon Street, intimate that Old Dredge's Annuals are now being distributed, and as the whole edition will soon be exhausted, any of their customers who have not ordered a supply had better do so at once should they require any. For the information of chemists who have not hitherto ordered these annuals, Messrs. Barclay mention that they print name, address, and any other matter connected therewith on the front cover, and supply them thus at 6*d.* per 100, carriage paid.

NEW ZEALAND AGENCY.

Messrs. Ayrton & Saunders, of Liverpool, have arranged with Messrs. A. E. Whittome & Co., of 48, Shortland Street, Auckland, N.Z., to carry a comprehensive stock of their general goods, and they are in a position to promptly execute any orders received without the delay which would occur if they had to be specially imported.

HAZELINE SNOW.

Messrs. Burroughs, Wellcome & Co. submit a sample tube of Hazeline Snow, in the preparation of which they have recently effected some improvements. It now contains 50 per cent. of Hazeline, and will be found to leave no trace of greasiness when it is applied to the skin. For this reason it is especially appreciated by those who find preparations containing fats, oils, or glycerin objectionable. A mouthpiece is supplied for screwing on the orifice of the collapsable tube, for convenience in applying Hazeline Snow to internal hæmorrhoids.

LABERN'S PERFUMERY.

Messrs. H. Labern & Son ask us to state that their perfumery is not by any means confined to high-class articles, as might be imagined by the notice in last week's Journal; they cover also a very large range of popular goods, but certainly all are equally distinguished for artistic taste in the matter of get-up, whether the twopenny or three guinea article. A very large selection of labels is placed by the firm at the disposal of chemists for use with their own name, and those labels represent the finest artistic colour printing.

Mr. Thomas Whiffen has contributed £25 to the relief fund raised in connection with the Cripplegate fire.

Market Report and Prices Current

Specially compiled for the Pharmaceutical Journal

LONDON REPORT.

[Specially Compiled for the 'Pharmaceutical Journal.'

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

December 2, 1897.

The course of business has been exceedingly disappointing during past week, and almost everywhere complaints have been heard that there was nothing doing. The changes in value have been unimportant. Ipecacuanha and Opium are rather dearer. Sulphate of Ammonia dull. Acid Carbolic firm andrather higher. Morphia is also the turn dearer, as may be said of Menthol and Cream of Tartar. Acid Tartaric is steady. Acid Citric weak. Iodine and Iodides, Bromine and Bromides, Quicksilver and Mercurials unchanged. Quinine and Cocaine dull, as also Sulphonal and Phenacetin without alteration. Cod-liver Oil and Glycerin very dull. Vaseline lower. The following are the quotations ruling for articles of chief interest :—

Acetanilid—Is very dull at 1s. 2d. to 1s. 3d. per lb. for quantity and in bulk.

Acid Boracic—Unchanged, with but little business passing. Quotations :—*Crystals*: 24s. to 25s. per cwt. *Powder*: 26s. to 27s. per cwt.

Acid Carbolic—Is very firm at 7¼d. for best makes of 35°-36 C. *ice crystals* in 2½-cwt. drums and overcasks, while 39°-40 C. is quoted 7¾d., and 39°-40 C. *detached crystal* 8¾d. per lb. in quantity and in bulk. *Crude*: 60° C., 2s. 2d. per gallon; 75° C., 2s. 7d. *Liquid*: 95 per cent. of pale straw colour, 1s. 1d. to 1s. 2d. per gallon in 40-gallon barrels. This article is scarce for immediate delivery.

Acid Citric.—Very dull at the late decline. Quotations: 1s. 1d. per lb. on the spot.

Acid Tartaric.—Quiet but steady at last week's quotations of 1s. 1½d. per lb. for *English* and 12½d. to 12¾d. per lb. for *foreign*.

Ammonia Compounds.—*Sulphate* dull at £8 15s. per ton for grey, prompt, 24 per cent., London. *Chloride* steady at 23s. 6d. to 25s. 6d. per cwt. for 98 per cent., free from metals, and 30s. to 32s. per cwt. for the chemically pure. *Bromide* firm at 2s. 2d. per lb. *Nitrate*: 40s. per cwt.

Atropine.—The *Sulphate PB* remains very firm at 12s. 8d. per oz., and 2s. 4d. per oz. more for the *pure*. It is stated that in view of continued scarcity and dearness of suitable raw material, an advance in price is not impossible.

Bismuth—Remains at 5s. per lb. for the *metal* and 4s. 10d. for the *subnitrate* in half-ton lots.

Bleaching Powder.—Very little doing, but prices are about the same as last week at £7 5s. to £7 10s. per ton.

Borax.—Very quiet at 14s. per cwt. for *crystals*, and 14s. 6d. per cwt. for *powder*.

Bromine and Bromides—Unchanged at figures given last week.

Buchu Leaves.—A further arrival of 16 bales is reported this week. The article is entirely without life, and very little business is passing.

Cascara Sagrada—Is fairly steady at 18s. 6d. per cwt., but for large quantity rather less would probably be accepted.

Cinchonidine Sulphas—Dearer at 10d. per oz. in tins, and 11d. per oz. in vials for *English*.

Cinchonine—Also dearer at 7d. and 8d. per oz. for the *Muriate* in tins and vials respectively, and 6d. and 7d. per oz. for the *Sulphate*.

Cinnamon.—At the quarterly auctions held on Monday the large quantity of 3093 bales *Ceylon* was offered, as compared with 1393 bales in August last and 1400 bales in November last year. About 2400 bales found buyers at irregular prices, average qualities showing a reduction of ½d. to 1d. per lb., in a few instances slightly more, whilst fine to superior worked, well-known marks, sold with strong competition at full rates to 2d. advance. 540 bales *Ceylon* worked all sold, as follows: 110 bales first sort, fair to good 11d. to 1s., fine to super 1s. 3d. to 1s. 7d., one lot 2s. 4d.; 154 bales second sort, medium to fair 10d. to 11d., fine 1s. 2d. to 1s. 4d.; superior 1s. 7d.; 142 bales third sort, ordinary to medium 9d. to 10½d., fine 1s., superior 1s. 3d. to 1s. 5d.; and 128 bales fourth sort, ordinary to fair 8½d. to 9½d., fine and superior 11d. to 1s. 3d. Of 2553 bales unworked about 1850 bales sold, superior 1s. to 1s. 1d., No. 1 at 10d. to 11½d., No. 2 at 9¼d. to 10¼d., No. 3 at 8½d. to 9½d., No. 3 at 8d. to 9d., coarse and foxy 7d. to 9d. *Chips*: Only about 200 bags out of 1020 sold, ordinary to good ordinary, 3d. to 3¼d.; quillings and broken quill, 9d. to 11½d. per lb. The auctions for 1898 have been fixed to take place as follows: February 28, June 6, August 29, and November 28.

Coal Tar Distillation Products.—*Toluol*: 2s. 6d. per gallon. *Benzole*: 50 per cent., 2s. 3d.; 90 per cent., 2s. *Crude Naphtha*: 30 per cent. at 120° C., 1s. *Solvent Naphtha*: 95 per cent. at 160° C., 2s.; 90 per cent. at 160° C., 1s. 8d.; 90 per cent. at 190° C., 1s. 4d. per gallon.

Cocaine—Is quiet, most buyers having filled their immediate requirements prior to the late advance. The chief makers decline to quote, stating that they are sold out for the present, their price being nominally 10s. 6d. per oz. for 100 oz. lots, while it is possible to buy a little below this figure from second-hand.

Cloves.—Only 22 bales *Zanzibar* sold at auction at 2⅝d. to 2⅞d. *Amboyna* bought in at 4½d. 11 cases picked *Penang* sold without reserve at 6¼d. Privately *Zanzibar* are firm at 2⅝d. spot; January to March, 2 3/32d.; March to May, 3⅛d.

Codeia—Is firm at 11s. 3d. to 11s. 6d. per oz., according to quantity and packing.

Cod-Liver Oil—Remains very dull, prices being nominally unchanged at 70s. to 75s. per barrel for best non-congealing *Norwegian* in tin-lined barrels. *Newfoundland*: Practically a dead letter, price being nominally 2s. to 2s. 6d. per gallon.

Cream of Tartar—Is firmer to rather dearer, 73s. 6d. to 74s. 6d. per cwt. being asked for first white French *crystals*, and 75s. 6d. to 78s. per cwt. for *powder*.

Damiana Leaves—Are dearer and scarce; nominal value, 11d. to 1s. per lb.

Ginger.—The market for rough *Cochin* is extremely dull, 1235 bags being all bought in at 21s to 24s., for medium and small washed. 15 cases cut sold, B at 72s. 6d., fine bold at 100s.

Glycerin.—The continued mild weather, combined with absence of demand for manufacture of dynamite, has tended to check an already dull demand. Price varies from 52s. 6d. to 57s. 6d. per cwt. for best white double distilled chemically pure 1·260 quality in tins and cases, according to quantity and brand.

Guaza.—It is said that business has been done at 4d. per lb. this week for good green quality. The article is reported to be very scarce in India, and stocks there scarcely sufficient for local requirements.

Iodine—Firm at 7½d. per oz. *Iodides* at proportionate unchanged prices.

Ipecacuanha.—Holders are very firm at 6s. 9d. to 7s. per lb. for *Rio*, whilst *Carthagena* is exceedingly scarce, even in second hands, and it is doubtful if more than two or three bales could be got at 6s. per lb

Isinglass.—At the periodical auctions, the last of the year, held to-day, supplies were considerably larger than at the preceding, although still relatively moderate, the total amounting to 489 packages against 330 packages in October. A generally strong demand prevailed, and the greater part found buyers at firm to advanced prices. *Bombay* and *Kurrachee*, of which about one-half consisted, met a ready sale, particularly leaf, which brought an advance of 1d. to 3d., new tongue dearer, old tongue 2d. higher, bladder-pipe dearer, cake in request at previous rates for the lower kinds to rather dearer for middling, but decidedly higher for good to fine. *Penang* sold with competition at an advance of about 3d. for leaf and 2d. for tongue, whilst good cake showed a considerable rise. *Saigon* long leaf in more demand at full rates, and round leaf 2d. to 3d. higher. The larger supply of *Para* showed greater variety in the assortment; a good demand prevailed, and prices of lump were mostly rather dearer; tongue brought a slight advance. *Maranham* sold readily at a general advance. *West India* also met a strong demand, prices advancing 2d. to 3d. per lb.

Lithia.—The *Carbonate* is unchanged at 9s. 4d. to 9s. 8d. per lb. for quantity and in bulk.

Mandrake Root—Remains scarce and dear, while the demand for the manufac-

tured article is fairly active. It is thought therefore that even higher prices will probably rule ere long.

Menthol—Is very firm at from 7s. 6d. to 7s. 9d. per lb. on the spot, whilst for forward delivery Japan shippers quote 7s. 9d. to 8s. per lb. *c.i.f.*, which price is, of course, under the circumstances quite nominal. As soon, however, as the cheap parcels bought some time ago are exhausted, decidedly higher prices will have to be paid, it being reported that the late floods in Japan have done very considerable damage to the peppermint crops.

Mercurials — Are unchanged at late prices, viz., 2s. 2d. to 2s. 5d. for *corrosive sublimate*, and 2s. 6d. to 2s. 10d. for *calomel*, according to quantity.

Morphia—Is firmer, and price is expected to be higher in consequence of the advance in the valuc of *opium*. The price for the *hydrochlorate* powder is 4s. 3d. to 4s. 6d. per oz., according to quantity.

Nitrate of Soda—Remains firm at £7 15s. to £8 10s. per ton for refined, according to quantity and packing.

Oils (Essential).—*Peppermint HGH* is quiet at 5s. 9d. to 6s. per lb., according to quantity. *Wayne County*, 4s. per lb. *Japan*, dementholised, very firm at 3s. 3d. to 3s. 6d. per lb. on the spot, whilst to arrive nothing can be obtained under 3s. 9d. per lb. 40 per cent., 4s. 9d. to 5s. per lb. on the spot, and for arrival 5s. 3d. per lb. *c.i.f. Star Aniseed* firm at 7s. 9d. per lb. on the spot, and 7s. 2d. per lb., *c.i.f.* terms. *Cassia* quiet and rather easier for *c.i.f.* quotations, which for 75 to 80 per cent. are 4s. 9d. to 4s. 10d. per lb., and for 70 to 75 per cent., 4s. 7d. per lb. *Citronelle* steady at 1s. 4d. per lb. on the spot. *Lemongrass* very firm and still advancing, 5⅜d. to 5½d. per oz. being now the quotation. *Pimento*: English oil has been advanced to 12s. per lb. *Croton* lower at 3d. per oz. by the case. *Cajeput* very firm at 4s. 6d. to 4s. 9d. per bottle. *Dill* dearer at 11s. per lb. *Wintergreen* lower at 6s. 6d. per lb.

Oils (Fixed and Spirits).—*Linseed*: This market has a steadier tone, on the spot pipes £14 12s. 6d., barrels £15. *Rape*: quiet but unchanged at last week's quotations of £25 10s. for ordinary brown on the spot, and £27 for refined on the spot. *Cotton*: Unchanged and very quiet, refined being still £14 2s. 6d. to £14 15s. according to make. *Olive*: *Italian* oils are reported to be dearer. *Spanish*: Unchanged so far at £32. *Levant*: £31 10s. to £33. *Cocoanut* dearer, closing very firm at the advance. *Ceylon* on the spot £22 10s. *Cochin*: Spot £30 10s. *Palm* again dearer at £23 on the spot for *Lagos*. *Turpentine* dearer, and closing very firm at the advance; American, on the spot, 23s. 6d. to 23s. 9d. per cwt.; January to April, 24s. to 24s. 3d. per cwt. *Petroleum Oil* is dearer, and at the close the market is very strong at 4½d. per gallon for *Russian* on the spot, and 4¾d. per gallon for *American*, same position; water white, 5⅛d. per gallon. *Petroleum Spirit*: *American*, 6d. per gallon; *deodorised*, 6¼d. per gallon.

Opium—Is firm at an advance of about 6d. per lb. here, and about 9d. per lb. on the other side.

Phenacetin—Is quiet and unchanged, price ranging from 4s. to 4s. 3d. per lb., according to quantity.

Podophyllin—Continues firm at 12s. to 13s. 6d. for fully soluble *PB* quality, according to make and quantity.

Potash Compounds.—*Chlorate* steady at 3¾d. per lb. on the spot. *Bichromate* quiet at 4⅛d. per lb. *Prussiate*: English, 6½d. per lb. for *yellow*, and 1s. 2d. per lb. for *red*. *Bromide* firm at 1s. 10d. per lb. *Iodide* steady at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate* very quiet, and prices are quite nominal. *Bicarbonate* unchanged at 30s. per cwt. for *powder*.

Quicksilver—Is unchanged at £6 18s. 6d. per bottle from second-hands, whilst importers still quote £7 per bottle.

Quinidine Sulph—Has been further advanced by the English makers to 1s. 2d. per oz. in tins, and 1s. 4d. per oz. in 1 oz. vials.

Quinine—Is very quiet, makers' prices for best brands being nominally 1s. 4d. per oz. for 1000 oz. lots, while from second-hand the article can be purchased in limited quantity at 1s. 2¾d. to 1s. 3d. per oz. for bulk packing.

Saffron—Has been reduced in price this week, and genuine *Valencia* is now quoted from 34s. to 39s. per lb.

Seneka Root—Is rather easier, and it could probably be got at 1s. 3d. to 1s. 4d. per lb. for fair quantity.

Senna.—As far as can be seen at present only about 140 bales *Tinnevelly* will be offered in next week's auctions from first hands. For *Alexandrian* the demand is small, and only a few cases have changed hands this week at private rates, thought to be about 7d. per lb. for leaf.

Serpentaria Root—Is lower, and holders are willing to accept 2s. 3d. to 2s. 6d. per lb.

Shellac.—This article, like most of those of a speculative nature, is exceedingly dull, and business is of a very unimportant character. At the fortnightly sales on Tuesday only small supplies were catalogued. Demand was fair, but prices of *Second Orange* declined about 1s. per cwt. on last sale's rates, the value of *TN* being now 61s. to 62s. per cwt. A total of 837 cases offered and 480 cases sold. *Fine Orange*: 25 cases fine pale lemony octagon *B* were bought in at 95s. *Second Orange*: Of 622 cases 412 sold, fine pale *SM* in circle at 78s., bright curly strong little matted at 66s., good fair *TN* rather broken at 62s., fair bright curly, 61s. to 62s., fair flat reddish at 61s. to 62s., fair bright, little matted at 60s., ordinary to middling red flat at 58s. to 60s., fair bright claret curly at 57s. to 58s., weak flat liver at 55s.; all more or less blocky fair to good bright, 57s. to 59s. *Garnet*: Of 81 cases 16 sold, in small lots, ordinary livery *SB* in diamond at 51s., fair free *OCC* bought in at 66s., and blocky *PBG* at 60s. *Button*: Of 109 cases 52 sold, all blocky part hard 2's at 58s., 2's in circle at 55s., 3's at 50s. to 53s., dark at 41s.

Soda Compounds.—*Crystals* are firm, but unchanged at 55s. per ton *ex* ship terms. *Bromide* steady at 2s. 2d. per lb. *Iodide*: 11s. 7d. per lb. *Caustic* steady at £7 15s. per ton for the 70 per cent. white; 60 per cent., £1 per ton less. *Hyposulphite* very dull at 5s. to 8s. per cwt., according to quantity, brand, and packing. *Bicarbonate*: £7 5s. to £7 10s. per ton for the 98-99 per cent., and 18s. per cwt. for the fully bicarbonated. *Nitrate* firm; *refined*, £7 15s. to £8 5s. per ton.

Spices (Various).—*Black Pepper*: 90 bags Singapore sold at 3⅝d. *White Pepper*: 83 bags Singapore bought in at 6¾d. to 7¼d., and 10 cases extra fine bold at 10d. *Chillies*: 35 bales Zanzibar sold, without reserve, at 29s. 6d. to 32s. *Capsicums*: 79 bales Bombay, old import, bought in at 23s. to 28s. *Mace*: Only 4 cases Penang sold, middling at 1s. 7d., good bright bold at 2s. 2d.; 17 packages West India sold at 1s. 3d. to 1s. 6d. *Nutmegs* are dull at about previous rates. *Pimento*: 554 bags bought in at 3¾d.

Sulphate of Copper—Is lower and very dull at £15 17s. 6d. to £16 15s. according to brand.

Sulphonal - Quiet but steady at unchanged value, makers still executing from hand-to-mouth orders at 7s. 3d. per lb. for bulk packing.

Vaseline—Has been reduced 2d. per lb, with the usual difference in price for the various forms of packing

LIVERPOOL REPORT.

December 1, 1897.

There are few changes in price to comment upon during the week's business, Oils generally being unaltered, with the exception of Oil of Turpentine, which rose 3d. per cwt., but can now be had at last week's figure. Linsced and Canaryseed are selling at a slight rise on last week, the former having risen owing to the continued short supply. Sierra Leone Chillies and Ginger sold at fair prices, whilst a goodly consignment of Chilian Beeswax brought a full rate. As regards chemicals generally, Potashes and Pearlashes are where they have been in price for some time, Cream of Tartar is only nominal in price, and Sulphates of Copper and Ammonia are easier. Other chemicals are unchanged, and the business passing in them very quiet.

Ammonium Salts.—*Carbonate*: 3d. per lb., and somewhat scarce. *Sal Ammoniac*: 33s. and 31s. per cwt. *Sulphate* is now selling here at £9 per ton, or 2s. 6d. easier than last week.

Beeswax.—35 bags of Chilian of good to best quality, sold at £6 7s. 6d. to £7 per cwt.

Canaryseed—Is unaltered in demand, which is slow, but prices for Turkish are still from 25s. 6d. to 27s. 6d. per 464 lbs., according to quality. 200 bags of Turkish sold at 26s. to 27s. per 464 lbs.

Chillies—Of good medium quality from Sierra Leone have been selling at 37s. 6d. per cwt.

Copperas.—Still quoted at 39s. per ton for Lancashire and 37s. for Welsh, and quantity offering small.

Copper Sulphate—Easier at £16 5s. per ton, and neglected.

Ginger.—Sierra Leone has found buyers at 17s. 6d. per cwt.

Linseed—Shows no inclination to lower prices nor to being offered more freely. The sales include some 400 bags of Cyprus seed from Larnaca at 39s. to 40s. per 416 lbs.

Oils (Fixed) and Spirits.—*Castor oils* are unchanged from last week, but a better

demand is experienced. *Olive oil* continues firm and scarce. Leville has been selling at £31 10s., and Candia at £32 10s. per ton. *Cottonseed* and *Linseed oils* offer no feature worthy of notice, being both at last week's rates. *Spirits of Turpentine* was in short supply, and rose to 24s. 9d. per cwt., but can now be bought at 24s. 6d. per cwt.

Soda Salts.—*Bicarbonate*: £6 15s. per ton. *Crystals*: £2 17s. 6d. per ton. *Caustic*: 70 per cent., £7 5s. per ton; 60 per cent., £6 5s. per ton. *Borax*: £14 5s. per ton. *Nitrate* is in moderate demand at a steady rate of 7s. 6d. to 7s. 9d. per cwt.

NEWCASTLE CHEMICAL REPORT.

December 1, 1897.

Oversea shipments of chemicals are fewer now that the upper Baltic ports are closed for the season. The heavy manufactured goods still show fairly well as exports to the Mediterranean, and Soda Crystals and Soda Ash move freely for home use. Prices remain unchanged, and are quoted as follow:—Bleaching Powder, £6 10s to £7 10s., according to markets. Soda Crystals: 42s. 6d. to 57s. 6d. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

MANCHESTER CHEMICAL REPORT.

December 1, 1897.

Heavy chemicals continue firm, although owing to the uncertainty prevailing as to the trend of future prices there is not the amount of business doing in contracts usual at this season of the year. Bleaching Powder remains at £6 per ton, soft wood casks on rails, although it is predicted a higher price will shortly be asked for this article. Caustic Soda is perhaps a shade weaker, except on rails. Orders for Sal Ammoniac continue to be placed here at old ratee, namely, £33 per ton, firsts, and £31 seconds. Sulphate of Copper is unchanged at £16 10s. per ton best brands, here, but Brown Acetate is scarce and decidedly firmer at £5 15s. per ton for both Welsh and best American, *c.i.f.* For quantity, 6½d. is adhered to for local-made Yellow Prussiate of Potash, with a farthing more for retail lots. Creosote is higher at 2½d., but Pitch is dull at 17s. 6d. per ton, *f.a.s.* Ship Canal. Glauber Salts, 27s. 6d. per ton, and Epsoms, 55s. in bags, on rails, Manchester. Now that business all-round is taking such a miscellaneous turn, it will interest local pharmacists to know that the first public oil sales were conducted here on Friday last under the auspices of a Liverpool firm, when 7615 gallons of Nobel's 130° test refined Petroleum Oil was offered in lots of 280 gallons and upwards. The price varied from 3d. to 3⅛d. per gallon delivered to buyers' premises in Manchester and Salford. The first lot of mineral lubricating oil will be offered a week or so hence. As there are facilities for storing fifteen million gallons at Mode Wheel, it will be seen that another powerful bid is being made for Liverpool trade.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Skerratt & de Bernard, Medical and Surgical Home, 6, Bentinck Street, Cavendish Square, W. Debts will be received and paid by Juanita de Bernard.

William James Jones & Robert James Perkin, Chemists and Druggists, 105, Church Street, Croydon, so far as William James Jones is concerned.

Charles Lowe & John Gill, Manufacturing Chemists (trading as F. C. Calvert & Co., at Bradford and Manchester, and as Charles Lowe & Co., at Reddish, near Stockport. The business will be continued under the same styles by Charles Lowe.

Joseph S. Peal and Charles William Peal, Dentists (carrying on business as Joseph Peal & Sons), 6, Saville Row, Newcastle-on-Tyne. Debts will be received and paid by Joseph S. Peal, who will continue the business at 70, Jesmond Road, Newcastle-on-Tyne, under the present title.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

John Clark Forster, trading as Fergusson & Forster, Wholesale Spice Merchants, 11 and 12, Great Tower Street, E.C., and 6 and 7, Osborn Street, Whitechapel, E.

DIARY FOR THE WEEK.

Monday, December 6.

Edinburgh Pharmacy Athletic Club.
Annual Smoking Concert.

Imperial Institute, at 8.30 p.m.
"The Mineral Resources of British Columbia and the Yukon" (illustrated), by A. J. McMillan.

Royal Geographical Society, at 8.30 p.m.
"Explorations in the North of Greenland," by Lieut. R. E. Peary.

Royal Institution, at 5 p.m.
General Monthly Meeting.

Society of Chemical Industry, at 8 p.m.
"The Sulman-Teed Process of Gold Extraction," by H. L. Sulman and Dr. F. L. Teed.

Tuesday, December 7.

Glasgow and West of Scotland Pharmaceutical Association, at 9 p.m.
Discussion adjourned from November 23.

Pharmaceutical Society, at 8 p.m.
"Note on Some of the Official Extracts," by E. H. Farr and R. Wright.
"Recent Additions to the Museum," by E. M. Holmes.

Wednesday, December 8.

Brighton Junior Association of Pharmacy, at 9 p.m.
Discussion on the Matters Recently Brought Forward by the "Federation of Local Pharmaceutical Associations."

Sheffield Pharmaceutical and Chemical Society, at 8.30 p.m.
"Proprietary Articles Trade Association," by J. H. Bradwell.

Manchester Pharmaceutical Association, at 7.30 p.m.
"Handy Tests for Water Analysis," by Charles Turner.
Discussion on Mr. Kirkby's Propositions.

rsday, December 9.

Chemists' Assistants' Association, at 9 p.m.
"Some Mental Processes Employed by the Student of Science," by F. A. Hocking.

Imperial Institute, at 8.30 p.m.
"Queensland; Its Resources, Climate, and Industries" (illustrated), by the Rev. E. Wilson.

Midland Pharmaceutical Association, at 8.30 p.m.
Trade Meeting: Address by W. S. Glyn-Jones.

School of Pharmacy Students' Association, at 8 p.m.
Address by William Martindale.

Friday, December 10.

Aberdeen Junior Chemists' Association, at 9.30 p.m.
Questions and Hat Night.

Edinburgh Chemists', Assistants', and Apprentices Association, at 9.15 p.m.
Apprentices' Night. Conducted by David Harley

EXCHANGE—OFFERS AND WANTS.

OFFERED.

Books.

Bargains.—Three British Pharmacopœias, two 1867, one 1874; two Squire's 'Companion to Pharmacopœia,' 12th and 13th editions, all perfect, good condition, post free for 2s. 9d. each.—Ely, Belvedere, Kent.

Perkins' 'Organic,' 4s; Remsen's 'Organic,' 3s. 6d.; Watts' 'Inorganic' (Tilden), 5s. 6d.; Ganot's 'Physics' (15s.), 10s.; Vine's 'Botany' (first half), 4s.; Prantl and Vine's, 5s. 6d.—Hewitt, 111, Beech Road, Chorlton-cum-Hardy.

Formulæ.

Book of 130 well-tried recipes for Chemists; general, remedial, veterinary, toilet; post free, 1s. 6d. —Tully, Chemist, Hastings.

Miscellaneous.

Pure New English Honey, excellent flavour and colour, 6s. 6d. per 12 lbs.; carriage forward, packages free; cash with order.—Brampton, Sudbury, Suffolk.

OFFERED—*(continued)*.

Duplicate Silver Coins.—Edward II. penny, Elizabeth's twopence, threepence, and sixpence; all good, 1s. each. Lot others.—Mr. Walter, c/o Mr. Maish, Chemist, Bristol.

Microscope by Crouch, 1 in. and ⅛ in. objectives. cheap; also Vine's 'Botany,' practically new. Apply—"Alpha," Wadham House, Wentworth Street, London, E.

Avery's Brass Counter Scales (as Maw's Fig. 2), on mahogany slab, 11½ inch beam, agate bearings, total height 20 inches, in good condition, for one sovereign.—Kemp, Chorlton-cum-Hardy.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

OFFERED—*(continued)*.

Fage's Saccharometer in mahogany case, cost 42s., will send for approval; cash 10s. 6d. Maurice's 'Treatise on Brewing,' published 1815 at 10s. 6d.; cash 2s. 6d.—Ely, Belvedere, Kent.

Optical and Photographic.

Photographic Mounts, cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000. Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s. 100. Samples free.—Peck, East Dereham, Norfolk.

WANTED.

Wanted. Winter's Rypophogon Soap. State quantity and price; post paid.—Woodward, Pharmacist, Reigate, Surrey.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

Pharmaceutical Society *v.* Potter.

In the High Court of Justice, Queen's Bench Division, before Mr. Justice Hawkins and Mr. Justice Channell, on December 8, 1897, an appeal was heard from a decision of the County Court Judge at Reading refusing to convict for the sale of weed-killer.—Mr. Williams appeared for the plaintiffs, and Mr. St. Gerrans for the defendant.—Mr. Williams said this was an appeal against the decision of the County Court Judge sitting at Reading (see *ante*, p. 47). The proceedings under which the judgment was given were under the 1st and 15th Sections of the Pharmacy Act of 1868 for the recovery of penalties for the selling and keeping open shop for the sale of poisons, but one penalty only was sued for. The proceedings originally were merely for keeping open shop, but the learned Judge allowed him to amend by adding the word "selling." Having read Section 1,

Mr. Justice Hawkins said, as he understood it, the question was whether the word "sell" would apply to the defendant, who never knew of the existence of the tin of poison in the shop. There was no doubt that if he did, and sold it, he would be liable to the penalty; but the question was whether, having ordered that particular thing for himself, it never having been sent to the shop with his knowledge—it having been taken into the shop by the shopman and sold by him without any instructions or authority whatever—whether that was a sale by the defendant.

Mr. Williams said that was the contention of the defendant—that he had no knowledge. The point therefore arose, what did the Act mean when it said "no person shall sell," or, in other words, who was to be regarded as the seller under Sections 1 and 15? The meaning followed the words of Section 1, which imposed a penalty on an unqualified person selling. In this case the evidence was that a person was sent down by the Pharmaceutical Society in order to make this purchase. He went to the shop of the defendant in the London Road, Reading, and asked the assistant if they sold Harrison's weed-killer, whereupon the defendant replied that they did, turned round, and took up a tin and handed it to the purchaser.

Mr. Justice Hawkins said the purchaser had not gone to buy it for his own use apparently.

Mr. Williams said from knowledge that had come to the Society it was supposed that if he went there he would get it.

Mr. Justice Channell asked what the shop was in other respects. What were the ordinary things sold there?

Mr. Williams said he believed garden requisites. A bill was given when the purchase was made of various other things in which the defendants were spoken of as dealing in wagon-covers, oil-cloth, mackintoshes, etc., and he believed they also sold tools and things of that sort. In further reply to the Bench, he said he did not think either partner took part in this transaction personally.

Mr. Justice Hawkins said it must be taken for granted that there was not any other poison of any sort or kind in the shop. The truth seemed to be that for his own purposes, and not for the purpose of sale at all, Mr. Potter had procured a tin of this weed-killer, which was in a back place, and ought not to have gone into the shop at all. The shopman who was managing the shop without any authority, there being no mark upon the tin indicating according to the ordinary course of things, that it was for sale, took it—on his own authority—into the shop and put it on a shelf, and when he was asked by the person who came in whether he had any weed-killer, he took it down and sold it. When he was asked the price of it he found no mark upon it showing that it was intended to be sold, but he handed it over. Then the contention was that it was not done by the hand of Mr. Potter. It was conceded that if Potter had done it, then it was an infringement of the Act, as it certainly would be; and if Potter knew that the article was about to be sold it would not have signified in that case whether he sold it and delivered it with his own hand or by the hand of his manager; but the difficulty in this case was that it was not an article which they sold. It was not intended or marked for sale, and the sale was without authority—on the part of the manager—of an article which had never been brought into the shop or into stock.

Mr. Williams said it appeared that the weed-killer had been exhibited in the window for a certain time—he was not sure how long—but not a very long time certainly.

Mr. Justice Hawkins said there was no evidence of its ever having been seen or being known to be in the shop or offered for sale. He could thoroughly understand that if there was in a shop poisonous matter kept in stock, and if the principal intended to sell with his own hand, or his manager sells it for him, it would be a reasonable argument that what the manager did in the conduct of the business the principal must be responsible for; but this was not part of the stock.

Mr. Williams said the plaintiffs were not in a position to prove that it was part of the stock, but it appeared that it had been first in a back office, subsequently in the shop itself, and then exposed in the window; and as he should submit, exposed for sale. Subsequently it was replaced on the shelf.

Mr. Justice Hawkins said he should be in favour of the contention if the article were exposed with the authority and on behalf of the shopkeeper.

Mr. Williams said there was no evidence as to the intention with which it was purchased.

Mr. Justice Hawkins said there was no necessity for it. He never put a price upon it, as was the custom with ordinary things.

Mr. Williams said that was so; there was no price upon it, but the servant who sold it appeared to have charged a price which left a profit to the master. The prohibition in these sections was against the sale of a poison by any person not qualified, and he submitted that it was not necessary to show with what motive the thing was bought, or even that it was sold with the connivance, or by the authority of, the master.

Mr. Justice Hawkins, having read the 15th Section, asked whether Mr. Williams contended that the defendant kept open shop, or sold.

Mr. Williams said both. He kept open shop, and through his servant he sold, and if the sale took place in an open shop kept by the defendant he was then and there guilty of having kept open shop for retailing poisons. He did not think there was any actual decision on the meaning of the word "sell" in the Pharmacy Act, saying in so many words that it included the master as well as the servant, but he should submit that the natural meaning would include both principal and agent in a sale.

Mr. Justice Hawkins said if it could be shown that the sale was made by the authority of the defendant, he should quite agree with that if he did not actually with his own hands sell it.

Mr. Justice Channell asked if there was not a decision wit regard to the sale of milk?

Mr. Williams said there was a case under the Food and Drugs Act, 1875, and the proceedings under Section 6 of that Act were before a magistrate under the summary jurisdiction, not civil proceedings in the County Court, which he should submit made the decision stronger in his favour. He then proceeded to cite the case of Brown *v.* Foot in the 'Law Times Reports,' No. 8, vol. 66, in which it was decided by Mr. Justice Hawkins and Mr. Justice Wills in 1892 that a conviction by a magistrate of a milk seller whose servant had adulterated milk and sold it was correct, and that it was not necessary to prove the knowledge or connivance of the employer. He read the judgments in that case at length, which were to the effect that the principal was the seller. He submitted that the construction of the word in the present case must be the same as in that. In both cases the main word to be construed was "sell," and he submitted that the natural meaning of the word, even in the absence of direct authority upon the legal meaning, would be to include both the principal and the servant who carried out the physical delivery of the article, and took money in return. If that was so the subsequent sections of the Act would not affect the construction. Before dealing with Section 17, which was relied upon by the other side, he would deal with the second point, upon which the learned County Court Judge had decided against the appellants. Upon it appearing by the evidence of the defendant's partner that the defendant carried on business in partnership the Judge held that there could be no conviction.

Mr. Justice Channell said that did not appear upon the notes.

Mr. St. Gerrans admitted that it did not appear on the notes, but the Judge had so decided, though he did not now intend to adduce any argument in support of it.

Mr. Justice Channell said if the man would have been liable on the facts, and he had no partner, he did not see how the fact of his having a partner would make any difference.

Mr. Justice Hawkins said the only question for the Court was whether the decision of the County Court Judge was right.

Mr. Williams said it was important for the Pharmaceutical

Society—charged with administering the Act—to see that a decision of that sort was not unchallenged.

Mr. Justice Channell said it might have been important if that were the sole ground upon which the question turned. What was the other ground?

Mr. Williams said the second point was whether the word "sell" in the 15th Section included merely the physical seller.

Mr. Justice Hawkins said the appellants had to make out a case of agency. There was no particle of evidence in the notes of any sale by the defendant, or by his partner or manager of any article of poison. They merely sold rakes and shovels.

Mr. St. Gerrans said the learned judge had so found as a fact.

Mr. Williams said he was not so sure of that. As the case was decided on the other points, it became unnecessary to go into the evidence of fact. If the master was not liable for thesale because he did not sell with his own hand and was not liable for the act of his agent because he was a member of a partnership, it became unnecessary to prove whether the seller was an agent or not.

The further hearing was adjourned till Thursday.

The case was resumed on Thursday morning, when Mr. Williams continued his argument, citing several cases in which an employer had been held liable for the acts of his servant, even when acting contrary to his instructions. The main point of his argument was that weed-killer, being an article which would properly be classed amongst garden requisites, the shopman would have implied authority to dispose of it, and that in any civil action arising out of such sale the master would be liable.

At the conclusion of his argument, without calling on defendant's counsel, judgment was delivered as follows:—

Judgment.

Mr. Justice Hawkins: I am of opinion that this appeal ought to be dismissed. The learned County Court Judge gave judgment for the defendant on the points which were put before him in the course of the argument. The points which were raised before him were these. Mr. Williams submitted first that the condition of the defendant's mind was immaterial. He said "I submit Potter did intend to sell that tin." Now, if that first point had been made out there would have been an end to the case, and if the County Court Judge had said "I think that Potter did have possession of that tin with the intention that it should be sold, and that it was to be treated as being in stock," this case would have been utterly indefensible. The next point is that Potter sold, and it having been contended for the defendant after that, that Potter did not sell by his own hand, that matter is dealt with; and it was contended by Mr. Williams, and I think properly contended, that it is immaterial that he had a partner, and that partner was guilty, and that Potter was guilty of the unlawful act, and is liable to the penalty. I should have said that if Hawthorne had come in, although Potter knew nothing about what Hawthorne did, and if he had said "Put that tin in the window, it may attract somebody, and if anybody comes in sell it to them"—if he had said that, or said "Put it in stock and sell it if anybody wants it, it is a new article altogether"—then I should have said it makes no difference whatsoever that Mr. Potter was not present himself; but that what he is said to have done was done through the agent of his partner. Then the next point was that it was immaterial that he sold by a servant. There, again, I think if that had been made out, if you have the first question answered in the affirmative, that he did intend to sell the tin, it would be utterly immaterial what was the hand which delivered it over to the purchaser, or the person who by word of mouth made the contract, he being authorised to conduct the general business of the shop. I should have said it was absolutely immaterial, and the plaintiff would be entitled to have the verdict entered for him. But now, that Potter did not intend to sell the tin must be taken to be one of those facts which the London County Court Judge found. That the tin was there there is no doubt. That it was in the premises under the roof there is no doubt, but the learned County Court Judge must be taken on these notes to have said that the tin was not there for the purpose of sale, and that Potter did not intend to sell that tin. And by Potter, I repeat, he must have meant that neither Potter nor his partner intended to sell that tin. That is in accordance with the facts as they are stated on the notes. I am not going to discuss at all, or to analyse the evidence for the purpose of asking myself, or of stating whether or not a case may not have been fairly presented to the jury, if there had been a jury, to say that Potter's story was an odd thing, and in the absence of any explanation from Potter as to why he had bought that one tin and put it in the desk, or on the desk in his private office, I should have required myself, I think, some explanation how that happened. Potter might have been able to give satisfactory evidence as to why it was there. It may be that he had ordered a tin to be sent to him privately in order that he might consider whether it was an article that they would sell or authorise to be sold; and it may be that he, on examination of the article, might say, "This is too dangerous an article for us to keep in the shop for sale," and would not put it into stock at all. The fact that he put no price upon it, as was customary with regard to all other articles which were kept in the shop, is a circumstance which tends to corroborate the view taken by the learned County Court Judge, that Potter never intended that particular tin to be offered for sale. Then if he did not intend to sell it, one has to ask one's self what is there to make him liable for the sale of a poison which he never intended to sell? If they had been dealing in that shop with articles of a similar description, and if this had been placed on the counter—I will not say by either of the masters—or had been there, and both Potter and Hawthorne, or one of them, had seen it in the window exposed for sale, although they did not mean actually to sell it, and had said to the assistant "If anybody comes in to buy this tin, do not sell it," then if a person had come in, and the person who was in charge of the shop, having been asked for a tin of this description, had actually sold it, I should have said myself it would have been within the scope of his authority; that is to say, within the scope of his assumed authority, not of his actual authority. Not of his actual authority because he had himself received express instructions not to sell it, but in the scope of this assumed authority, because by allowing the thing to be put in the window as an article for sale, the assistant is supposed to have, and is assumed to have, authority for the purpose of selling it. But there is no such circumstance here. The boy, or young man—I do not know what his age was—certainly says he put it in the window one night and took it out next morning, but what he did was not with the authority of either of the partners, nor with their knowledge. It may be, if it was known to Hawthorne, he said, "Put it aside until Potter comes," and they did not even look for the mark upon it, which was usual in articles intended to be sold, viz., the price. It was put aside as an article not to be sold at all. It was not an article they had ever dealt in before, and it was sold directly in the teeth, I was going to say, of any authority, but certainly in the absence of any authority. That is found by the learned County Court Judge. I do not at all differ from those cases—nor could I—in which it has been said that if a man is acting within the scope of his authority the master must be responsible in a matter of this description. In the case of the adulterated milk the defendant was a milk-seller, and it was part of the business which he carried on to sell milk. The man was entrusted with the sale of milk, and the man chose to adulterate it. Then the sales so made by him were made properly on account of his master, and the master was held responsible because the man had adulterated the milk, which in its pure state he was authorised to sell, and which it was part of his duty to sell. I do not think that class of cases assists us in the least here. But suppose even in the milk case someone had said to the man, Can you sell me any cocoa or anything of that sort? not being part of his business at all, and the man happened to have a packet of cocoa in the house, and said Yes, and sold it, and it turned out that the cocoa was altogether adulterated in such a manner as rendered the real seller of it liable to penalties, could it be said that the milk-seller was authorised by his master either expressly or impliedly to sell and dispose of an article in which the master never dealt at all, and which he had never given him any authority to sell? I cannot conceive that it could be so. Supposing in this very case it could be proved that the master had got possession of this particular tin of poison for his own private purposes and not for sale at all. Suppose that had been expressly proved and that the master had even opened the tin and used some portion of it for his own private purposes, could it be said that he, not meaning to sell it—which I take to be found as a fact—if his servant went into the back office behind the shop and took the article without authority, and took it into the shop and sold it, that the master is responsible for an act of that description? I think not. I admit that there are some circumstances which might have been more thoroughly investigated, perhaps by cross-examination of Mr. Hawthorne or by requiring the presence of Mr. Potter, but inasmuch as the case was conducted and came to this termination on the evidence which

was offered to the learned County Court Judge, and he has found these facts which I have already stated, I think the verdict must remain. The defendant is entitled to it on the finding of the learned County Court Judge.

Mr. Justice Channell: I am of the same opinion. Mr. Williams has put his points very clearly, and in almost all of them I agree with him. I think that in all probability there was a case here under which the property would have passed to a purchaser, and that, therefore, in that sense there was a sale, because it would have passed to the purchaser; but I think it is solely because of the doctrine of ostensible authority and estoppel, and that Mr. Potter could not have said that the property in this tin did not pass. But in order to make him liable to this penalty he must come within the words of these two sections: "It shall be unlawful to sell poisons," and so on. I leave out the immaterial words, and afterwards "any person who shall sell poisons shall for every such offence be liable to pay a penalty." It is said that the penalty is sought to be recovered here in civil proceedings, and no doubt that is so, but at the same time it is a penalty for what is called an offence; and it seems to me that although that offence would be committed by a master who sells through his servant, and probably even if he sold through his servant a matter stocked in the shop, though contrary to particular orders or anything of that sort, yet it can only apply to a sale that there is some real authority to make, and not to a sale which accidently operates as it were by virtue of the doctrine of estoppel. In this case, if you believe the facts, there was no more real authority to sell this tin of stuff than there would have been authority to sell the chairs and tables in the same private office from which it was taken. Consequently it seems to me that Mr. Potter did not come within the provisions of the Statute. I myself should have looked with considerable suspicion on the story coming forward after this sale. I should have looked with very great suspicion on it myself, but there is no reason why it should not be true, and if the learned County Court Judge believed it, which he appears to have done, his decision would be right. Some of the grounds he gave for his decision certainly are not right; that about the partner I am clear is not, but I concur in the decision that this appeal must be dismissed.

Mr. Williams asked leave to appeal if it were deemed desirable, as an important public question was involved.

Mr. Justice Channell said the plaintiffs had succeeded on everything of public importance, but there was a lack of evidence as to what the defendant was supposed to have done.

Mr. Justice Hawkins said there would be no leave to appeal.

MEDICAL JOTTINGS.

The Röntgen Society.—Professor Silvanus Thompson, the President of the recently-formed Röntgen Society, in his recent inaugural address, reviewed the antecedents and circumstances under which Röntgen made his discovery in November, 1895, and stated that with the exception of anæsthetics and Lister's antiseptic system no recent discovery had done so much for operative surgery as that of the Röntgen rays. The honorary membership of this Society has been conferred on and accepted by Professor Röntgen.

The New Professor of Pathology at Cambridge University.—Dr. Kanthack has been elected to the Professorship of Pathology at Cambridge in succession to the late Dr. C. S. Roy. This was in accordance with general expectation, as Dr. Kanthack, owing to the illness of the late professor, had for some time past successfully performed the duties of the office.

The President of the Royal College of Physicians on Physic-giving.—Sir Samuel Wilks, at a recent meeting of Guy's Hospital Physical Society, advised his hearers to read Dr. Lauder Brunton's recent article on "Scientific Therapeutics," and incidentally remarked that one of the hindrances to the elevation of the medical profession was the question of physic-giving. When therapeutics came to be founded on a really scientific basis there would be an end to all quackery. At present it was not so. Nowadays the idea seemed to be that where there was a wrong there was a corresponding right; when there was disease there was a remedy for it, and all we have to learn is how to apply the remedy. This is the foundation of homœopathy, the treatment of symptoms, the pathology of the various cases being ignored. He then referred to an extraordinary prescription recently brought under his notice, and said it was clear from it what kind of patient the prescriber had to deal with, and enumerated his various symptons: cough, pain in the limbs, quickened pulse, thick urine, weakness; treated respectively with acetate of ammonia, potassium iodide, digitalis, squills and sp. ammoniæ aromaticus; together with ipecacuanha as an expectorant, senega as a tonic, tinct. chlorformi co. to combine the lot, with a little aqua menthæ pip. added in case of wind, which latter evoked a good deal of merriment amongst his audience.

The Personal Estate of the late Sir William Mackinnon, K.C.B., Honorary Surgeon to the Queen, and formerly Director-General of the Army Medical Department, has been valued at £25,567 17*s.* 6*d.* After leaving various legacies to relatives and bequests, including £2000 to the Edinburgh University to found prizes or scholarships, the testator has bequeathed the residue, which will probably exceed £16,000, to the Royal Society for the purpose of furthering natural and physical science, original research and investigation in pathology.

Dr. Dabbs, the late Poet Laureate's medical adviser, is credited with having written the article on Tennyson in the current number of the *Quarterly Review*.

Dr. Thomas Williams Evans, the well-known American dentist, died on November 14 at his home in the Avenue du Bois de Boulogne, Paris. He established himself in Paris during the Empire and acquired a very select practice, several crowned heads availing themselves of his skill. When the Empress Eugénie was compelled to leave the Tuileries on September 4, 1870, she went in a cab to Dr. Evans' house, where she stayed the night, and the next day he travelled with her in a carriage to the coast, whence she embarked for England.

SOCIAL MEETINGS.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

This Association held its usual fortnightly social and musical meeting on Wednesday, December 1.—The chair was taken by Mr. W. W. Savage, and an excellent programme having been provided, a most pleasant evening was the result. The following gentlemen kindly assisted with the programme:—Messrs. C. A. Blamey, W. J. Davies, J. H. Day, J. Harvey, and Norman-Richards.

CHEMISTS' ASSISTANTS' ASSOCIATION.

The Annual Conversazione was held in the Dorset Hall, Portman Rooms, Baker Street, W., on Thursday, December 2. The event passed off most successfully, some 200 ladies and gentlemen taking part in a very enjoyable dance; the band of Mr. Hall Woolnoth supplying excellent music. Amongst those present were Mrs. and Mr. Walter Hills, Mrs. and Mr. W. H. Francis, Mrs. and Mr. E. W. Lucas, Mrs. and Mr. T. C. W. Martin, and Messrs. R. Bremridge, W. J. Rogerson, J. C. Umney, and C. W. Martin.—Mr. Hills took the chair at supper, and when proposing the toast of the "Ladies," took occasion to refer to the good work done by the Association, and to thank Mr. C. E. Robinson (Hon. Secretary) for the efforts he had made to ensure a perfect ball.—The President, Mr. T. Morley Taylor, in replying for the "Ladies," expressed the pleasure of the Association at seeing Mrs. and Mr. Hills present.—Mr. Robinson having also briefly replied, dancing was resumed, and continued until about 4 a.m. Messrs. T. C. W. Martin and C. W. Martin officiated as M.C.'s.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

A smoking concert was held in the Exchange Restaurant on Wednesday, December 1, Mr. Wm. Jones, President of the P.A.T.A., occupying the chair. A most enjoyable evening was spent, songs, etc., being contributed by Messrs. Lidbury, Woolman, Thomas, Stan Leigh, Taylor, Cornish, Sadler, etc., and there was a large attendance.—The Chairman, in the course of a few remarks, referred to a meeting when he addressed them on the work of the P.A.T.A. last year, and also said how pleased he was to see such a good number of assistants present wishing success to the Association.—A vote of thanks to the Chairman for presiding, proposed by Mr. H. Jessop, seconded by Mr. F. Casson, and unanimously carried, terminated the meeting.

Market Report and Prices Current

Specially compiled for the Pharmaceutical Journal

LONDON REPORT.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

December 9, 1897.

Business in drugs and chemicals has been almost at a standstill during past few days, while changes in values have been almost wholly without importance. Acid Citric and Tartaric are a trifle easier. Cream of Tartar rather firmer. Quinine dull and weak. Acid Carbolic firm. Ipecacuanha dearer, Quicksilver slightly lower, but Mercurials unchanged. Cocaine quiet. Opium, Morphia, and Codeia without change. Shellac dull and slightly easier. Cod-liver Oil and Glycerin unchanged. We quote :—

Acid Acetic.—A fair business is doing in this article, and prices are steady at 39s. 6d. per cwt. for the *glacial* 98-100 per cent., 25s. per cwt. for 60 per cent., and 15s. 6d. per cwt. for 33 per cent. (B.P.), and 14s. 3d. per cwt. for 30 per cent. (1-7).

Acid Boracic—Dull and quiet at 24s. per cwt. for *crystals* and 25s. per cwt. for *powder*.

Acid Carbolic—Remains firm at 7⅛d. to 7¼d. for the 35-36° acid in *ice crystal* form in bulk packing; other qualities in proportion.

Acid Chrysophanic—Is rather firmer at 11s. 6d. to 13s. 6d. per lb., according to make and quantity. Arrivals of the crude material are said to be of poor quality.

Acid Citric—Lower at 12¾d. to 1s. 1d. per lb. on the spot.

Acid Tartaric—Quiet, and the shade easier, nominal quotations 1s. 1d. to 1s. 1½d. per lb. for English, and 12½d. for foreign.

Alum—Is steady at £5 7s. 6d. per ton for loose lump, £5 5s. for lump in tierces, and £5 15s. per ton for ground packed in bags.

Ammonia Compounds.—*Sulphate* closes rather firmer, although no change can be made upon last week's quotation of £8 15s. per ton for gray prompt 24 per cent. London. *Chloride* steady at 23s. 6d. to 25s. 6d. for the 98 per cent., free from metals, and 28s. 6d. to 32s. 6d. per cwt. for the chemically pure. *Iodide* : 14s. 6d. per lb. *Bromide* : 2s. 2d. per lb. *Nitrate* : Pure cryst. 99 per cent., 40s. to 42s. 6d. per cwt. *Sulphocyanide* : Dull at 1s. to 1s. 1½d. per lb.

Balsam Canada—Is dearer at 1s. 2d. in casks and 1s. 4d. per lb. in tins. Supplies are very small.

Balsam Tolu.—Offers of this article have been made at 1s. 9d. per lb. *c.i.f.* terms by one house, causing spot holders to retaliate by quoting 1s. 9d. London terms.

Bleaching Powder.—Quotations unchanged at £7 5s. to £7 10s. per ton.

Borax—Quiet, but without change at 14s. per cwt. for *crystals*, and 14s. 6d. per cwt. for *powder*.

Calabar Beans—Are in slow demand, for spot 3d. per lb. is asked.

Cascara Sagrada.—18s. 6d. per cwt. is still quoted for good quality of the last crop, but for good old 25s. per cwt. is asked.

Castoreum.—A large supply met with a good demand, and all sold, but at very irregular prices, 1sts and 2nds being generally dearer, and 3rds and pickings decidedly lower. 1850 lbs. sold as follows :—YF 1sts 77s., 2nds 67s., 3rd 46s. to 50s., wet and mouldy 37s., pickings 31s. to 33s. ; MR 1sts and 2nds 51s., 3rds 31s. to 32s., wet 29s. 6d., pickings 24s. 6d. ; Canada 1sts and 2nds 63s., 3rds 42s. to 55s., pickings 34s. 6d. ; NW 1st 67s., 1sts and 2nds 57s. to 58s., 3rds 40s. to 42s., pickings 35s. to 39s., cuttings 29s.

Cloves.—In auction 175 bales *Zanzibar* sold ; middling, 2¾d. ; fair, 2⅞d. ; good, 3d. 29 cases picked *Penang* bought in at 7d. Only small business doing privately in *Zanzibar*. Quotations are January-March 2 15/16d., March-May 3 3/32d.

Coal Tar Distillation Products.—*Totuol* : Pure, 3s. 6d. per gallon. *Benzole* : 90 per cent., 1s. 9d. ; Solvent naphtha, 95 per cent. at 160° C., 2s. per gallon.

Cocaine—Is unchanged, price remaining nominally 10s. 3d. to 10s. 6d. per oz. for the best brands in 100-oz. lots.

Coca Leaves.—Green *Truxillo* are dearer, fine being held for 7d. per lb.

Cocoa Butter.—In auction on Tuesday 200 cases (20 tons) Cadbury's sold at 10½d. to 10⅝d. per lb., the average being a fraction above 10⅝d. per lb., against 11⅜d. per lb. in November sales ; 170 cases Dutch make bought in at 10d. per lb.

Codeia.—Market is firm at 11s. 3d. to 11s. 6d. per oz., according to quantity and packing.

Cod-Liver Oil.—Market is quiet at nominally unchanged quotations.

Cream of Tartar—Is dearer at 74s. 6d. per cwt. for first white French *crystals* on the spot, *powder* being quoted 76s. 6d. to 78s. per cwt.

Ginger.—*Cochin* continues very dull. Only 251 bags common washed, rough, offered, and all bought in ; also 55 cases cut, *C* at 37s., *B* at 52s. 6d. Of limed *Japan* 60 bags sold at 13s. 6d. *African* bought in at 20s. 16 barrels *Jamaica*, of new import, sold ; middling, 76s. ; good, 82s. ; and 2 half-barrels fine at 91s.

Glycerin—Is a shade firmer, the demand for dynamite purposes having been very active with decidedly higher prices for the desired quality. The double distilled chemically pure quality has, however, so far, not been affected, and quotations for 1·260 s.g. still remain at 52s. 6d. to 57s. 6d. per cwt. according to quantity and brand.

Guarana—Is very quiet at 1s. 8d. to 1s. 9d. per lb.

Guaza.—Stocks here are now said to be very small, and for good green on stalk nothing is to be had below 4d. per lb.

Gum Mastic.—Some of the new crop has arrived, and is held for 2s. per lb. for fine.

Gum Tragacanth—Is in some instances rather easier. Common grades are scarce. Quotations range from £13 10s. to £14 for fine, to £11 10s. for thirds, and down to 40s. per cwt. for low.

Kava Kava—Can be had on the spot in moderate quantities at 8d. per lb.

Mandrake Root—Is again rapidly advancing. 30s. per cwt. *c.i.f.* is now the nearest quotation.

Menthol.—In fair demand at 7s. 3d. to 7s. 6d. on the spot ; December to January steamer 7s. 9d. per lb. *c.i.f.*

Mercurials.—Makers have so far not reduced their prices in face of small decline in value of quicksilver, *Corrosive sublimate* remaining at 2s. 2d. to 2s. 5d., and *Calomel* 2s. 5d. to 2s. 9d. per lb., according to quantity.

Morphia—Unchanged at 4s. 3d. for the *hydrochlorate powder*, in quantity and in bulk.

Oils Essential.—*Peppermint* : *HGH* is very quiet and rather lower at 5s. 9d. per lb. *Wayne County* : 4s. per lb. *Japan* : Dementholised quiet at 3s. 3d. per lb. on the spot, and 3s. 10½d. *c.i.f.* ; 40 per cent. 4s. 3d. per lb. on the spot, and 5s. 3d. *c.i.f.* *Star Aniseed* : Quiet at 7s. 7½d. per lb. asked, buyers at 7s. 6d. per lb. *Sassafras* : Genuine is held for 1s. 9d. per lb. in large bulk. *Wintergreen* is firmer at 5s. 6d. to 5s. 9d. per lb. *Cajeput* : Firm at 5s. to 5s. 3d. per bottle.

Oils (Fixed) and Spirits.—*Linseed* is quiet and lower at £14 10s. for pipes on the spot, and £14 17s. 6d. for barrels. *Rape* is dull but unchanged at £25 10s. for ordinary brown on the spot, and £27 for refined same position. *Cotton* : Steady at dearer rates, refined on the spot £14 5s. to £15, according to make. *Olive* steady ; *Spanish*, £32. *Levant*, £31 10s. to £33. *Cocoanut* steady at £22 10s. for *Ceylon* on the spot. *Cochin*, spot £30 10s. *Palm* very firm at £23 for *Lagos* on the spot. *Turpentine* very firm to slightly dearer ; *American* on the spot, 23s. 7½d. to 23s. 9d. per cwt. ; January to April, 24s. to 24s. 1½d. per cwt. *Petroleum Spirit* : *American*, 6d. ; *deodorised*, 6¼d. per gallon. *Petroleum Oil* unchanged at 4¼d. per gallon for *Russian*, and 4½d. for *American*.

Opium.—Market is wholly without change since last week, prices being nominally still the same as then, there being but little doing in the article.

Potash Compounds.—*Chlorate* continues unchanged at 3¾d. per lb. on the spot. *Bromide* firm at 1s. 10d. per lb. *Iodide* unchanged at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate* remains dull at 65s. per cwt. for small and 70s. per cwt. for large *crystals*, with slightly lower quotations for large contracts. *Prussiate* : *Yellow* is steady at 6½d. per lb. ; *red* firm at 1s. 2d. per lb. *Oxalate* : 5d. per lb. for neutral. *Cyanide* firm, 98 per cent. lump 1s. to 1s. 2d. per lb. *Bicarbonate* steady at 30s. per cwt. for *crystal* or *powder*.

Quicksilver.—The importers brought off a large business on Tuesday at £6 17s. 6d. per bottle, which marks a decline of 2s. 6d. per bottle. Second hands ask £6 17s., but it is said there is very little to be had at this figure.

Quinine—Remains very quiet this week. One or two Continental makers have been

selling direct to the wholesale druggists for delivery during this and next month at 1s. 2d. per oz. in 1000-oz. lots. The large quantity of bark which is being offered in sale to-day in Amsterdam would appear to be the probable reason for these lower offers; it is, however, hardly probable that the holders of bark will be in any way influenced by these tactics. At to-day's Dutch sales, result of which had not become known at time of our going to press, 9000 packages in all are being offered, containing approximately 1½ million ozs. of quinine, while next week the London bark sales will also take place. There have been sellers this week of second-hand lots of Sulphate of Quinine of favourite brands as low as 1s. 2½d. per oz. for 1000-oz. cases.

Rose Leaves—Are slightly easier at 1s. 2d. to 1s. 2½d. per lb. for good Dutch.

Salicine—Is firm at unchanged prices. For quantities under 28 lbs. 10s. 6d. per lb. is required.

Santonine—Is in fair demand at 4s. 9d. to 5s. 3d. per lb.

Serpentaria Root.—Our quotation last week was a clerical error. The article is firm and tending higher, and 1s. 3d. to 1s. 6d. per lb. is the present value.

Shellac.—Actual sales on the spot continue limited, although there is more inquiry; holders are firm. *Second Orange*, basis *TN*, quoted 62s. per cwt. cash, and *AC Garnet*, good free, at 74s. per cwt. For arrival the market is flat, with sales of *TN Orange*, November to January steamer, at 59s. per cwt. *c.i.f.*

Soda Compounds.—*Crystals* steady ta 55s. per ton *ex* ship terms in bags. *Bicarbonate*: £7 5s. to £7 10s. per ton for the commercial and 18s. per cwt. for the full bicarbonated. *Nitrate* steady at £7 15s. to £8 5s. per ton for refined. *Bromide*: 2s. 2d. per lb. *Hyposulphite* quiet at 5s. to 8s. per cwt., according to quantity and brand. *Sulphite*: 17s. 6d. to 22s. 6d. per cwt., according to quality.

Spermaceti. — American is steady at 1s. 4d. per lb.

Spices (Various). — *Black Pepper*: 31 bags good Singapore sold at 3⅝d., and 40 bags *Tellicherry* without reserve at 3⅞d. to 3½d. Aleppy bought in at 3⅝d. *White Pepper*: Only 37 bags fine *Singapore* were offered and bought in at 9d. *Chillies*: 118 bales *Zanzibar* bought in. *Capsicums*: 4 bales *Madras* bought in at 26s. *Cassia Lignea*: 250 boxes ordinary bought in at 37s. 6d.; 100 bales good broken sold at 32s. 6d. *Cinnamon Chips*: 100 bags, tainted with tar, sold, without reserve, at 2d. to 2⅛d.; also 149 bags sound common 2⅞d., fair 3¼d.; 4 bags quillings sold at 9½d., and 33 bags small broken at 8¾d. *Mace*: 12 cases *Penang* bought in, pickings 1s. 4d.; 10 packages *West India* sold at 1s. 3d. to 1s. 7d. *Pimento*: 325 bags bought in at 3¾d.

Sulphate of Copper—Continues to decline in value, this week's quotation being £15 15s. to £16 15s. per ton, according to brand.

Turmeric.—*Bengal* continues in demand with a fair business at dearer rates, including 350 bags at 13s. per cwt. *Madras*: Quiet at 17s. 6d. to 19s. per cwt. for middling to good bright finger.

To-day's drug sales went off with very little spirit, a large proportion of the lots offered failing to find buyers. The following are the particulars of prices ruling. The next public sales will take place this day six weeks, say on January 20.

Aconite Root.—10 bags *Japan* sold at 27s. 6s. per cwt.

Aloes—*Cape* sold at 23s. 6d. for fair bright hard down to 19s. 6d. to 20s. for rather dull and 15s. 6d. to 17s. 6d. for low and drossy. A scratch lot of 33 packages, part *Curaçoa*, in gourds, balance being catalogued as *Barbadoes*, ground ditto *Mocha* and strained *Socotrine* sold without reserve at 5s. per cwt. Fine pale livery *Curacoa* sold at 38s.; good ditto at 30s.; fair ditto at 22s. to 27s. per cwt. 30 kegs good *Socotrine* held for 78s. per cwt.

Ambergris.—1 tin, of which no sample was forthcoming, taken out at 40s. per oz.

Aniseeds.—50 bags fair *Spanish* were taken out at 26s. per cwt.; 25 bags *Cyprus* at 22s. 6d.

Argol.—6 bags *Cape* taken out at 35s. to 45s. per cwt.

Balsam Peru.—1 case bought in at 8s. 6d. per lb.

Balsam Tolu.—10 cases were taken out at 2s. 6d. per lb.; 2 cases good old ditto at 2s. 9d.

Buchu Leaves.—20 bales sold at 5½d. per lb. for fine green rounds down to 2½d. for yellow.

Cardamoms.—In small supply, only 45 packages being offered, the bulk selling at steady to rather dearer rates for small. Fair pale medium bold *Mysores* sold at 3s. 8d. per lb., whilst small ditto sold at relatively higher prices of 3s. 5d. to 3s. 6d. per lb. *Decorticated*: 3s. 5d. to 3s. 6d. for good.

Castor Oil.—50 cases fair *Calcutta* seconds held for 3⅞d. per lb. 13 cases fair *Italian* bought in at 5d.

Chillies.—10 cases *Zanzibar* sold without reserve at 29s. 6d. per cwt.

Cinchona Bark.—46 packages crown and grey bark partly sold at 10d. to 1s. 5d. per lb. 59 bales yellow bark part sold at 9d. for 1 *CCD*, balance being held for 10d., damaged fetching 8d. for 2 *CCD*, down to 5d. for 4 *CCD*.

Civet.—2 horns were taken out at 16s. per oz., a bid of 14s. being declined.

Coca Leaves.—54 bales good green *Truxillo* part sold at 8d. per lb. 9 cases good green *Ceylon* realised 6d.

Cod-Liver Oil. — 10 barrels of fair quality, catalogued as finest new Norwegian non-freezing cod-liver oil remained unsold, price mentioned being 75s. per barrel.

Colombo Root.—18 bags old wormy sorts small to bold taken out at 55s. per cwt., 3 bags fine bold picked washed at 77s., 15 bales fair washed pickings selling for 50s. per cwt.

Colocynth.—1 case very small *Spanish* sold, subject to approval, at 9d. per lb., while for 11 cases ditto, rather mixed, a bid of 1s. all round was made and declined.

Croton Seed.—2 bags fair small sold at 40s. per cwt., 10 bags *China*, without reserve, only fetching the low figure of 13s. per cwt.

Cubebs.—5 bags of fair quality held for 37s. 6d. per cwt.

Cummin Seeds.—8 bags of fair quality sold without reserve at 25s. per cwt.; 50 bags of medium quality being held for 21s., 20 bags low *Malta* selling, subject to approval, at 17s.

Cuscus Root.—8 bales cleaned were held for 30s. per cwt.

Cuttlefish.—13 bags good pale medium size sold without reserve at 2¼d. per lb.

Dragon's Blood.—3 cases small dull slabs sold without reserve at 85s. per cwt.

Ergot of Rye.—4 bags fair *Russian* held for 9½d. per lb.

Gamboge.—8 cases part sold at £7 17s. 6d. for good bright pipe, but rather blocky and softish; balance of somewhat better quality taken out at £8 10s. per cwt.

Gum Arabic.—12 bags *Aden* gum bought in at 35s., 1 case picked grain at £6 5s., 1 seron hard *Turkey* sorts at 75s.; fair soft sorts at 85s. per cwt.

Gum Benjamin.—Fair *Siam* sold at £13 10s.; small to medium free almonds at £16 5s.; ditto part blocky at £15; blocky seed friable at £7 10s.; small low seed, £4 5s. to £5 5s.; good *Sumatra* seconds sold at £7 12s. 6d. to £8 15s.; fair ditto part brown sides and ends at £6 5s. to £6 17s. 6d.; ditto stained with paraffin oil realising 82s. 6d. to 87s. 6d.; low seconds ditto fetched 70s. per cwt.; medium *Penang* sold at 44s. to 45s. per cwt.

Gum Euphorbium.—2 serons bought in at 12s. per cwt.

Gum Guaiacum.—Of 9 cases without reserve part sold at 5½d. per lb.

Gum Kino.—2 tins of good quailty were bought in at 7s. per lb. 2 cases *Australian* slightly blocky at 8s.

Gum Myrrh.—11 barrels Aden picked taken out at 77s. 6d.; good native picked and bold siftings at 100s. to 105s. per cwt. 1 case sold without reserve at 75s.

Gum Olibanum.—31 cases held for 50s. for good, 30s. for dark, and 25s. per cwt. for small pea size.

Gum Sandarac.—5 casks bought in at 60s. per cwt.

Honey.—20 cases pale *Italian* sold at 20s. to 22s. 6d. per cwt.

Ipecacuanha.—45 bales of *Rio* quality were shown, and sold readily at 3d. to 6d. per lb. advauce. Privately some quantity was turned over after the auctions. *Carthagena*: This quality is very scare. The 5 bales offered were woody pickings, part selling at 6s. per lb.

Jalap.—9 bags *Tampico*, quality of which could hardly be called first class without reserve, realised 2d. to 4½d. per lb. 8 bales small sound heavy tubers were held for 7d.

Kola Nuts.—1 bag of good quality realised 5d. per lb., ditto slightly mouldy 4¾d., ditto very mouldy 3½d. to 4d. per lb.

Liquorice Root.—10 bales *Russian* thin to medium to rather thick *decorticated* taken out at 35s. per cwt.

Matico.—10 bags of fair quality to rather brown were held for 10d. per lb.

Morphia Sulphate.—85 ozs. were bought in at 4s. 3d. per oz.

Musk.—1 caddy thin skin blue bold *Tonquin*, slightly broken, good grain, held for 80s., old-fashioned dry, part ordinary, for 65s. per oz.

Nutmeg Paste.—5 cases held for 2½d. per lb.

Oils (Essential).—*Lemongrass* sold at 8d. per oz. for genuine, whilst for 10 cases,

"not sold as genuine," said the broker. 2d. per oz. did not tempt buyers. *Nutmeg*: 72 bottles, without reserve, sold at 1⅞d. to 2d. per oz. *Cinnamon*: 4 cases sold at 1s. 1½d. to 1s. 2½d. per oz. for leaf. Bark held for 4s. per oz. *Peppermint*: Dementholised *Japan* held for 3s. 3d. per lb. *Citronelle*: 1 drum taken out at 1s. 4½d. per lb.

Orange Peel.—1 case fair machine cut taken out at 8d. per lb. 11 packages all bought in at 7½d. to 8½d. for good thin cut, and 5d. for ringlets. 8 cases dark thin cut part sold at 6d.

Orris Root.—16 bags fair *Florentine* catalogued as fine bold Florentine orris root did not find a buyer, being withdrawn at 45 per cwt. 20 bags fairly bold ditto, but of poor colour, were withdrawn at 32s., and 14 bags *Mogador* at 30s. per cwt.

Pistachio Nuts.—5 cases part sold at 1s. 6d. per lb.

Quillai Bark.—20 bales crushed were taken out at 38s. per cwt.

Quinine Sulphate.—1000 ozs. *Taillandier's* brand were held for 1s. 3d. per oz.

Rhubarb.—Bold part rough round *Canton* held for 1s. 5d. to 1s. 7d. per lb., small part rough ditto for 1s. 2d., small trimming ditto, *Shensi* character, selling at 1s. 9d.; fine bold ditto at 1s. 3d.; bold flat rough *Canton* held for 1s. 3d. to 1s. 7d.; 4 cases small flat high-dried sold at 11½d., bold dull-coated ditto at 1s.; rough horny common ditto at 7d.; fine pale round *Shensi* sold at 2s. 10d., flat ditto at 1s. 9d. per lb.

Sarsaparilla.—10 bales *Lima* taken out at 1s. 6d. per lb. 10 bales *Mexican* sold at 3d., of 2 cases native *Jamaica* 1 case sold at 10d.

Sassafras Root.—A lot of about 24 cwt. was bought in at 11s. per cwt.

Senna.—The "Egypt," which arrived last week with 140 bales *Tinnevelly*, had not discharged her cargo in time for the sales, hence the offerings were smaller than expected. Another steamer, the "Kawachi Maru," brought 107 bales from Colombo, but a fire broke out on Tuesday, and it is said that practically the whole of this parcel has been destroyed. Of *Tinnevelly* 127 bales were offered; the bulk sold at about steady prices, from 1¾d. for the small yellowish leaf, and 2¼d. to 3d. per lb. for medium. *Alexandrian*: 7 cases only offered; part sold at 3½d. per lb. for good pale siftings. *Mecca Sorts*: 18 bales, which have been offered before, were again in sale, but were again taken out at 2d. per lb., 1¾d. being the holder's ideas.

Squills.—36 bags held for 2½d. to 3d. per lb. for fair quality.

Sticklac.—145 bags *Siam* bought in at 47s. 6d. per cwt.

Strophanthus Seed.—6 bags fluffy *Kombé* were held for 3s 3d. per lb.

Tonquin Beans.—Fair frosted *Para* held for 1s. 6d. to 1s. 10d. per lb.; foxy and black for 1s. to 1s. 3d.; extra fine *Angostura* for 8s. 6d. per lb.

Vermilion.—2 cases *Chinese* bought in at 2s. 2d. per lb.

Wax.—28 cases *East Indian* were all bought in, £6 10s. being the price mentioned. 4 packages fair *San Domingo* fetched £5 17s. 6d. to £6. 2 cases good *Jamaica* sold at £7 2s. 6d. 11 bags fair *Australian* were bought in at £6 10s.; fair *Madagascar* at £6 5s., white *Spanish* at £7 5s., yellow ditto at £6 10s. per cwt.

NEWCASTLE CHEMICAL REPORT.

December 8, 1897.

This chemical market is quiet, as is usual at this time of year. In prices there are no changes to note. Such are:—Bleaching Powder, according to markets, £6 5s. to £7 5s. Soda Crystals: 45s. to 57s. 6d. Caustic Soda: 70 per cent., £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

LIVERPOOL REPORT.

December 8, 1897.

Ammonium Salts.—Are without any change from last report except Sulphate, which is weaker, viz., £8 16s. 3d. per ton.

Beeswax.—Good sales of African have been made, 19 packages in all. Loanda at £5 to £5 10s. per cwt., and Sierra Leone at £5 17s. 6d.

Bleaching Powder—Is firmer at £6 5s. per ton.

Canaryseed—Seems neglected, and the price only nominal for Turkish at 25s. 6d. to 27s. 6d. per 464 lbs.

Copperas—Brings good prices. Lancashire, 39s. per ton; Welsh, 37s.

Copper Sulphate.—Price rules easier, viz., £16 to £16 5s. per ton.

Fœnugrec Seed.—140 bags Eyptian sold ex store at 9s. per cwt.

Ginger—Has been in good demand; over a ton of Sierra Leone found buyers at 17s. per cwt., and a further lot of 60 bags went for 16s. 3d. per cwt.

Kola Nuts.—Fresh have been selling in small lots at 3¼d. per lb.

Linseed—Is extremely scarce, stocks here being practically at the last ebb. 300 to 400 bags of Turkish sold at prices varying between 37s. 6d. and 38s. per 416 lbs.; 100 bags Cyprus (Larnaca) at 40s. 6d. for best, and 39s. 6d. for medium quality, and a little River Plate at 35s. 6d.

Oils (Fixed) and Spirits.—*Castor oils* are selling slowly at 3⅞d. to 3½d. per lb. for Calcutta, and 3⅜d. to 3⅞d. for French 1st pressure. *Olive oils* are unchanged from last week's quotation, and are in limited demand. *Linseed oils* of Liverpool make sell moderately at 15s. 9d. to 16s. 6d. per cwt. *Cottonseed oil* Liverpool refined is held for 14s. 9d. to 15s. 6d. per cwt. *Spirit of Turpentine* is firmly held at 24s. 9d. per cwt.

Potash Salts.—*Chlorate* is quiet at 3¾d. per lb. *Cream of tartar* is offering at 74s. to 75s. per cwt. for finest cream. *Potashes*: 19s. to 19s. 6d. per cwt. *Pearlash*: 30s. per cwt. *Saltpetre*: 21s. 6d. per cwt.

Sodium Salts.—*Bicarbonate*: £6 15s. per ton. *Borax*: 14s. per cwt. *Caustic*: 76 to 77 per cent., £8 15s. per ton; 70 per cent., £7 5s. *Crystals*: £2 17s. 6d. per ton. *Nitrate* is in fair demand at the steady price of 7s. 6d. to 7s. 9d. per cwt.

MANCHESTER CHEMICAL REPORT.

December 8, 1897.

The Board of Trade returns of exports are much more satisfactory than might have been expected, although to the United States there is a suggestive decrease in heavy chemicals, showing that the production on the other side is beginning to tell unfavourably on this department of English trade. It is interesting to note, however, that chemicals and medicinal preparations exported show an increase of 27·3 per cent.; alkali 13·8, and bleach 18·7, although the values in the two last-named articles have not kept pace with the increase in quantity. Locally, a fair demand is passing in miscellaneous articles, although the price of Bleaching Powder, £5 5s. per ton, on rails, over next year is far from satisfactory from a producer's standpoint. Caustic Soda is easier at £7 per ton for 70's, white. Brown Acetate of Lime is strong at £5 15s. per ton for both Welsh and best American. Sulphate of Copper continues to recede, and to-day is quoted at £16 10s. per ton for best brands, delivered Manchester. Acids generally are steady, but Pitch continues depressed, with small exports from Manchester direct. Yellow Prussiate is scarce and in strong request at 6½d. to 6¾d. Green Copperas is steady at late rates. No public oil sales have been held here since our last, but the trade promises to develop rapidly, three steamers being due or on passage, viz., the "Apscheron," with 2250 tons of Russian pale lubricating oil; the "Rocklight," with 2119 tons of Russian petroleum; and the steamer "Etelka," with 1469 tons, in all 5838 tons.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Henry Hopkins and Thomas Andrew (trading as Henry Hopkins & Co.), Mineral Water Manufacturers, etc., 9, St. Mark's Street, Goodman's Fields, and 96, Commercial Street, Spitalfields. Debts will be received and paid by Henry Hopkins.

Charles Josephs and Stuart Laurance (trading as Charles Josephs), Shop Fitters and Show Case Makers, 5, New Oxford Street, W.C. Debts will be received and paid by Charles Josephs.

Ralph W. Robinson and A. Horsley Hinton, Photographers, 147, High Street, Guildford. Debts will be received and paid by Ralph W. Robinson.

David A. Buchanan and Albert Broughton (trading as D. A. Buchanan & Co.), Mineral Water Manufacturers, etc., 1, Elm Road, West Derby Street, Liverpool. Debts will be received and paid by Albert Broughton, who will carry on the business on his own account.

Jonathan Allott and George Allott (trading as Allott Brothers), Mineral Water Manufacturers, the Steps, Sowerby Bridge, Yorks. Debts will be received and paid by Jonathan Allott, who will carry on the business under the present style.

Joseph Turner, E. Gordon Lee, and H. R. Turner (trading as Turner, Lee, & Co.), Chemical Manufacturers, Clayton, near Manchester, and Great Yarmouth. Debts will be received and paid by E. Gordon Lee

RECEIVING ORDER IN BANKRUPTCY.

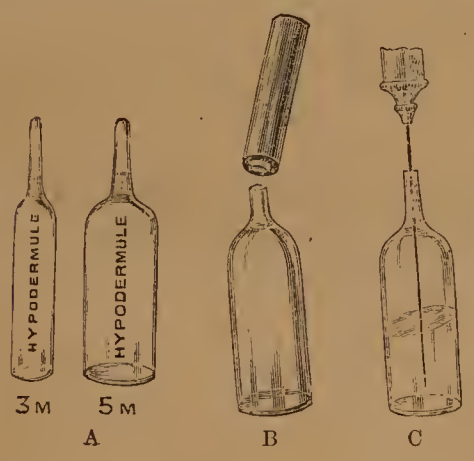
(From the London Gazette.)

Dr. Robert Browne, Fenella, Hendon, Middlesex.

NEW IDEAS & TRADE NOTES

ROGERS' "HYPODERMULES."

Mr. Frank A. Rogers, of 327, Oxford Street, W., has designed and introdueed a new form of hypodermic medication, which possesses obvious advantages over anything else of the kind at present in use. The "hypodermules," as they are termed, consist of miniature glass flasks containing exactly measured doses of sterilised solutions, instantly ready for hypodermie injection. The "hypodermules" ean be made any size, and the contents may be prepared aceording to any formula, all that is necessary being to state the dose of the drug required and the number of minims of fluid (1 to 5 or more) in which it is to be dissolved. If the amount of solvent is not specified, 5-minim hypodermules will be supplied wherever practicable. In use the point of one of the miniature flasks (A) is broken off by means



of a small eopper tube (B), and the needle of the syringe is then inserted (C), an instantaneous and accurate injeetion being thus rendered possible. It is elaimed, with good reason, that this system of preservation and presentation ensures (1) absolute sterility, as all the solutions are carefully sterilised and introdueed into the hypodermules direct, thereby redueing to a minimum the risk of after-boils and pustules; (2) accuracy of dose, as the contents of each "hypodermule" are measured when introdueed into it; (3) prevention of eoneentration by evaporation or of alteration in chemical constitution by exposure to air; (4) no solvent is necessary, as in the case of the eompressed tablets, and there is no possibility of an overdose; (5) it is the most perfeet method for the transmission and preservation of the various animal serums; (6) this method possesses special value as regards the preservation of solutions intended for ophthalmic use.

SANDAL WOOD OIL.

Messrs. W. J. Bush and Co., Limited, have sent a eopy of a eireular which gives in tabulated form some important partieulars reeorded by various investigators respecting oil of sandal wood, drawn from East Indian wood. It is pointed out that a prejudice has been caused to both buyers and sellers of this oil by some ehemists aeeepting as absolute the figures relating to its physical eharaeteristics published in Germany. To obviate this they wish to make known the results of their own observations together with those of other observers who have published their results from time to time. The former give the density at 15° as 0·971 to 0·982, the rotation (100 Mm.) as 10°·8 to 17°·7, and the percentage of santalol as 91 to 98. The rotation figures are for monochromatic (D) light. The figures for ordinary light (transition tint) would, with most substanees, be considerably higher. It would appear from these and other recorded results that English-drawn oil from East Indian sandal wood may vary in density from 0·970 to over 0·980, and it would appear, from the two sets of figures published at different times by Messrs. Sehimmel & Co., that, as might be expected, the German distilled oil varies to the same extent. The rotation also may vary from −10° to −20°, and it is not advisable to fix narrower limits than these for density and rotation. Messrs. Bush & Co. agree with previous observers as to the solubility in 70 per eent. aleohol, all the oils of their own distillation having been found to be readily soluble in less than 5 times their volume at 20° C.

SYLVIA'S HOME DYES.

Messrs. Ayrton & Saunders, of Liverpool, notify us that the priee per card for Sylvia's Home Dyes is 4*s.* (not 6*s.*). This includes carriage to any part of the United Kingdom.

LIQUORICE, SPICES, AND SEEDS.

Messrs. Evans, Gray, & Hood, who have been associated for some years past with the firm of Messrs. Fergusson & Forster, have opened business on their own aeeount as spice, seed, liquorice, drysaltery, and general produee merchants and importers. They are in a position to supply Solazzi and Grasse Liquorice on the usual terms. Their warehouse is situated at 9, Sheppey Yard, Minories, and they will shortly open a sample room in the neighbourhood of Easteheap.

LATE ADVERTISEMENTS.

Assistants Wanted.

Johannesburg. — Qualified Assistant wanted for firm of leading chemists. Abont 25 years of age; good appearanee. Quick and reliable dispenser. Three years' agreement to be signed. Second-class passage paid. Salary £16 10s. per month first year, £17 10s. second year, and £18 10s. third year. Room supplied but not board. Apply, stating full particulars, to Borax, care of John Murdoch & Co, 52, Leadenhall St., E.C.

Natal.—Qualified Assistant wanted for Coast town. Age 24 to 30, Quick and aeeurate dispenser. Three years' agreement to be signed. Salary £12 10s. per month first year, £13 10s. second year, and £15 third year. Second-class passage paid. Apply, stating full partieulars of experience, to E. M., care of John Murdoch & Co., 52, Leadenhall St., E.C.

DIARY FOR THE WEEK.

Saturday, December 11.

Pharmaceutical Football Club v. Melrose Rovers at Wormholt Farm. Kiek-off at 3 p.m.

Monday, December 13.

Galen Lodge, Freemasons' Hall.
Meeting at 5.30 p.m.

Imperial Institute, at 8.30 p.m.
"Canada's Metals" (Illustrated), by Professor W. C. Roberts-Austen.

Tuesday, December 14.

Edinburgh Chemists', Assistants', and Apprentices Association, at 8.30 p.m.
Musical Evening (Oddfellows' Hall).

Royal Photographic Society, at 8 p m.
"Colour Photography," by Professor Gabriel Lippmann. (Theatre, Society of Arts.)

Wednesday, December 15.

Bolton Pharmaceutical Association.
Discussion on the Federation Cireular.

Brighton Junior Association of Pharmacy, at 9 p.m.
Social Evening.

Chemical Society, at 8.30 p.m.
Extra Meeting.
Kekulé Memorial Leeture, by Profcssor F. R. Japp.

Forfarshire and District Chemists' Association, at 4 p.m.
Social Tea and General Meeting, also Diseussion on the New Pharmacy Bill and the P.A.T.A. (Lamb's Hotel, Dundee.)

Midland Chemists' Assistants' Association, at 9.15 p.m.
"Poisons," by F. Casson.

Pharmaceutical Society.
Evening Meeting in Edinburgh at 8.30 p.m.
"Fluid Extraet of Liquorice," by Peter Boa.
"The Metrie System in Prescriptions," by Dr. T. T. Dewar and James Jaek.
"True and False *Cactus grandiflora*," by Dr. Gordon Sharp.
"Additions to the Library and Museum."

Western Chemists' Association (of London), at 9 p.m.
Address by the President. (Westbourne Restaurant.)

Thursday, December 16.

Chemical Society, at 8 p.m.
"A New Method of Determining Freezing Points in Very Diluto Solution," by M. Wilderman.
"Stereo-Chemistry of Unsaturated Compounds, I., Esterification of Substituted Acrylic Acids," by J. J. Sudborough and Lorenzo Lloyd.
"Formation and Hydrolysis of Esters," by J. J. Sudborough and M. E. Feilmann.

Chemists' Assistants' Association, at 9 p.m.
Adjourned Discussion of the Proposed Alteration of Rule 6.

Linnean Society of London, at 8 p m.
I. "On the Affinities of the Madreporarian Genus Alveopora," by H. M. Bernard.
II. "On West Indian Charaeeæ, Collected by T. B. Blow," by Messrs. H. and J. Groves.

Friday, December 17.

Aberdeen Junior Chemists' Association, at 9.30 p.m.
"Iee Water and Steam," by Alex. Findlay.

Sheffield Microscopical Society, at 8 p.m.
Practical Night, Conductod by Members.

FOOTBALL.

Pharmaceutical F. C. v. Burgoyne Burbidge's (seratch). — This mateh was played on Saturday last at Wormholt Farm, the former winning by 6 goals to *nil*.

Metropolitan College of Pharmacy v. Westminster College of Pharmacy.— These teams met on Saturday, December 4 last, at Wormholt Farm, Shepherd's Bush, the game resulting finally in a win for the "Metropolitans" by 5 goals to *nil*.

EXCHANGE Offers & Wants

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Formulæ.

Cod-liver oil emulsion; a really good form, easy to make, no eggs, permanent, palatable, cheap; 50 per cent. oil; post free, with instructions, 2s. 6d.—Campbell, 536, Coventry Road, Birmingham.

Books.

'Pharmaceutical Journal,' 75 vols., half calf, complete, from 1842 to 1892. **'Journal de Pharmacie,'** 80 vols., complete, from 1809 to 1858, and from 1863 to 1896 inclusive. **'Year-Book of Pharmacy,'** 23 vols., complete, from 1870 to 1892 inclusive. The above for sale, what offers?—"Cascara," 'Pharm. Journ.' Office, 5, Serle Street, W.C.

OFFERED—*(continued).*

'Encyclopædic Dictionary,' quite new and best condition, in 14 numbers, cost £6 10s.; what offers?—Roberts, Chemist, Rusholme.

Drugs and Chemicals.

What offers?—Syrupus rhedos, any quantity.—Bond Smith, Potton.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4 wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

OFFERED—*(continued).*

Pure New English Honey, excellent flavour and colour, 6s. 6d. per 12 lbs.; carriage forward, packages free; cash with order.—Brampton, Sudbury, Suffolk.

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GENERAL INDEX to the PHARMACEUTICAL JOURNAL

A general index to the "**Pharmaceutical Journal**" for the seventeen years ending June 29, 1895—including volumes IX. to XXV. of the 3rd series—having been repeatedly asked for by readers, such an index will be printed by subscription if a sufficient number of orders are received. The subscription price will not exceed one guinea and may be considerably less if a large number of orders are received, as it is not desired to do more than cover the cost of production. Conditional orders may be sent by readers who are not prepared to subscribe more than half a guinea (or even five shillings), if they will indicate the price they are prepared to pay on the accompanying order form.

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Legal Intelligence.

Saccharin Corporation, Limited, v. Chemical and Drugs Company, Limited.

Mr. Justice North had before him in the Chancery Division of the High Court of Justice on Friday, December 10, a motion by the plaintiffs in their action for an interim injunction to restrain the defendants until the trial of the action or further order from importing into England or from manufacturing and selling in this country saccharin made in accordance with certain patents, of which the plaintiffs held the English rights.

Mr. Fletcher Moulton, Q.C., in opening the motion, stated that the Chemical and Drugs Company recently came into existence, and they were selling saccharin obtained from abroad in England, where the plaintiffs held all the patents for its manufacture. There were several processes for the manufacture of saccharin, and the plaintiffs practically held all of them. What the defendants did was to buy saccharin from abroad, repack it, and send it into this country for sale.

Mr. Swinfen Eady, Q.C., for the defendants, denied that there was any evidence of that.

Mr. Moulton said that they had not been able to find out under which process the saccharin sold by the defendants was manufactured, but that did not matter, as the plaintiffs' case was that they held patents for all the processes by which saccharin could be made. The defendants did not say from whom they obtained saccharin, or that it was made by any particular process, but alleged that there was a process by which saccharin could be made which did not infringe any of the plaintiffs' patents. They did not say, however, that the saccharin they sold was made by that process.

Mr. Justice North asked if the defendants were willing to keep an account, to which

Mr. Swinfen Eady agreed, if it was not advertised.

Upon that undertaking his Lordship declined to grant an injunction on the motion, the costs being reserved.

A Disputed Agreement.

The case of Lewis & Burrows' Drug Stores, Limited, *v.* St. John, which came before Mr. Justice Stirling in the Chancery Division of the High Court of Justice on Saturday, December 11, was brought for an injunction to restrain the defendant from excluding the plaintiffs from 32A, High Street, Clapham. The plaintiffs, who carry on business in many parts of London, in November of the present year were minded to establish a branch at Clapham, and they accordingly entered into negotiation with the defendant, who is the owner of the premises in question. As the result of such negotiations defendant wrote the following letter:—

"In consideration of your agreeing to take 32A, High Street, Clapham, on a seven, fourteen, or twenty-one years' repairing lease from Christmas next at a rental of £180 per annum—you paying fire and plate-glass insurance premiums—the first year's rent to be allowed you, and you agreeing to put a front in at a cost of not less than £110, I agree to pay you £170 when the front is fixed. The allowance of the first year's rent shall not appear in the lease, but a receipt shall be given to you by me in full discharge. P.S.—You can have immediate possession of the premises." The plaintiffs desired to open the shop at once in order to get the benefit of the Christmas trade. When the lease came to be drawn by the solicitors, plaintiffs objected to a covenant being inserted to the effect that the premises should only be used for the purpose of carrying on the business of a chemist and druggist and as a dwelling house only. The plaintiffs had taken possession and proceeded to put in the front, though this was strenuously denied by the defendant. The plaintiffs alleged that they had entered into a binding agreement to take a lease, while for the defendant it was contended that the letter amounted merely to an offer which had not been accepted, and which offer was rescinded before acceptance.

Mr. Buckley, Q.C., and Mr. Ingle Joyce appeared for the plaintiffs; Mr. Graham Hastings, Q.C., and Mr. Stewart Smith represented the defendant.

His Lordship said although the evidence was conflicting, the probability was that at the trial the plaintiffs would make out a case, and therefore, on the balance of convenience and inconvenience, he thought he ought to grant the injunction. At the same time the plaintiffs must undertake to carry on no other business but that of a chemist and druggist on the premises, and also to deal with the property at the trial as the Court might direct.

Mr. Buckley said the plaintiffs would give the undertaking, whereupon his Lordship granted an injunction as prayed.

Artificial Musk.

Fabriques de Products Chimique de Thann et de Mullhouse *v.* Caspers.—Mr. Justice Romer in the Chancery Division of the High Court of Justice, on December 8, had before him this action, by which the plaintiffs sought to restrain the defendant from infringing a patent granted to one Bauer. In the statement of claim the plaintiffs relied on patents granted to Schnaufer and Hupfeld, and to Bauer, but they abandoned the former at the opening of the case because the answers of the defendant to interrogatories showed that the infringement was under Bauer's patent. The patent was for obtaining a compound or mixture of compounds from coal tar called artificial musk. The compound had been very largely sold as a substitute for musk in perfumes. The substitute had great strength in the way of smell, and it could be so qualified as to make strong scents without being too much like musk in its effect. Bauer's patent was taken out in 1889, and there was no allegation in the pleadings that the invention was not useful. The defence was that the invention was not new, that it was not the proper subject matter for letters patent, insufficiency of specification, and non-infringement. The plaintiffs called Professor Dewar to give evidence as to the novelty and utility of Bauer's invention, and as to the infringement by the defendant.

Mr. Fletcher Moulton, Q.C., and Mr. J. C. Graham represented the plaintiffs, while the defendant, Charles Jules Caspers, appeared in person.

Mr. Justice Romer gave judgment for the plaintiffs for an injunction on Bauer's patent with costs, and granted a certificate of the validity of the patent. The defendant would have costs so far as they related to the abandoned patent, with a certificate that the particulars of objection as to Schnaufer and Hupfeld's patent were reasonable. There would be an inquiry as to damages sustained by the plaintiffs by the defendant's infringement, and the costs of that inquiry would be reserved.

A Camphorated Oil Case.

At Dudley Police Court on December 3 Mr. E. M. Warmington (Town Clerk) asked permission to withdraw a case in which a local shopkeeper was summoned for selling camphorated oil not of the substance and quality demanded.—Mr. Frank Deeley (for the defendant) contended on that occasion that camphorated oil was not mentioned in the British Pharmacopœia, though "liniment of camphor" was. The Magistrate's clerk had advised that the prosecution must substantiate their case by producing evidence to show that camphorated oil and liniment of camphor were the same. That it had not been possible to do.

Defective Seidlitz Powders.

At Ingleton Petty Sessions, on Friday, December 10, James Jackson, grocer, of Bentham, was charged by Mr. Arthur Randerson, inspector under the Food and Drugs Act, with selling defective seidlitz powders.—Mr. G. S. Tatham appeared for defendant and pleaded guilty to a technical offence.—Mr. Randerson said he purchased one dozen seidlitz powders at defendant's, and sent them to the analyst, whose report showed that they contained a material excess of sodium bicarbonate and a deficiency of tartarated soda and tartaric acid.—Fined 2*s.* 6*d.* and £1 14*s.* 11*d.* costs.

Medical Jottings.

The Use of Hydrochloric Acid in the treatment of sciatica is referred to in the *Semaine Médicale*, which records the case of a man who had been treated by hypodermic injections of salt and water for this complaint without much success. Thinking that a stronger preparation of salt might be more efficacious, this individual procured some hydrochloric acid, painted it on his skin, and as a result got rid of the trouble within a few days. He then communicated the result to his medical man, who has since employed the remedy in several cases with invariable success. As the *Lancet* points out, the hydrochloric acid of the French 'Codex' (34·4 per cent.) is very slightly stronger than that of the British Pharmacopœia (32 per cent.).

Mr. W. H. Burns, whose death has been announced, was well known to the medical profession owing to the fact that of recent years he had taken great interest in Guy's Hospital, of which he was a Governor, and where his services on the Finance Committee were much appreciated. Mr. Burns was the head of the English branch of the well-

known American banking firm of J. S. Morgan & Co., and by his influence and example he induced many people to give largely to charity. He took great interest in the Royal National Pension Fund for Nurses, of which he was Chairman of Council, and the confidence of nurses in his able management is shown by the fact that their annual contributions to the fund amount to upwards of £60,000, a sum which represents the savings which they are able to put by yearly towards provision for sickness or old age.

The University College Hospital Authorities, have in consequence of heavy expenditure and liminished income from the falling off of ordinary subscriptions during this year, had to close fifty beds, this however, leaves 160 available, more than sufficient to comply with the regulations of the General Medical Council, which are to the effect that no medical school can be attached to a metropolitan hospital the number of the beds of which fall short of 150. Some months since, Sir J. B. Maple contributed £120,000 to this hospital, but for a specific purpose, namely, the re-building of part of the structure which had long been in a condition unsuitable for the treatment of the sick and hurt. The impression has possibly got abroad that this munificent gift was intended to meet the current working expenses of the hospital, and may have induced the charitably disposed to send their contributions elsewhere, for the time being at any rate.

The Next International Medical Congress will take place in Paris in 1900, the year of the great exhibition.

If Tobacco Smoking is justifiable at all on hygienic grounds, it is generally conceded, observes the *Lancet*, that the pipe is the least injurious means. The tobacco should be pure and free from added flavouring, which in many instances is resorted to in order to cover inferior quality. A hook-shaped pipe is better than one the bowl of which is on a level with the mouth, as a considerable quantity of the oil is kept back in the curved part. Specially constructed pipes cannot be regarded with much favour, such as those which are said to be hygienic, and usually contain a so-called nicotine absorber. Those smokers who require these auxiliary attachments had better not smoke at all. As a matter of fact, tobacco yields little nicotine in the smoke produced by its partial combustion; it is mainly to oils of a tarry and acrid character that the toxic symptoms of tobacco smoking are due.

The Exports from the United Kingdom of Medicines, comprising drugs and medicinal preparations, during the eleven months ending November 30 last, amounted to the value of £1,030,410, against £1,009,449 during the same period in 1896, and for the month of November only, the value was £102,924, against £85,379 in 1896, showing an increase of 20 per cent.

A Small Revolution has taken place in the medical world of Bath. Mr. Freeman, who had a very large general practice, died some weeks since, and almost simultaneously Dr. Fox, the well-known consulting physician, announced his intention of retiring from practice, in consequence of having come into a considerable fortune. Mr. Freeman had been established at Bath for thirty-three years, and Dr. Fox went there in 1871. Dr. Fox is leaving Bath to reside for some time in Italy.

Pharmacy Balls.

The following balls have been announced for the early part of 1898:—

The Midland Chemists' Assistants' Association Ball will be held in the Edgbaston Vestry Hall, Birmingham, on Thursday, January 6, 1898, commencing at 8 p.m. Tickets (Gentleman's, 3*s.* 6*d.*, Lady's, 3*s.*) may be obtained from the Hon. Secs., Mr. Frank Casson, High Street, Harborne, and Mr. Ernest W. Mann, 97, Bristol Road, Birmingham.

The Chemists' Ball will be held at the Portman Rooms, Baker Street, W., on Wednesday, January 19, 1898. Tickets (Lady's, 12*s.* 6*d.*, Gentleman's, 17*s.* 6*d.*) may be obtained of the Hon. Sec., Mr. William Warren, 24, Russell Street, Covent Garden, W.C. A first list of Stewards appears in the advertisement pages this week (see p. 3).

The Midland Pharmaceutical Association holds its Annual Ball on Thursday, January 20, 1898, at the Grosvenor Rooms, Grand Hotel, Birmingham. Particulars may be obtained from Mr. C. Thompson, 159, Stratford Road, Sparkbrook.

The Junior Pharmacy Ball is to be held on Wednesday, February 9, 1898, at the Portman Rooms, Baker Street, W. The Hon. Sec. is Mr. W. J. Henson, Beulah Hill, London, S.E., who will be pleased to receive applications for tickets, the cost, 7*s.* 6*d.*, including supper and light refreshments during the evening.

Football.

Metropolitan College of Pharmacy *v* South London School of Pharmacy.—The return match of these clubs was played on Saturday, December 11, on Tooting-Bec Common, which resulted in a win for the "Metropolitans" by 3 goals to *nil*.

Marriages.

Rogers—Bryant.—At St. Matthew's Church, Lavender Hill, S.W., on December 11, by the vicar, Frank Ashley Rogers (one of the town representatives of Burroughs, Wellcome & Co.) to Pauline Bryant.

News in Brief

Special Notice to Correspondents.—As the result of continued pressure on our space it is becoming increasingly difficult to insert all the reports and other news received, in the space available from week to week, and several items appear in the present issue which were unavoidably crowded out last week. With a view to meeting the difficulty to some extent, Correspondents are requested, therefore, to write as concisely as possible, and also to endeavour to secure the delivery of their communications not later than Wednesday in each week.

Chemical Society.—The following gentlemen were elected Fellows on December 2 last:—John Ball, Ph.D., William Ball, A. A. Beadle, Richard O. Burland, J.P., Alex. McLean Cameron, Alex. Clarkson, F. Collingridge, B.Sc., J. Murray Crofts, B.A., A. J. Dixon, F.I.C., Oscar Guttmann, F.I.C., R. Hamilton, J. Harger, B.Sc., Ph.D., J. W. Horseman, C. Kelly, T. Lemmey, B.A., J. S. Maclaurin, D.Sc., Alan Macmullen, B.A., C. J. Mansford, B.A., E. Masters, J. A. Mathews, M.A., M.Sc., P. G. G. Moon, J. J. Mooney, J. C. Philip, B.Sc., Ph.D., Alex. F. Reid, E. H. Roberts, E. S. Simpson, B.E., R. F. W. Smith, T. Southern, Jun., F. W. Steel, M. E. Stephens, G. Stubbs, E. H. Tripp, Ph.D., J. S. Turner, F. K. Viccajee, P. J. Vintner, M.A., A. J. White, F. S. Young, M.A.

Westminster College of Chemistry and Pharmacy. — The annual College dinner was held at the Holborn Restaurant on Friday, December 3, Mr. Thomas Skewes-Cox, M.P., in the chair. There was a good assembly of past and present students and friends, the dinner passing off most successfully. After the loyal toasts had been honoured, Mr. E. Walden, the secretary, read the twenty-fifth annual report, which showed the College to be in a very satisfactory position, both as regards the number of students and of passes at the various pharmaceutical and medical examinations. Mr. J. B. Davidson gave the toast of "The Westminster College," and in responding Mr. G. S. V. Wills referred to the success of the past session, there being nine more passes than the previous year, making a total of 3457 students who have qualified from the College since its foundation in 1872. He then gave the history of the Pereira Medal, which was this year awarded to one of their students, Mr. W. A. Knight. Mr. H. Wootton, in proposing "The Students," impressed upon those who are still passing through that period the importance of using the time wisely, as on the use or abuse of the period would depend the future career of each individual student. Mr. E. G. Price responded. At the conclusion of a musical programme the Chairman

distributed eleven silver medals to successful students for excellence of work done during the past session. He remarked that he had had considerable experience of chemists in different parts of the country, and he always found them men of education and intelligence, and looked up to as possessing considerable scientific and general knowledge. He congratulated those who had won the silver medals, and urged them not to close their books, but to continue their studies after passing the examinations.

Glycerinated Calf Vaccine Lymph is the subject of a report to the Local Government Board, which is prefaced by an introduction by the Medical Officer, Dr. Thorne Thorne, who comments upon the operations witnessed at Paris, Brussels, Berlin, Dresden, Cologne, and Geneva by Dr. Monekton Copeman and himself. The Report contains a number of full-page illustrations and embodies a complete account of the collection and preparation of the lymph in the different cities visited. In every instance, it is stated, the work of collecting, preparing, and storing the lymph was carried out with the greatest care; a condition of scientific cleanliness was especially aimed at, and a laboratory, fitted with bacteriological and other scientific apparatus, always formed an essential part of the vaccine institution.

At the Linnean Society, on November 18, Messrs. Peter Goiffon, D. A. Jones, and E. R. Budden were elected Fellows, and the President announced that since the close of last session they had been so fortunate as to receive from Professor G. J. Allman, a former President of the Society, a portrait of himself painted by Miss Busk, whose portrait of her late father was now hanging near it. It was an excellent likeness, and he was sure it would be highly valued. He moved that a vote of thanks be recorded for the presentation, and this was unanimously agreed to.

Royal Institution.—A general monthly meeting of the members of the Royal Institution was held on Monday afternoon, the 6th inst., Sir James Crichton-Browne, M.D., F.R.S., Treasurer and Vice-President, presiding. The following were elected members:—The Hon. H. M. Birdwood, C.S.I., Major John Leslie, Captain H. G. Lyons, R.E., and Mr. Cecil Powney. The special thanks of the members were returned to Professor Dewar, LL.D., F.R.S., for his present of a portrait of Mr. Benjamin Vincent, Honorary Librarian of the Royal Institution.

Royal Institution.—The following are the lecture arrangements before Easter:—Professor Oliver Lodge, six Christmas lectures (specially adapted for young people) on The Principles of the Electric Telegraph; Professor E. Ray Lankester, eleven lectures on The Simplest Living Things; Professor Dewar, three lectures on The Halogen Group of Elements; Dr. J. Paul Richter, three lectures on Some Italian Pictures at the National Gallery; Professor J. A. Fleming, five lectures on Recent Researches in Magnetism and Diamagnetism; Professor Patrick Geddes, three lectures on Cyprus; Mr. William H. Hadow, three lectures on The Structure of Instrumental Music; Mr. Lionel Cust, two lectures on Portraits as Historical Documents, Portraits as Monuments. The Friday evening meetings will begin on January 21, when a discourse will be given by the Right Hon. Sir John Lubbock, Bart. M.P., on Buds and Stipules; succeeding discourses will probably be given by Professor C. Lloyd Morgan, Mr. A. A. Campbell Swinton, Dr. J. Hall Gladstone, Professor L. C. Miall, Captain Abney, Professor J. E. Thorpe, Mr. James Mansergh, the Dean of Canterbury, Professor Dewar, and other gentlemen. Lord Rayleigh will deliver lectures after Easter.

Messrs. Maw, Son & Thompson have contributed the sum of one hundred guineas to the Mansion House Fund for relief of the sufferers thrown out of employment through the disastrous fire in Cripplegate.

Mr. Councillor D. M. Stevenson gave notice at a meeting of the Corporation of Glasgow, held on Monday, November 29, of the following motion:—"That in view of the large amount of analytical work now required in certain departments of the Corporation, it is expedient that a chemist who will give his entire services to the Corporation be engaged, and that a committee of members of the Heath and Sewage Committees be appointed to draw up terms and conditions of engagement and to report."

A Belfast Syndicate has been formed for the purpose of acquiring several well-known drug stores and medical halls in that city. It is rumoured that the new company, said to have abundant resources, is to be styled "The Belfast Drug Store Company, Limited." The vendors are to be retained as managers for a number of years, and will continue to have an interest in the Company.

The Edinburgh Pharmacy Athletic Club held its sixth annual smoking concert at the West End Café, Princes Street, Edinburgh, last week, Mr. D. B. Dott presiding. During the evening a handsome gold watch suitably inscribed was presented to Mr. J. P. Gibb, the secretary, in recognition of his work for the club.

The Tenth Annual Supper of the Royal Dispensary Pharmacy Students took place at the Imperial Hotel on Friday, December 10, Mr. William Duncan in the chair, Messrs. W. J. Mackenzie and C. M. German, demonstrators, being the principal croupiers. Messrs. Ewing, Boa, Maclaren, Coull, Hill, were also present. The Chairman, in proposing "The Pharmaceutical Society and Examiners," condemned the proposed modified examination for assistants, and Mr. Wells, speaking for pharmacy students, also condemned the proposal as being contrary to the best interests of assistants. Mr. J. Laidlaw Ewing replied for the Society and Examiners. Mr. Boa then proposed "The Pharmacy Students." Mr. Wells replied, and, in the name of the students, presented a handsome gold signet ring to Mr. Duncan. Mr. Simpson likewise presented a case of pipes to Mr. Mackenzie, and Mr. Black a case of pipes to Mr. German. Mr. Williams proposed "The Ladies," and Mr. Ezard replied. Mr. J. Rutherford Hill proposed "The Chairman and Croupiers." There was a large attendance, and a very enjoyable evening was spent.

Tyrotoxicon Poisoning was the alleged cause of death in the case of a little girl aged four years at Halifax on November 28. At the inquest the jury returned a verdict to the effect that death was due to poisoning by tyrotoxicon, present in milk taken shortly before the child went to bed on November 27. No one was to blame in the matter, but the jury added a rider emphasising the necessity of milk being boiled before it is given to children.

Imperial College of Chemistry.—On Monday, December 13, the students of this College, by permission of Mr. Frank Livesey, chief engineer of the Company, accompanied by Mr. Frederick Davis, Principal of the College, visited the South Metropolitan Gasworks. The time occupied in going over the works, together with explanations upon the principles involved in the processes extended over five hours. Not only was gas-making fully detailed, but bye-products including cyanogen, ammonium sulphate, sulphur, and sodium ferrocyanide were discussed and practically demonstrated.

Association News.

The Edinburgh Chemists', Assistants', and Apprentices' Association had a social and musical evening on Tuesday, December 14, at the Oddfellows' Hall, Forrest Road, Mr. Geo. Sinclair, President, in the chair. There was a good attendance and an excellent programme during the evening. Mr. George Lunan, on behalf of the Association, presented the President with a portrait on the occasion of his marriage, and Mrs. Sinclair unveiled the portrait. Mr. C. F. Henry moved a vote of thanks to to the Committee, and Mr. W. B. Cowie moved a vote of thanks to the performers, and Mr. Geo. Coull moved a vote of thanks to the Chairman and Committee, remarking that much credit was due to the Secretary, Mr. G. H. C. Rowland, for the successful arrangements.

Ulster Pharmaceutical Association.—At Belfast on the 7th inst. the monthly meeting of this Association was held at Royal Avenue, Mr. James Tate, M.P.S.I., in the chair. An interesting paper on "Antitoxic Serums" was read by Dr. Fielden, L.P.S.I., in the course of which the process of manufacture and mode of administration of the serums were described at some length. At the conclusion of the paper a vote of thanks was accorded to Dr. Fielden, who suitably replied.

The Aberdeen and North of Scotland Society of Chemists and Druggists is to have an "At Home" in the Douglas Hotel on Wednesday evening, January 19.

Sunderland Chemists' Association.—The annual dinner of this Association was held on December 8 in the Grand Hotel,

Bridge Street, at 7 o'clock, when forty chemists and friends sat down to a splendid dinner, and did every justice to the capital catering of the manager, Mr. Hall. After the cloth was removed the President, Mr. C. Ranken proposed the Royal toast.—Mr. H. J. Turnbull, Sen., proposed "The Pharmaceutical Socicty."—Mr. Clague, of Newcastle, responded.—Mr. W. H. Bartram gave "The Sunderland Chemists and Kindred Associations."—Mr. Ranken and Mr. G. Merson (Hon. Sec. Newcastle Association) responded.—Mr. Todd toasted "The Visitors," and Messrs. Dobinson and Prosser responded.—A new departure was tried by the Association at this dinner, viz., to reduce the toast list and have more entertainment. The Dinner Committee had worked hard and had successfully got together a large number of artistes, including several amateurs. Part of the professionals were kindly sent from the local variety theatre, and their efforts were highly appreciated. Songs, recitations, humorous readings, conjuring, juggling, etc., whirled away the hours till 11 o'clock, when the merry party broke up, after having spent the most enjoyable and successful dinner the Association has ever held. Letters of regret at not been able to be present were read from Alderman J. Harrison, J.P., Mr. Bryes, and Alderman Burns (Ex-Mayor). Amongst those present were: Messrs. C. Ranken (President), R. H. Bell (Secretary) in the vice-chair; Mr. Clague (President), and Mr. G. F. Merson (Secretary), of the Newcastle Association, Dr. Scarfield, M.O.H.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.—A lantern lecture on photography was given before the members of the above Association on Tuesday, November 30, at the Great Northern Hotel by Messrs. O. and F. Nicholson. Several magnificent slides were thrown on to a large screen. The lecture proved very interesting and enjoyable, the sea views and cloud photographs being especially fine. On the motion of Mr. Rogerson, seconded by Mr. George Rimmington, a vote of thanks was accorded the lecturers. Mr. O. Nicholson suitably replied.

THE ANNUAL MEETING OF "CAMWAL" was held at Anderton's Hotel, Fleet Street, on Tuesday, December 7, Mr. H. Davenport in the chair, there being a large attendance. In submitting to the shareholders for approval the nineteenth annual balance sheet, the Directors expressed considerable satisfaction in being able to recommend a dividend and bonus amounting to 12½ per cent., in spite of the fact that a large portion of capital was expended on new factories at Manchester and Birmingham. £11,100 debentures were issued, making the total now out £20,000. In addition to this a loan of £5000 at 4 per cent. per annum has been raised. During the past year there has been an increase of 327 new shareholders (after deducting those who have sold their shares), making a total number of members 4268. The Directors propose paying the dividend on December 14, the amounts of which will be placed to the credits of open accounts, unless application had been made before December 3. It is proposed to give the employés a liberal bonus as hitherto, and to recommend a dividend of 10 per cent., and bonus 2½ per cent. (free of income tax). This absorbs £5016 2*s.* 6*d.*, together with balance carried forward, £906 19*s.* 8*d.*, making in all £5923 2*s.* 2*d.*—The Chairman, in moving the adoption of the report and balance-sheet, remarked that the financial statement and the dividend recommended must afford much satisfaction to all shareholders, especially seeing that the Association had a large amount of capital invested in the new factories which had not commenced to repay any of the sum expended; their whole trade, however, had increased on the previous year, as had also the membership, the number of chemist shareholders being now over 4000, and he had no doubt that when the factories at Birmingham and Manchester had been established a short time their trade would go up by leaps and bounds.—Mr. W. Urwick seconded the motion, and spoke hopefully of the new factories, which he thought would be quite as successful as the London one.—Mr. A. Wrenn was of opinion that the Association would do well to supply shareholders with such substances as tartaric acid, citric acid, etc., of which it bought largely.—The Chairman, in reply, said the Association was always willing to supply members with anything appertaining to their business, but it would not be wise to send out lists or quotations as they did not wish to clash with drug firms.—Mr. Dixon wished to know if the Association was prepared to supply ginger-beer in stone bottles.—The Chairman said if chemists would take the business up the Association would supply ginger beer. At one time they had the plant and were prepared to manufacture it, but chemists then seemed to think that trade *infra dig.*, and there was no demand for it.—The motion was then unanimously carried, as was also a motion recommending a dividend of 10 per cent. and a bonus of 2½ per cent.—The two retiring directors, Messrs. A. Gould and G. Goldfinch, were re-elected.—The sum of £50 having been placed in the hands of the directors as a contribution to the Benevolent Fund, and votes of thanks passed to the Chairman, Directors, and staff, the meeting closed.

NEW IDEAS & TRADE NOTES

BEEF-TEA TABULES.

MESSRS. BRAND & CO., LTD., are now supplying what may be termed solidified beef-tea in tablets of an oblong shape, weighing about half an ounce each, which are intended for the rapid and convenient preparation of beef-tea. This is accomplished by dissolving the tablet in hot water, when a brown savoury fluid of an appetising odour and flavour is produced. No other addition is necessary, the makers having added sufficient salt and a little flavouring material of the nature of piquant sauce. Our examination shows that the tabules contain a large proportion of nitrogen, partly in the form of the extractives of beef, and partly in the form of albuminoids. When the tabule is treated with hot water the extractives dissolve, leaving fine flocks of coagulated albumin floating in the fluid. By submitting the product to artificial digestion with acid pepsin practically the whole of the flocks disappear, leaving a nearly clear fluid containing only a small quantity of fat globules. The tabules contain only about 8 per cent. of moisture and 12 per cent. ash, chiefly sodium chloride and phosphate. Owing to the low percentage of water the tabules seem to keep perfectly sweet, and no antiseptic or artificial preservative could be detected by chemical examination. They are each separately wrapped in waxed paper and packed in boxes containing one dozen tabules. The retail price of the tabules is 2½*d.*, each one being sufficient to produce a breakfast cup of stimulating and nourishing drink. On the grounds of economy, convenience and portability the tabules should command a ready sale. They will be specially useful for the busy man in need of a non-alcoholic stimulant, which shall at the same time possess some nutritive value. In character we should say the tabules represent very closely the concentrated product of a beef tea made on modern lines as distinct from the old-fashioned method. In the former the boiling is short and the coagulated flocks of albumin are not strained out. In the latter the boiling is prolonged, and the product being finely strained contains very little nourishing properties, the coagulated proteids being retained on the strainer.

FLY REELS IN SOUTH AFRICA.

MESSRS. MARSHALLS', LIMITED, inform us that Mr. Albert C. Davis, who has lately been representing the firm in South Africa, has just returned to this country after having had a most successful business trip. In this connection Messrs. Marshalls', Limited, desire to mention that in consequence of the large export orders they have received for the "Fly Reels" ("Reel Comforts") and enamelled tube specialties from South Africa, there are many home firms whose orders may not have received quite so prompt attention they have hitherto been recipients of. However, having lately had their existing premises at 27, Red Lion Square, largely extended, embodying additional machinery, they are now in a position to cope with any orders which may arrive in future, however large.

SANITAS EMBROCATION.

THE Sanitas Co., Ltd., have placed this new preparation on the market in green glass stoppered bottles to retail at 1*s.* each bottle, being enclosed in a cardboard case. The embrocation is intended both for human and veterinary use, and inasmuch as it may be diluted with water if necessary without causing separation of its component parts, it possesses an advantage over other immiscible liniments. It is recommended for use in the treatment of strains, rheumatism, etc., and as a valuable stable requisite. Full instructions for use are printed on the labels.

AN UP-TO-DATE OLD FIRM.

MESSRS. E. & H. ALLISON, LTD., 11 and 12, Blanket Row, Hull, have admitted Mr. H. Irving Foster, F.C.S., to the managing directorship of the firm rendered vacant by

the retirement of Mr. Edward Allison. The managing dircctors are now Messrs. W. A. Allison, Fred. E. Johnson, and H. Irving Foster, who each hold a third of the shares of the company. This is one of the oldest firms in the North of England, its records extending considerably over the century, and it is intended to develop it to its fullest extent. It is intended to extend the premises at once by taking in two houses for further laboratory and specialty work.

Market Report and Prices Current

Specially compiled for the Pharmaceutical Journal

LONDON REPORT.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

December 16, 1897.

Business has been somewhat restricted during the past week, partly owing no doubt to the natural tendency to restrict purchases to actual pressing wants until after stocktaking. The most important changes have been a considerable reduction in price of Caffeine and Salts, a further fall in Quinine, and an advance in price of Lithia Salts. Cocaine remains fairly steady. Sulphonal and Phenacetin without change, the same applying to Quicksilver and Mercurials, Iodine and Iodides, Bromine and Bromides. The anticipated further advance in Bismuth has so far not taken place; it is, however, thought possible that the move may come at or soon after the turn of the year. Glycerin, Cod-liver Oil, and Menthol quiet. Acid Citric and Tartaric dull. Cream of Tartar firm and rather dearer. Shellac in fair demand. The following are the prices ruling for articles of chief interest:—

Acid Boracic—Quiet at 24s. per cwt. for *crystals* and 25s. for *powder*.

Acid Carbolic—Is steady at 7d. to 7¼d. per lb. for the 35 to 36° C. *ice crystal* in quantity and bulk packing; 39 to 40° C. ditto being quoted 7¾d.; and 39 to 40° C. *detached crystals*, 8¾d. per lb. *Crude*: 60°, 2s. 2d.; 75°, 2s. 7d. per gallon. *Liquid*: 95 per cent. of pale straw colour 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

Acid Citric—Quiet at 12¾d. per lb. on the spot for crystals.

Acid Tartaric—Dull, and a shade lower for foreign. Quotations nominal at 1s. 1½d. per lb. for English, and 12⅜d. per lb. for foreign.

Ammonia Compounds.—*Sulphate* dearer and closing very firm; grey prompt 24 per cent., London, £8 17s. 6d. per ton. *Chloride* steady at 23s. 6d. to 25s. 6d. per cwt. for the 98 per cent., free from metals, and 28s. 6d. to 32s. 6d. per cwt. for chemically pure. *Bromide* unchanged at 2s. 2d. per lb. *Iodide* steady at 14s. 6d. per lb. *Nitrate*: Pure cryst., 99 per cent., 40s. per cwt.

Atropine—Is firm at 12s. 8d. per oz. for the *Sulphate* and 15s. for the *pure*, good raw material remaining still very scarce and dear. It is thought that any alteration in price of the manufactured article must necessarily be in an upward direction.

Balsam Peru—Is dearer, 8s. 9d. to 9s. per lb. being now the holders' price.

Bromine—Unchanged at 1s. 11d. per lb. in 20-case lots, *Bromides* being also unaltered in value at 1s. 10d. for *Potass. Bromide*.

Barks.—*Bayberry* is offered at 21s. per cwt., *c.i.f.* *Sassafras of Root* is firm, 4½d. per lb., *c.i.f.*, being asked. *Wahoo of Root* scarce at 8½d. per lb., *c.i.f.* *Witch Hazel*: 2½d. to 2¾d. per lb., *c.i.f.* *Cascara Sagrada*: Old bark on the spot is held for 25s. per cwt., new 18s. 6d. *Slippery Elm*: Rough 4¾d. per lb., *c.i.f.*; in 5-lb. bundles 6½d. per lb., same terms.

Bismuth.—So far the expected further advance in price of this article has not taken place, the *metal* being still quoted 5s. per lb., and the *Subnitrate* 4s. 10d. for 10-cwt. lots. Many people are of opinion that an advance to prices formerly ruling is only a question of time.

Borax—Unchanged at 14s. per cwt. for *crystals* and 14s. 6d. per cwt. for *powder* in large bulk.

Caffeine.—The manufacturers have announced the following reduction in prices:—*Pure*: Not less than 100 lbs., 13s. 4d. per lb.; not less than 10 lbs., 13s. 10d. per lb.; less quantity, 14s. 4d. *Citras* B.P.: Not less than 100 lbs., 10s. 6d.; not less than 10 lbs., 10s. 10d.; less quantity, 11s. 2d. per lb. All net cash terms.

Cinchona Bark.—The monthly London sales took place on Tuesday, when 2433 packages of all descriptions were offered. Following so closely on the huge sales in Amsterdam last week, it was not to be expected that the demand would prove very active, and this turned out to be the case. Holders, however, as a rule declined to give way to the "panic" prices, and the bulk of the offerings were bought in at full rates. Demand, however, was but poor, and the sold portion realised about equal prices to those established in Holland last Thursday. *Ceylon*: 261 packages offered and 194 packages sold, according to analysis, *Succirubra*, stem chips at 3¼d. to 4d., good shavings at 4½d., mixed root at 4d.; renewed chips and shavings, good at 4⅛d. to 4¾d. *Officinalis*: Chips and shavings, ordinary to fair at 2¾d. to 3¾d.; renewed ditto, fair at 3⅝d. *East Indian*: Of 427 packages 248 sold, red stem chips and shavings, ordinary to fair at 2¾d. to 3⅜d., broken quill at 3½d., renewed chips and shavings 3⅛d. to 3¼d. Officinalis, renewed chips and shavings, fair to good at 4d. to 6d., good natural mossy quill at 8½d., thin renewed 4½d.; Ledger, mixings at 4⅝d. *Java*: Of 202 bales and 17 cases offered 101 packages sold, Ledger, stem chips at 6⅝d., stout silvery quill at 7d., thin mossy ditto at 5d. *South American*: 687 packages Bolivian cultivated Calisaya offered and 23 bales sold, fair to good quill at 5d. to 7½d. 58 serons soft Columbian bought in. Of 307 bales Cuprea 69 bales sold at 1d. to 1¼d. *African*: 484 bales offered and bought in.

Coal Tar Distillation Products.—*Toluol*: 2s. 6d. per gallon. *Benzole*: 50 per cent., 1s. 11d., 90 per cent. 1s. 9d. per gallon. *Crude naphtha*: 30 per cent at 120° C., 1s. *Solvent naphtha*: 95 per cent. at 160° C., 2s.; 90 per cent. at 160° C., 1s. 8d.; 90 per cent. at 190° C., 1s. 4d. per gallon.

Cocaine.—Market remains in *statu quo*, makers' price nominally 10s. 6d. to 10s. 9d. for best brands, while from second hand it would be possible to shade this price; there is, however, but little doing in the article.

Codeia—Is firm at unchanged prices, say 11s. 3d. to 11s. 6d. per oz. according to quantity.

Cod-Liver Oil—Is quiet, price being nominally 75s. to 77s. 6d. per barrel for best non-freezing *Norwegian* in tin-lined barrels. *Newfoundland* remains practically a dead letter at nominal prices of 2s. to 2s. 6d. per gallon.

Cloves.—Only 40 bales *Zanzibar* offered in auction, and realised 2¼d. Of *Penang* 10 cases middling picked, 1896 import, sold without reserve at 5⅞d. Privately *Zanzibar* are firm at 2⅞d. for January to March, and 3d. for March to May.

Cream of Tartar—Is decidedly firmer, and a good business has been done at dearer prices. First white French crystals having realised 75s. per cwt. on the spot; powder at 77s. to 78s. per cwt.

Ginger.—*Cochin* continues depressed, 313 bags rough being all bought in. Of 191 cases native cut 167 cases sold; small limed, part cut, 27s. to 28s. 6d.; medium and small ditto, 31s.; bold and medium ditto, 44s. 140 bags limed *Japan* bought in at 14s. 6d. 9 barrels *Jamaica* bought in at 78s. to 85s.

Glycerin.—Market remains quiet, prices for best German brands being nominally 55s. to 57s. 6d. per cwt. for the chemically pure white double distilled 1·260 quality in tins and cases.

Iodine—Is still quoted 7½d. per oz., *Iodides* being without change at 9s. 9d. to 10s. 3d. per lb. for *Potass. Iodide*.

Menthol—Is quiet at 7s. 6d. to 7s. 9d. per lb., according to quantity and position.

Lithia.—The two combined makers of this article have somewhat unexpectedly advanced price by about 2s. per lb. for the *Carbonate*, which would bring price of same to about 11s. 9d. per lb., definite list of the actual advanced prices for the various *salts*, has, however, not yet been issued.

Mercurials—Remain unchanged at 2s. 2d. per lb. for *corrosive sublimate*, and 2s. 6d. for *Calomel* in 10-cwt. lots.

Morphia—Remains very inactive at 4s. 3d. to 4s. 6d. for the *Hydrochlorate* powder in quantity and bulk packing.

Nitrate of Soda.—£7 15s. for *commercial* and £8 5s. per ton for refined.

Oils Essential.—*Peppermint*: *HGH* slow of sale at 5s. 6d. per lb. *Japan*: Dementholised quiet at 3s. 3d. per lb. on the spot, whilst for arrival 4s. per lb. *c.i.f.* is the quotation; 40 per cent., 5s. per lb. on the spot; for arrival, 5s. 1½d. per lb., *c.i.f.* *Star Aniseed*: Very dull, with but little

doing; nominal value on the spot, 7s. 6d per lb.; for arrival, 7s. 1d. per lb., *c.i.f* *Cassia*: Practically no business doing nominal value 5s. 3d. per lb. on the spot for 70 to 75 per cent.; 6s. per lb. for 75 to 80 per cent. on the spot, and 5s. 9d. per lb., *c.i.f.* for arrival. *Citronelle*: Quiet at 1s. 3d. per lb. for drums, and 1s. 4d. per lb. for tins. *Lemongrass*: Very firm at 8d. per oz.

Oils (Fixed) and Spirits.—*Linseed* is rather easier at £14 7s. 6d. to £14 10s. for spot pipes, and £14 17s. 6d. for barrels. *Rape*: Since our last this has declined, but closes with more inquiry at £25 for ordinary brown on the spot, and refined at £26 10s. *Cotton*: Steady at £14 5s. to £15 according to make. *Olive*: Spanish, £32; Levant, £31 10s. to £33. *Cocoanut* steady at unchanged rates; £22 10s. for Ceylon on spot, and £30 10s. for Cochin, same position. *Palm*: Lagos on spot, £23. *Turpentine* steady at last week's rates, 23s. 7½d. to 23s. 9d. per cwt. on the spot. *Petroleum* flat at scarcely last rates; Russian, on the spot, 4⅜d. to 4¼d. per gallon; American, on the spot, 4⅜d. to 4½d. per gallon; water-white, 5⅝d. per gallon. *Petroleum Spirit*: American, 6d.; deodorised, 6¼d. per gallon.

Opium.—Market remains quiet and practically unchanged, manufacturing stuff being quoted 8s. 9d. to 9s. 3d. *Druggists'*: 9s. 6d. to 10s. *Soft Shipping*: 10s. 6d. to 12s. per lb., *Persian* being nominally 9s. 6d. to 11s. 3d. The future course of the market depends now more or less upon the fate of the autumn and winter sowings.

Potash Compounds.—*Chlorate* very quiet at 3¾d. per lb. on the spot. *Bromide* firm at 1s. 10d. per lb. *Iodide* unchanged at 9s. 9d. to 10s. 3d. per lb. according to quantity. *Permanganate* dull at 65s. per cwt. for small crystals, and 70s. per cwt. for large crystals. *Prussiate*: Yellow unchanged at 6½d. per lb.; red steady at 1s. 2d. per lb. *Bichromate* steady at 4⅛d. to 4¼d. per lb. *Bicarbonate* unchanged at 30s. per cwt. for crystals or powder.

Quicksilver. — Importers still ask £6 17s. 6d. per bottle, whilst from second hands 6d. per bottle less is wanted.

Quinine.—In face of the less favourable results of the late bark sales in Amsterdam and London, the market has taken a decided turn in a downward direction. Makers' prices for the best brands having been reduced to 1s. 1d., at which figure they will, however, only accept quite moderate orders, and from regular customers only, while there have been sellers from second hand at 12½d. per oz., the favourite brands being, however, no longer obtainable at this figure. There appears to be a strong opinion in well-informed quarters that the market will recover, and that, in fact, before many months we shall again see even higher prices than those lately ruling. Much, however, will naturally depend upon the shipments of bark from the other side, that is, whether these are moderate or excessive.

Roots.—*Dandelion* is very firm at 40s. to 45s. per cwt. *Snake* scarce at 1s. 3d. per lb. *Hydrastis* firm at 2s. 2d. per lb. *Mandrake*: Good quality very scarce; 4d. per lb. nearest value for quantity. *Senega*: Good Western is quiet at 1s. 4d. per lb. *Kava Kava* offers at 8d. per lb. *Sarsaparilla*: Mexican offers from New York at 3d. per lb. *c.i.f.*, Honduras 1s. 4½d. to 1s. 5d. per lb.; Jamaica steady at 1s. 9d. per lb. *Orris* unchanged at 50s. per cwt. for Florentine and 28s. to 30s. per cwt. for good Mogador. *Rhubarb*: A small business doing at last auction's rates. *Jalap*: Good Vera Cruz held for 7d. per lb. *Ipecacuanha* dearer at 7s. 6d. per lb. for Rio and 6s. per lb. for Carthagena.

Saccharin.—Pending results of the legal action now being taken by the Saccharin Corporation there are offers of the article from the Continent at prices tangibly below those quoted by the Corporation, even down to 25s. per lb. for the 350 strength. Buyers are however chary of touching any make but that which claims to be the only one which can be legally sold or used in the United Kingdom.

Shellac.—The last sales of the year took place on Tuesday, when small supplies were offered. There was a fair demand, but the firmness of holders checked business, and less than half of the quantity catalogued was sold. Since the auctions the demand has improved and a good business has been done at steady rates to 1s. per cwt. advance. A total of 840 cases offered and 330 cases sold. *Fine Orange*: 35 cases *Octagon B* offered and bought in, good pale of the mark, but cakey to blocky, at 90s. *Second Orange*: Of 676 cases 247 sold, good bright *SG* in diamond out of condition part blocky, without reserve, at 70s. to 71s., reddish *AA* in circle cakey to blocky at 65s., middling to fair bright *TN* at 61s. to 62s., sickly palish at 61s., reddish livery cakey at 58s., ordinary livery at 53s. *Garnet*: Of 81 cases 61 sold, *AC* good curly cakey at 72s., ditto cakey to blocky at 71s., ruby *OCC* at 62s. *Button*: Of 49 cases 22 sold, pure stamped 1sts and 2nds at 76s. to 80s., ordinary resinous seconds at 61s., coloury cakey 3rds at 53s. Cabled advices from Calcutta report a firmer market, with buyers, December to February steamer, at 63s. 9d., *c.i.f.*

Soda Compounds. — *Crystals* remain steady at 55s. per ton ex ship terms in barrels. *Bicarbonate*: £7 5s. to £7 10s. for the 99 per cent., and 18s. per cwt. for the fully bicarbonated. *Nitrate*: Refined £8 5s. per ton. *Bromide*: 2s. 2d. per lb. *Hyposulphite* unchanged at 5s. to 8s. per cwt., according to brand.

Spices (Various). — *Black Pepper*: 25 bags Singapore sold at 3½d. *White Pepper*: 10 bags fine bright bold Singapore sold at 8½d.; 25 cases very fine ditto bought in at 10d. *Chillies*: 30 bales Zanzibar sold at 27s. 6d. to 28s.; 17 cases fine Japan bought in at 50s. *Capsicums*: 57 bales small round brownish Bombay bought in at 25s. *Cassia Lignea*: 310 bales broken sold, without reserve, at 29s. 6d., and 20 bales at 30s. *Mace*: 20 cases Penang bought in, pickings at 1s. 3½d., good bold 2s. 6d. *Nutmegs*: 10 cases Penang sold, 80's at 1s. 8d., 90's at 1s. 6d., shrivelled 6½d., 106's bought in at 1s. 3d. *Pimento*: Only 6 bags offered, and sold at 3⅝d.

Sulphate of Copper.—Quiet at £15 10s. to £16 10s. per ton according to make and quantity.

MONTHLY STATEMENT OF DRUGS, ETC., WAREHOUSED IN LONDON.

December 1, 1897.

		November.		Stocks, Nov. 30.	
		Arrivals.	Deliveries.	1897.	1896.
Aloes (all kinds)	packages	—	295	4,526	6,266
Balsams ,,	,,	84	73	424	616
Bark, Cinchona	,,	1,049	3,162	17,517	23,456
Quinine Sulphate	ounces	48,832	47,824	1,477,952	1,431,440
Beeswax	packages	—	—	—	—
Camphor	,,	587	694	11,368	12,405
Cardamoms	,,	216	249	462	276
Cochineal	,,	321	155	2,162	2,345
Colombo Root	,,	31	75	15	113
Cubebs	,,	—	5	467	480
Dragon's Blood	,,	—	27	67	72
Galls (all kinds)	,,	325	965	3,950	7,920
Gum, Ammoniacum	,,	—	—	32	43
Arabic, all kinds	,,	1,135	2,023	12,551	12,235
Asafœtida	,,	118	28	528	317
Benjamin	,,	232	547	2,596	3,165
Galbanum	,,	—	—	—	1
Gamboge	,,	11	5	302	207
Guaiacum	,,	57	13	126	44
Kino	,,	2	2	19	25
Mastic	,,	—	3	—	8
Myrrh	,,	52	50	583	606
Olibanum	,,	4	145	1,048	2,861
Tragacanth	,,	145	533	2,880	3,921
Ipecacuanha	,,	66	107	238	488
Jalap	,,	—	11	347	329
Nux Vomica	,,	170	171	149	718
Oils, Castor	,,	253	152	562	741
Olive	,,	40	151	779	957
Aniseed	,,	35	20	147	49
Cassia	,,	45	25	116	20
Rhubarb	,,	181	129	941	522
Saltpetre	tons	1,057	1,616	2,325	2,528
Sarsaparilla	packages	94	64	254	302
Senna	,,	504	668	1,216	2,828
Shellac	,,	2,531	3,926	49,533	33,538
Terra Japonica, Gambier	tons	353	508	1,143	1,414
Cutch	,,	71	90	1,434	1,627
Turmeric	,,	3	93	400	951

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

Sulphonal.—The two principal makers are still accepting from hand-to-mouth orders at 7s. 3d. They insist, however, that this price is not remunerative, and that a tangible advance is inevitable.

MANCHESTER CHEMICAL REPORT.

December 15, 1897.

The approach of the festive season is causing a certain amount of quietude in the giving out of orders in this district. Both Caustic Soda and Bleaching Powder are easier, and re-sale lots of the latter are being disposed of at £5 per ton in quantity, although £5 5s. is the official figure for delivery over next year. White Caustic Soda is quoted £7 per ton. Brown Acetate of Lime continues scarce, and as there appears to be very little on the way, the article is firm at £5 15s. per ton net, ex warehouse or *c.i.f.* Naphthas and Benzols are steady. Sulphate of Copper is rather higher, and in some instances £17 is asked for best brands, delivered here. Yellow Prussiate is firmly held, and Lancashire makers now adhere to 6¼d., even in quantity. Sulphate of Ammonia: £8 13s. 9d. to £8 15s. on rails, Lancashire. Pitch dull at 17s., *f.a.s.*, Manchester. Green Copperas unchanged at 38s. to 40s., *f.o.b.*, Liverpool, and 35s., *f.a.s.*, Ship Canal.

LIVERPOOL REPORT.

December 15, 1897.

Trade generally here has been anything but brisk during the week. Transactions have been few, but prices remain to all intents and purposes those of last week, except in oils, Castor Oil of all kinds being a shade easier, and Oil of Turpentine having suffered two drops in price of 3d. per cwt. each. A rather higher rate for Linseed has ruled since last report, chiefly affecting Cyprus seed, but prices all round may be taken as abnormal, and due chiefly to unchecked diminution in stocks held locally and want of imports. Transactions in Fœnugrec Seed and Teneriffe Cochineal are reported on private terms of a satisfactory kind. The stock of Quillaya Bark now held here is reduced to 5 tons, which are being offered at £26 per ton for Chilian.

Ammonium Salts.—Carbonate continues scarce at 3d. per lb. Sulphate is dearer again, £8 17s. 6d. per ton. Sal ammoniac, 33s. per cwt.

Beesway.—18 packages of Niger wax brought £5 15s. per cwt.

Bleaching Powder.—£5 12s. 6d. to £6 5s. per ton.

Canaryseed—Is in slow demand, price ruling for Turkish 25s. to 27s. per 464 lbs.

Castor Seed.—80 bags Parahyba sold ex quay at 10s. 6d. per cwt.

Copperas—Is still selling at high rates. Lancashire 39s. per ton, Welsh 37s.

Copper Sulphate—Is somewhat firmer and in better inquiry at £16 2s. 6d. to £16 5s. per ton.

Cochineal.—Teneriffe has been selling at steady prices.

Fœnugrec.—Egyptian is reported as selling privately to the extent of 120 bags.

Kola Nuts.—About 60 packages of dried made 2¼d. per lb., ex quay.

Linseed.—Sales are confined to 100 bags Larnaca at 41s. per 416 lbs., with poorer seed at 40s.; 100 bags Turkish at 38s., and 200 bags River Plate at 35s. 6d. per 416 lbs.

Linseed Meal.—50 tons off quality American ex quay sold at £6 10s. per ton.

Oils (Fixed) and Spirits.—*Castor oils* are in poor demand and, owing to large arrivals, are easier in price, Calcutta "good seconds" selling at 3⅝d. to 3⅜d. per lb., ex quay, and French, 1st pressure, at the same figure. *Linseed* and *Cottonseed oils* are in quiet demand, but there is a steady market at last week's rate, namely, 15s. 9d. to 16s. 6d. per cwt. and 14s. 9d. to 15s. 6d. per cwt. respectively. *Spirit of Turpentine*: There are now sellers willing to accept 24s. 3d. per cwt. on the spot.

Quillaya Bark.—3 tons Chilian sold on private terms; for 5 tons in stock £26 per ton is asked.

NEWCASTLE CHEMICAL REPORT.

December 15, 1897.

Soda Ash and Sulphur are in demand on this market, otherwise there is little deviation from the regular run of affairs usually experienced at this season of the year. Prices are maintained, however, fully at tariff rates, as follow:—Sulphur: £5. Soda Ash: 52 per cent., £4 5s. Bleaching Powder, according to markets, £6 5s. to £7 5s. Soda Crystals: 42s. 6d. to 57s. 6d. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Alkali: 52 per cent., £5 5s. per ton.

PARTNERSHIP DISSOLVED.

(From the London Gazette.)

William Edwin Williams, F.R.C.S., and William Gostwych Sargent, L.S.A., Surgeons and Apothecaries, Abertillery, Monmouth, so far as William Edwin Williams is concerned.

RESCINDING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Alfred de Courcy Lyons, Bachelor of Medicine, Aldwick Court, Blagdon, Somersetshire, having paid all debts in full, the Receiving Order and Adjudication is rescinded and annulled.

LATE ADVERTISEMENT.

Tenders for Drugs.

ST. MARY'S HOSPITAL, PADDINGTON, W.

CONTRACT FOR DRUGS, CHEMICALS, DRESSINGS, &c.

The Board of Management hereby invite Tenders for the supply of Drugs, Chemicals, Dressings, &c., during the three months from January 15th, 1898, to April 14th, 1898, both days inclusive. Tenders must be delivered in sealed envelopes, addressed to the Secretary, and marked on the outside "Tender for Drugs," on or before Tuesday, 28th December, at noon. Forms of Tender may be obtained on application to the undersigned.

By Order,
Thomas Ryan,
Secretary.

Friday, December 17.

Reynolds and Branson's Cricket Club, at 7.30 p.m. Smoking Concert at Brayshay's Rooms, Bond Street, Leeds.

Monday, December 20.

Imperial Institute, at 8.30 p.m. "The Petroleum Sources of the British Empire" (illustrated), by Boverton Redwood.

Tuesday, December 21.

Royal Photographic Society, at 8 p.m. "Photo-Mechanical Printing in Connection with the Survey of India," by Colonel Waterhouse.

Personal Notes.

Mr. Alderman H. Bartlett, Local Secretary of the Pharmaceutical Society for Banbury, has been placed on the Commission of the Peace for that Borough.

Miss Dora Mason, youngest daughter of A. J. Mason, chemist and druggist, Bexley Heath, has gained the Blackheath High School Scholarship, of the value of £30, on the results of the Oxford and Cambridge Joint Board Examination.

Mr. James Tate, M.P.S.I., Royal Avenue, Belfast, has been elected President of the Ulster Pharmaceutical Society in room of the late Mr. W. Prott, deceased, of the firm of Messrs. Davidson & Leslie, Belfast.

Mr. Alex. S. Pickering, of Dunster House, Mincing Lane, E.C., has been appointed London Agent to the British Chemical Co., Ld., Clydebank.

Mr. Geo. T. Cooper, Pharmaceutical Chemist, who was formerly with Messrs. John Bell & Co., Oxford Street, W., has passed the B.Sc. examination of the London University.

Dr. Campbell Morfit, whose death was announced in the *Times* last week, was formerly Professor of Applied Chemistry in the University of Maryland, and a scientific adviser of the United States Government. He was the author of several standard works on applied chemistry, including 'Chemical and Pharmaceutical Manipulation,' and had for many years past resided in London.

Mr. William Cowan, inventor and maker of the vaccination shield, writes to say that he has got about 200 replies from chemists through his advertisement in the Journal, asking him to join the P.A.T.A., but he considers it very unfair that manufacturers have to subscribe £5 5*s.* annually and chemists 5*s.* only. It would, he thinks, be more to the Association's success if there was an all-round charge of 10*s.*, as it is not the manufacturer's fault that the cutting is done, and therefore it is unfair that they should have to pay extra.

EXCHANGE Offers & Wants

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books.

'Family Physician,' 4 vols. in two, 16s.; Fenwick's 'Diagnosis,' 2s. 6d.; Ellis' 'Diseases Children,' 1s. 6d.; Byron's Works, 7s. 6d.—Alpha, 34, Church Street, Preston.

'Pharmaceutical Journal,' 75 vols., half calf, complete, from 1842 to 1892. **'Journal de Pharmacie,'** 80 vols., complete, from 1809 to 1858, and from 1863 to 1896 inclusive. **'Year-Book of Pharmacy,'** 23 vols., complete, from 1870 to 1892 inclusive. The above for sale, what offers?—"Cascara," 'Pharm. Journ.' Office, 5, Serle Street, W.C.

'Encyclopædic Dictionary,' quite new and best condition, in 14 numbers, cost £6 10s.; what offers?—Roberts, Chemist, Rusholme.

OFFERED—*(continued).*

Optical and Photographic.

Photographic Mounts, cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000; Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s. 100. Samples free.—Peck, East Dereham, Norfolk.

Miscellaneous.

Teeth for Sale.—2000 odd diatorics. What offers?—Macdonald's, Ltd., Piccadilly, Manchester.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

OFFERED—*(continued).*

Machine for drying pills quickly; can also be used at same time for revolving advertisement; 10s.—J. Eagle, 155, Pentonville Road, London, N.

Two handsome show-jars, 22 in. in height, gold tops, in perfect condition, Royal arms.—149, Junction Road, Upper Holloway, N.

What offers? Show-jar, good condition, Pharmaceutical arms, height 38 in. without cap, and octagon stand. "Chemist," 111, Cold Bath Road Harrogate.

WANTED.

Wanted.—Pharmacopœia, English and foreign, earlier than 1820.—Williams and Norgate, 14, Henrietta Street, Covent Garden, London.

GENERAL INDEX to the PHARMACEUTICAL JOURNAL

A general index to the "**Pharmaceutical Journal**" for the seventeen years ending June 29, 1895—including volumes IX. to XXV. of the 3rd series—will be printed by subscription if a sufficient number of orders are sent in by the end of the year. The subscription price will not exceed one guinea and may be considerably less if a large number of orders are received, as it is not desired to do more than cover the cost of production.

Conditional Orders.—To meet the wishes of several correspondents who suggest that many readers would desire to possess copies of the general index but are not prepared to subscribe more than half a guinea (or even five shillings), a list will be kept of such readers if they will indicate the price they are prepared to pay on the accompanying order form, and send it in at once. If it be possible to produce the Index at the price specified, those orders will be executed in due course; otherwise, they will be regarded as non-existent. No conditional orders, however, can be received after December 31.

SPECIAL NOTICE.—If the work is to be proceeded with, it is necessary that orders should be sent without delay to the

Editorial Department, "PHARMACEUTICAL JOURNAL,"
17, Bloomsbury Square, London, W.C.

ORDER FORM.

Please add my name to the list of subscribers for the proposed General Index to the

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Name..... .....

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Date..... .....

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Price not to exceed..... *per copy.*

NEW IDEAS & TRADE NOTES

MASSAGE AT HOME.

The Matto Chain is an appliance for self-massage, and consists of a double line of balls revolving on their own axes upon a chain of stout wire, which has a convenient holder at each end, by means of which it can be passed to and fro over any portion of the body. It can easily be worked by anyone, and can be folded into so small a space that it can be packed in an ordinary travelling-bag. To use it, one of the holders is taken in each hand, and whilst the chain is kept taut, the balls are rolled gently over the various parts of the naked body. As the balls pass over the muscular tissue it is alternately depressed and relaxed as it receives and is freed from the pressure of each succeeding ball. This stimulates the muscles, induces circulation, and generally invigorates the frame. Almost immediately a redness of the skin appears, a pleasant feeling of warmth and more elasticity of the body is felt, relieving all neuralgic pains and stiffness of the limbs. One of the most important advantages of the Matto Chain is that it does away with the employment and expense of a qualified masseur or masseuse. The retail price of the apparatus is 7*s.* 6*d.*, and it is supplied by Matto, Limited, 32 and 34, Clerkenwell Road, London, E.C.

A PICTORIAL CALENDAR.

Spratt's Patent, Limited, Henry Street, Bermondsey, London, S.E., forward a copy of their 1898 calendar, which is illustrated by portraits of ten celebrated dogs. At the back of each picture is printed a large amount of useful technical information as to the points to breed for. There are also sketches of Indian game fowls, wild ducks, and partridges, and hints how to rear them. The drawings are by specialist artists, and the whole work has been executed in England.

VINOLIA SOAP.

Messrs. Blondeau et Cie advise us that they will be pleased to allow rebate for the difference in the prices of Vinolia soaps and preparations (bought direct), the prices of which have been reduced, upon receiving particulars of quantities held by their customers.

NEW PHOTOGRAPHIC APPLIANCES.

The Thornton-Pickard Manufacturing Co., Ltd., Altrincham, sends an advance copy of the firm's new 1898 Illustrated Catalogue, which is got up in the usual excellent style. It is stated in the introduction to the catalogue "that the sales for 1897 again show an enormous increase upon previous records"; and if the general get-up of the new catalogue is any criterion, it may be anticipated that the record will again be beaten in 1898, for the products of the firm are known to be reliable and generally satisfactory. Particulars are given in this catalogue respecting new apparatus for 1898, among which are a new 5 by 4 size of the Amber Camera; the new Patent Film Carrier, already noticed in these columns; a New Aluminium Shutter specially designed to meet the requirements of those who cannot afford to purchase the Standard Pattern Shutter; also full particulars of the competition for £200 in prizes. Readers should apply at once for a catalogue, which will be sent free by post on application to the firm.

A TRADE AMALGAMATION.

The Amalgamation of two old-established and well-known firms in the wholesale drug trade will take place at the beginning of the new year. Messrs. Willows, Francis, & Butler, of 101, High Holborn, who were established so far back as 1751, just a century and a half ago, will be joined by Messrs. H. Ayscough Thompson & Son, of Worship Street, the makers of concentrated infusions, fluid extracts, and liquor sennæ dulc. (Moir), etc. The style of the new firm will be Willows, Francis, Butler, & Ayscough Thompson, and the amalgamated businesses will be carried on at 101, High Holborn, W.C. New and extensive laboratories and warehouses are in course of erection.

NEWS IN BRIEF

Mr. J. Oldham Braithwaite, Pharmaceutical Chemist, will shortly take up an appointment on the chemical staff of Messrs. W. J. Bush & Co. (Ltd.), Artillery Lane, Bishopsgate, London.

Mr. T. Backhouse Hulke, F.R.C.S., Eng., has been appointed Surgical Registrar to the Middlesex Hospital, as successor to Mr. T. H. Kellock, F.R.C.S., Eng., appointed Assistant Surgeon.

Mr. K. Hebbeler, formerly proprietor of M. Buchner's German pharmacy in Houndsditch, and who is now managing director of the Berkefeld Filter Co., has gone into partnership with Dr. Leins, who had succeeded him in the Houndsditch business. They have jointly acquired the business of W. Schacht & Co., pharmaceutical chemists, of 26, Finsbury Pavement, which they will carry on in addition. The agency for Kronenquelle, the natural mineral water of Obersalzbrunn, has also been secured.

Bolton Pharmaceutical Association.—At a meeting held on December 15, Mr. Teebay in the chair, the Federation circular was the subject under discussion. It was thought that if the Pharmaceutical Society could be strengthened in any way by conferring the title of member on a man who had passed the Minor examination then let it be granted, but if not let the Act remain as it is. As to whether there should be an assistant's qualification or not, after consideration it was unanimously decided that it was absolutely unnecessary, as it would only make competition more keen, not only of the present unqualified assistant, but of the partially qualified man, and how could the public decide between the principal's and the assistant's certificate? And again, was there really a scarcity of qualified men? It was suggested that if the conditions of labour and remuneration were improved, then it would make assistants more content to do assistants' work instead of commencing business on their own account. Again, this partially qualified man would be able to become a manager of a branch shop or store, which would again have the tendency of lowering the standard and conditions of the qualified man. As to the question and the means to be adopted showing who is the legal seller, it was thought that the qualifying certificate should be exhibited in some prominent position, either in the window or the shop, where the individual in charge was either the principal or manager of a branch. The question of holding a social, etc., for the January meeting was postponed. The next meeting will be held on January 19.

Obituary.—Edmund Nicholas Alpe, one of the chief clerks in the Solicitors' Department of the Inland Revenue, Somerset House, W.C., died on December 17. Aged 48.

Cambridge Pharmaceutical Association.—This Association met on Friday, December 17, at the Prince of Wales, Mr. Alderman Deck in the chair, when a most successful smoking concert was given to a very large and appreciative audience. The performers were Messrs. A. G. Peck, E. W. Moss, Ellis Ward, A. F. Heald, O. F. Pink, G. E. Green, A. P. MacAlister, E. F. Church, and H. Spencer. Mr. Saleberg exhibited a phonograph, which afforded much interest, and the usual votes of thanks brought to an end a very pleasant evening.

Mr. Angus Knight, A.P.S., has taken over the business of the late Mr. Wm. Cockshott, of Westgate, Bradford, the oldest established pharmacist in the city, founded in 1807.

Edinburgh District Chemists' Golf Club.—The annual general meeting was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Tuesday, 21st inst., Mr. George Lunan, Captain, in the chair, and the following office bearers were elected for next year:—Honorary President, J. Laidlaw Ewing; Captain, H. D. Alexander; Vice-Captain, George Robertson; Secretary, James Stott, 10, Royal Crescent; Assistant-Secretary, J. G. Robb; Treasurer, W. B. Cowie; and as members of committee, Messrs. Burt, Dey, Laird, Lunan, Lyon, Stewart, and Swan.

Brighton Junior Association of Pharmacy.—On Wednesday, December 17, the last social evening of the above Association was held at the headquarters, Cannon Place, at 9 p.m., there being a very good attendance of members and friends. The Hon. Treasurer, Mr. C. G. Yates, was in the chair, and a capital programme had been arranged under the direction of the President, Mr. C. A. Blamey, to whom the result certainly did great credit.

'The Flora of Berkshire,' by George Claridge Druce, Ph.C., Hon. M.A. Oxon, is nearly ready for publication. The book, which is dedicated by special permission to Her Majesty the Queen, will contain Pp. cc.+644, crown 8vo., cloth, with map; price to subscribers 12*s.* 6*d.* net, to non-subscribers 16*s.* net The publishers are the Clarendon Press, Oxford, and Henry Frowde, London, Edinburgh, and New York.

Spirit of Salts kept on the same shelf as a bottle of medicine was taken in mistake for the latter by Jacob Brand (55), Whitechapel, on December 18, with a fatal result.

Carbolic Acid is again the subject of a rider by a coroner's jury (Wrexham), who, in returning the usual verdict in cases of suicide, recommended a proper regulation of its sale.

London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

December 23, 1897.

Business has, as might have been expected, been extremely quiet during past few days, while the changes in value have been quite unimportant. Sulphate of ammonia again dearer. Quinine and Cocaine quiet. Quicksilver and Mercurials unchanged. Acid Citric dull. Acid Tartaric and Cream of Tartar strong, and dearer. Carbolic quiet. Cod-liver oil weak and tending lower. Shellac more active at higher prices for forward delivery. Codeia steady. Opium and Morphia unchanged. Lithia advance confirmed, but not to the extent advised last week. The following are prices actually ruling for articles of chief interest:

Acid Boracic.—Quiet and unchanged at 24s. per cwt. for *crystals* and 25s. per cwt. for *powder* in large bulk.

Acid Carbolic.—This article has become somewhat inactive at 7d. to 7¼d. per lb. for the 35-36° C. *ice crystal* in bulk packing. *Crude*: 60° F. 2s. 2d., 75° F. 2s. 7d. gallon, *Liquid* 95 to 97 per cent. of pale colour 1s. 2d. per gallon in 40 gallon casks.

Acid Citric—Very dull at 1s. 1d. per lb. for immediate delivery.

Acid Tartaric.—English on the spot, 1s. 1½d. per lb.; foreign, 1s. 1d. per lb.

Ammonia Compounds.—*Sulphate* is firm and dearer at £9 per ton for prompt 24 per cent. London; Hull, £9 2s. 6d. *Bromide*; unchanged at 2s. 2d. per lb. *Iodide*: steady at 14s. 6d. per lb. *Muriate*: crystal, 28s. per cwt. *Nitrate*: 99 per cent., 40s. per cwt. *Sulphocyanide*: 1s. to 1s. 1½d. per lb. as to quantity.

Bismuth.—It is thought possible that at the commencement of the New Year we may see the long-anticipated advance in value to something like the former figure of 7s. 6d. for the *metal* and 7s. 3d. per lb. for the *Subnitrate*. Meantime the price remains unchanged at 5s. and 4s. 10d. per lb. respectively for 10-cwt. lots.

Borax—Dull of sale at 14s. per cwt. for crystals, and 14s. 6d. per cwt. for powder in large bulk.

Bleaching Powder.—Dull at £7 5s. per ton on the spot.

Camphor.—*Crude* is dull of sale. A small transaction for arrival is said to have been done in *Japan* at 88s. per cwt. for February to March shipment, *China* being quoted at 84s. per cwt. *c.i.f.*

Cloves.—Only small business passing privately in *Zanzibar*, the quotations being January to March, 2 3/32d., March to May, 3 3/32d.

Coal Tar Distillation Products.—*Toluol*: 2s. 4d. *Benzole*: 50 per cent., 1s. 11d.; 90 per cent., 1s. 9d. per gallon. *Crude Naphtha*: 11d. *Solvent Naphtha*: 95 per cent. at 160° C., 2s.; 90 per cent. at 160° C., 1s. 9d.; 90 per cent. at 190° C., 1s. 4d. per gallon.

Cocaine.—Market remains exceedingly quiet, makers' price being 10s. 3d. to 10s. 9d., according to quantity and make for the *hydrochlorate*, the price of the *pure* being 1s. 6d. per oz. higher. It would appear probable that after the commencement of the New Year there will be more doing in the article, when a further advance in price is considered not unlikely, bearing in mind the fact that present figure is still very low compared with former value of the article.

Codeia—Is steady at 11s. 3d. to 11s. 6d. per oz., according to quantity.

Cod-Liver Oil.—It is said that there are already offers of new oil on this market for later delivery; at all events, the near approach of the season for it has caused holders of 1896-7 oil to lower their prices in order to move off some of their stocks, but it is doubtful if, with the present holiday feeling, much business will result. Quotations range from 67s. to 70s. per barrel, according to quantity and holder.

Colocynth.—*Turkey* apple is quiet but firm, supply being but moderate; 1s. 1d. per lb. is asked for good.

Cream of Tartar—Is a strong market, and 75s. 6d. per cwt. has been paid for first white *French crystals* in large bulk; *powder*, 78s. per cwt.

Galls—Remain quiet but steady. The available supply of *Persian* is small, and holders are very firm, both for spot parcels and for arrival. For the former 42s. 6d. to 57s. 6d. per cwt. are asked as to quality, *China*, 64s. per cwt. on the spot.

Gum Acacia.—*Picked* qualities are in small supply, but there is but little business doing; such as there is has been done at steady rates at from £6 10s. to £14 per cwt., according to quality. *Turkey sorts*: Fine soft has been done at 85s. per cwt., but for hard rather easier prices would be taken. We hear of a small sale at 62s. per cwt.

Gum Mastic.—The new crop is firmly held, with sales of clean pale tear at 2s. per lb.

Gum Tragacanth.—A dull market and only a small business doing at steady rates. Fine pale is held for £14 per cwt.

Japan Wax—Is rather easier at 38s. per cwt. on the spot.

Lithia.—The advance in price of the *Carbonate* was stated last week to be 2s. per lb.; this was owing to a misunderstanding on part of the agents for one of the makers. Advance has actually been 1s. 4d. per lb., making present price of *Carbonate* 10s. 8d., and the *Citrate Powder* 6s. 1d. per lb. for large quantity in bulk packing.

Menthol.—Market is quiet at 7s. 6d. per lb. for good dry white crystal, both on the spot and to arrive.

Mercurials—Unaltered at 2s. 2d. to 2s. 6d. for *Corrosive sublimate*, and 2s. 6d. to 2s. 10d. for *Calomel*, according to quantity.

Morphia—Very quiet at 4s. 3d. to 4s. 6d. for the *hydrochlorate* salt in powder.

Oils (Essential).—*Peppermint*: *HGH* continues weak, and 5s. 6d. per lb. *c.i.f.* terms would probably buy for quantity. *Wayne County* is also dull at 3s. 9d. to 4s. per lb. in large bulk. *Japan* is firm at 3s. 3d. per lb. for dementholised, and 5s. per lb. on the spot for 40 per cent. *Star Aniseed*: Quiet, with sellers at 7s. 6d. per lb. *Cassia*: Dull, with no business passing on the spot. Quotations for arrival are nominally 4s. 7d. per lb. for 70 to 75 per cent.; 4s. 9d. per lb. for 75 to 80 per cent.; and 5s. 3d. to 5s. 5d. per lb. for 80 to 85 per cent., all *c.i.f.* terms. *Citronella*: Very quiet, both on the spot and for arrival. *Lemongrass* continues very firm but quiet at 8d. per oz.

Oils (Fixed) and Spirits.—*Linseed* is in good demand, and closes very firm at an advance. On the spot pipes London £14 12s. 6d., barrels £15 2s. 6d. *Rape* very quiet and lower at £24 15s. for ordinary brown on the spot, £26 5s. for refined same position. *Cotton* lower, £14 to £14 10s. for refined according to make. *Olive* unchanged, Spanish £32, Levant £31 10s. to £33. *Cocoanut* firm at £22 10s. for Ceylon on the spot, and lower for Cochin at £28 same position. *Palm*: Lagos on the spot £23. *Turpentine* dearer at 23s. 10½d. for American on the spot. *Petroleum oil*: Russian rather firmer at 4 5/16d. per gallon; American, 4½d. per gallon. *Petroleum spirit* unchanged at 6d. per gallon for American.

Opium.—Market remains practically without change at the prices quoted last week.

Phenacetin—Can still be bought at 4s. to 4s. 3d. per lb. according to quantity, both for *powder* and for *crystal*.

Potash Compounds.—*Chlorate* is, if anything, a shade easier, although nominally quotations on the spot are unchanged at 3¾d. to 4d. per lb., according to quantity. *Bromide*: Steady at 1s. 10d. per lb. for quantities less than 1 cwt. *Iodide*: Firm,

with good demand at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bicarbonate*: Steady at 30s. per cwt. for crystal or powder in large bulk. *Cyanide* is firm at 11½d. to 1s. per lb. for 98 per cent. *Oxalate*: Neutral is quoted 5d. to 6½d. per lb., as to make. *Permanganate* is weak at 65s. per cwt. for small, and 70s. per cwt. for large crystals. *Prussiate*: *Yellow* is firm at 6½d. per lb. in large bulk; *red*, 1s. 1d. per lb.

Quicksilver—Is still quoted £6 17s. 6d. per bottle from first-hand, and 6d. per bottle less from second-hand.

Quinine—Continues in *statu quo*. Makers' price remaining nominally 1s. 1d. per oz. for the *sulphate*, they not, however, being free sellers at this figure, while it is thought probable that the next alteration in price will be in an upward direction. Any change which may take place will, however, now hardly be before the commencement of the New Year.

Senna.—There is a small inquiry for *Tinnevelly* kinds, but second-hand stocks appear small, and high prices are asked in consideration of the fact that any demand for the next four weeks will have to be obtained from dealers owing to the postponement of the drug auctions until January 20. A small business has been done in medium *Alexandrian* leaf, which quality is becoming scarce.

Shellac.—Owing to the advance in the Indian Exchange, this market, as well as that of Calcutta has shown great firmness, and prices in all positions have an upward tendency. Buyers hesitate, however, to operate freely at the advanced ideas held by importers and shippers, but sales have been effected on the spot at 63s. to 64s. for *TN Second Orange*, and for arrival November to January steamer there are buyers at 62s., and January to March at 64s. for *A C Garnet*. The speculative market is strong and dearer, with good sales of *TN*, January delivery, at 65s.; February, 65s. to 66s.; and March at 66s. to 66s. 6d. per cwt.

Soda Compounds.—*Crystals* unchanged at 55s. per ton in barrels ex ship terms. *Bicarbonate*: Commercial, 98 to 99 per cent., £7 15s. per ton; pure fully carbonated, 17s. 6d. to 18s. per cwt. *Bromide*: 2s. 2d. per lb. *Acetic*: 29s. per cwt. *Carbonate*: 12s. cwt. for crystal, and 25s. per cwt. for dried. *Hyposulphite* dull at 5s. 6d. to 8s. per cwt. according to make. *Iodide* unchanged at 11s. 7d. per lb. *Salicylic*: 2s. per lb. for powder, 2s. 6d. per lb. for cryst. B.P., and 3s. 10d. per lb. for the physiologically pure. *Sulphite*: 17s. 6d. per cwt. for ordinary crystals, and 22s. 6d. per cwt. for recryst.

Spices (Various).—*Black pepper*: Sales privately of Singapore for arrival, January-March steamer, at 3⅞d. *White pepper* quiet but firm; Singapore, February-April steamer, 7⅛d.; Penang, January-March steamer, 6⅞d.; February-April, 6⅞d; *Cinnamon* remains quiet; usual assortment quoted for arrival, 8⅜d. *Cassia Lignea*: Small private business at 45s. 6d. to 46s. *Pimento* has been in better demand and is rather dearer, with sales at 3⅝d. to 3⅞d. for common to fair.

Sulphate of Copper.—Unchanged at £15 10s. to £16 10s., according to make and package.

Sulphonal.—The two chief makers are still sellers in limited quantity at 7s. 3d. per lb., both for the *crystal* and for *powder*.

Turmeric—Is a very firm market. *Bengal* in good demand, with some considerable business at 14s. per cwt. *Madras* quiet at 17s. to 19s. for medium to good bright finger.

MANCHESTER CHEMICAL REPORT.

December 22, 1897.

There is no change to report in heavy chemicals, although Caustic Soda and Bleaching Powder are easier. Bleach for prompt delivery varies from £5 10s. to £6, soft wood casks, on rails. Of course, sales to cover contracts continue at lower rates. Sulphate of Copper is fairly active at £16 15s. to £17, best brands delivered Manchester. Brown Acetate of Lime is scarce at £6 to £6 2s. 6d. per ton for both Welsh and American. Chlorate of Potash has declined to 3½d., but Bichromate is unchanged. Chlorate of Soda, 4¼d. Aniline Oil and Salt are firm at 9d. and 6½d. respectively. No change in Epsom and Glauber Salts.

NEWCASTLE CHEMICAL REPORT.

December 22, 1897.

The Christmas holidays now approaching are stultifying business in this special line of the district. The market keeps dull in consequence. Late quotations continue to rule as follow:—Bleaching Powder, £6 5s. to £7 5s., according to market. Soda Crystals: 42s. 6d. to 57s. 6d., according to market. Caustic Soda: £7 10s. to £7 15s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

LIVERPOOL REPORT.

December 22, 1897.

In view of the Christmas holidays the market has been inactive. A little business has been done in Oils at last week's rates. Linseed has been selling at full rates for both Turkish and River Plate. Among the miscellaneous sales Sierra Leone Ginger, fresh Kola Nuts, Syrian Fœnugrec Seed, Teneriffe Cochineal, Quillaya Bark, and Chilian Beeswax have gone off well, and realised satisfactory prices. A rather firmer feeling characterises the business in Cream of Tartar and Spirits of Turpentine than prevailed at the close of last week. In Chemicals the only feature worthy of remark is the progress upwards of Sulphate of Ammonia, which has again increased in price.

Ammonium Salts.—Sulphate is now offering at £9 to £9 1s. 3d.

Arsenic.—Powder, £22; lump, £29 15s. per ton.

Beeswax.—Extensive dealings in Chilian are reported, 100 sacks being sold at £6 5s. per cwt. for common, and £6 10s. good medium quality.

Bleaching Powder—Is in slow demand at last week's rates, viz., £5 12s. 6d. to £6 5s. per ton.

Canaryseed—Is only nominal at 25s. to 27s. per 464 lbs. for Turkish.

Cochineal.—Black Teneriffe has been cleared out at former rates, and for the small remainder prices are now asked of from 11d. to 1s. 1d. per lb.

Copperas.—High rates rule for both Lancashire and Welsh, viz., 39s. and 37s. per ton.

Copper Sulphate—Is quiet again at the easier price of £16 per ton.

Fœnugrec Seed.—70 bags of Syrian sold at 9s. 3d. per cwt., ex quay.

Ginger.—Sierra Leone has been changing hands at 17s. per cwt., ex store.

Kola Nuts.—Fresh fruit has been offering in small amount, and has found purchasers at 3½d. per lb.

Linseed.—100 tons of old River Plate sold, ex store, at 35s. 6d. per 416 lbs., and 50 bags of Turkish at 39s. 6d.

Oils (Fixed) and Spirits.—*Castor oils* are steady at last week's price, but demand is quiet. Calcutta and French 1st pressure are both offering at 3⅝d. to 3⅞d. per lb. *Linseed oil* of Liverpool pressure is firm at 15s. 9d. to 16s. 6d. per cwt. *Cottonseed oil*: Liverpool refined is unchanged at 14s. 9d. to 15s. 6d. per cwt. *Spirits of turpentine* is firmer again, and shows signs of again rising in price, being quoted now 24s. 3d. to 24s. 6d. per cwt.

Potash Salts.—*Bicarbonate*: 30s. per cwt. *Bichromate*: 4½d. per lb. *Chlorate*: 3¾d. per lb. *Cream of Tartar* is firmer, 75s. to 76s. per cwt. being asked. *Pearlash*: 30s. per cwt. *Potashes*: 19s. 6d. per cwt. *Prussiate*: 6½d. per lb. *Saltpetre*: 21s. 6d. per cwt.

Quillaya Bark.—1 ton of Chilian changed hands at £26 in store.

Soda Salts.—*Bicarbonate*: £6 15s. per ton. *Borax*: 13s. 10d. per cwt. *Caustic Alkali*: 76 to 77 per cent., £8 15s. per ton; 60 per cent., £6 5s. *Crystals*: £2 17s. 6d. per ton, and somewhat scarce. *Nitrate*: In fair inquiry at 7s. 6d. to 7s. 9d. per cwt.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Joseph John Ashburner and James William Lockie (trading as J. Ashburner & Co.), Tooth Brush Manufacturers, 369 and 390, Hackney Road, N.E., so far as James William Lockie is concerned.

F. Erskine Paton, Leonard D. Gamble, and Geo. T. W. Howison, Physicians and Surgeons, Abergavenny. Geo. T. W. Howison retires, and will in future carry on business as a Physician and Surgeon at 30, Monk Street, Abergavenny.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Horace Charles William Baker, Merchant, trading as W. V. Robinson & Co., at 29, Mincing Lane, E.C., and residing at 6, Morella Road, Wandsworth Common, Surrey.

Edward Lechmere, Dental Surgeon, 27, Belgrave Road, Pimlico, S.W., and 12, Dingwall Road, Croydon, and late of 14, Stratford Place, Middlesex.

James Wright, trading as Wright & Co., Glass Bottle and Earthenware Manufacturer, Moor Lane Potteries and Delph Glass Bottle Works, Brierley Hill, and residing at South Street, Brierley Hill.

Publications received.

The Practice of Pharmacy. By Joseph P. Remington, Ph.M., F.C.S. Third edition, enlarged and thoroughly revised. Pp. xxviii. + 1497, with over six hundred illustrations. Philadelphia: J. B. Lippincott Company. London: 6, Henrietta Street, Covent Garden. 1898. From the Publishers.

L'Euchinina e Suo valore terapeutico, Nell'Infezione Malarica. Ricerche del Dott. Giuseppe Panegrossi, assistente. Milano: Casa Editrice Dott. Francesco Vallardi, Corso Magenta 48. From Messrs. Zimmer & Co.

William Harvey. By D'Arcy Power F.S.A., F.R.C.S., Eng. Pp. 283. Price 3*s.* 6*d.* (Masters of Medicine series, edited by Ernest Hart, D.C.L.) London: T. Fisher Unwin, Paternoster Square. 1897. From the Editor.

Ueber die Verbreitung des Rohrzuckers in den Pflanzen, über seine physiologische Rolle und über lösliche Kohlenhydrate, die ihn begleiten. Von E. Schulze und S. Frankfurt. Reprinted from 'Zeitschrift für physiologische Chemie', xx. Strassburg i. E.: Von Karl J. Trübner, Verlag. 1897.

Regulations IX. International Congress of Hygiene and Demography. Pp. v. + 26.—Exhibition Programme and Regulations, 12 pp.—Provisional Programme, ix. + 29 pp. Madrid: Imprenta de Ricardo Rojas, Campomanes 8. Teléfono 316.

Quantitative Exercises for Beginners in Chemistry. By A. H. Mitchell, B.Sc. (Lond.). Part I. (Elementary Stage). Pp. 55. Price 1*s.* (Cloth). Part II. (Volumetric Analysis). Pp. 29. Price 10*d.* (Cloth). Reading: The National Publishing and Supply Association, Ltd., 26, Bridge Street. 1897. From the Author.

Neuere Mittheilungen über einige Organ-Präparate. I. Thyraden (aus Schilddrüsen). Knoll & Co., Chemische Fabrik. Ludwigshafen a. Rh.

Twenty-eighth Annual Report of the State Board of Health of Massachusetts. xlii. + 920 Pp. Boston: Wright & Potter Printing Co., state printers, 18, Post Office Square. 1897. From the publishers.

GENERAL INDEX

TO THE

Pharmaceutical Journal.

A general index to the "**Pharmaceutical Journal**" for the seventeen years ending June 29, 1895—including volumes IX. to XXV. of the 3rd series—will be printed by subscription if a sufficient number of orders are sent in by the end of the year. The subscription price will not exceed one guinea and may be considerably less if a large number of orders are received, as it is not desired to do more than cover the cost of production.

Conditional Orders.—To meet the wishes of several correspondents who suggest that many readers would desire to possess copies of the general index but are not prepared to subscribe more than half a guinea (or even five shillings), a list will be kept of such readers if they will indicate the price they are prepared to pay on the accompanying order form, and send it in at once. If it be possible to produce the Index at the price specified, those orders will be executed in due course; otherwise, they will be regarded as non-existent. No conditional orders, however, can be received after December 31.

SPECIAL NOTICE.—If the work is to be proceeded with, it is necessary that orders should be sent without delay to the

Editorial Department, Pharmaceutical Journal, 17, Bloomsbury Square, London, W.C.

An Order Form will be found in the Journal for December 18.

Coming Pharmacy Balls.

Thursday, January 6.

Midland Chemists' Assistants' Association Ball, at the Edgbaston Vestry Hall, Birmingham. Hon. Secs.: F. Casson, High Street, Harborne, and E. W. Mann, 97, Bristol Road, Birmingham.

Friday, January 7.

Plymouth, Devonport, Stonehouse and District Pharmacy Ball, at the Town Hall, Stonehouse. Hon. Sec.: F. Maitland, 31, Chapel Street, Stonehouse.

Wednesday, January 19.

Chemists' Ball, at the Portman Rooms, Baker Street, London, W. Hon. Sec.: W. Warren, 24, Russell Street, Covent Garden, London, W.C.

Thursday, January 20.

Midland Pharmaceutical Association Ball, at the Grosvenor Rooms, Grand Hotel, Birmingham. Hon. Sec.: C. Thompson, 159, Stratford Road, Sparkbrook, Birmingham.

Wednesday, February 9.

Junior Pharmacy Ball, at the Portman Rooms, Baker Street, London, W. Hon. Sec.: W. J. Henson, Beulah Hill, London, S.E.

Diary for the Week.

Tuesday, December 28.

Bradford and District Chemists' Association. Social Evening. (Great Northern Victoria Hotel.)

Royal Institution, at 3 p.m.

"On the Principles of the Electric Telegraph," by Professor Oliver Lodge. (First of Six Lectures to be Delivered subsequently on December 30, 1897, January 1, 4, 6, 8, 1898.)

Wednesday, December 29.

Midland Chemists' Assistants' Association, at 9.0 p.m.

Musical and Social Evening.

Exchange Offers & Wants

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Optical and Photographic.

Photographic Mounts, cartes, from 4s.; cabinets, 12s.; 1000 G.B.E. cartes, 12s.; cabinets, 22s. 6d.; 10 by 8 chocolate Oxford lines, 25s. 1000; Plate-sunk mounts, white on grey and cream on white, 8 by 6, 4s.; 10 by 8, 4s. 6d.; 12 by 10, 6s.; 16 by 12, 10s.; 18 by 14, 16s.; 20 by 16, 18s.; 25 by 19, 24s 100. Samples free.—Peck, East Dereham, Norfolk.

OFFERED—*(continued).*

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

OFFERED—*(continued).*

Miscellaneous.

Two 8 gall. Carboys and one 6-gall., cut stoppers, pear-shape, on mahogany stands, Maw's; cheap, or exchange.—Horner, Chemist, Bedworth.

WANTED.

Wanted.—Pharmacopœia, English and foreign, earlier than 1820.—Williams and Norgate, 14, Henrietta Street, Covent Garden, London.

DESCRIPTIVE TRADE INDEX

An Alphabetical List of Advertisers in the 'Pharmaceutical Journal,' designed as a convenient guide for buyers, giving a brief account of the nature of the business done and particulars of the chief specialties in each case.

For Classified List of goods offered by Advertisers see pages at end of this Index.

Acme Chemical Co., Ltd. (The), Tonbridge, Kent, and Carlton Street, Bolton, Lancs.

Telegrams: "Grindrod Tonbridge."

Makers of the well-known "Acme" Weed Killer. It is sold in both liquid and powdered form, the strength of the Liquid Weed Killers being 1 in 25 and 1 in 50. The Powdered Weed Killer is put up in tins, sizes 1, 2, 3, 4, and 5. Carriage is paid on five gallons and upwards and on tins No. 3, 4, and 5.

Addis (R.) and Son.

Makers of the "Everfast" Tooth Brush. This brush is made on an entirely new principle, whereby it is claimed that it is impossible for a single hair to come out. It is patented, and is warranted to be London made, and can be obtained of all wholesale houses and merchants.

Allen and Hanburys, Ltd., Bethnal Green, London, E.

Australian Depôt, 484, Collins Street, Melbourne.

Telegrams: "Allenburys London."

Telephone, Avenue 1172.

This firm are wholesale and export druggists, manufacturers of all Pharmaceutical Products, and sole agents for the antitoxins prepared by the British Institute of Preventive Medicine. Their Special Manufactures are:—Cod-liver Oil, specially refined; Castor Oil, free from odour and all flavour of castor oil; Malt Extract of very superior flavour and high digestive power; Liquid Malt Extract; Malt Extract with Cod-liver Oil, an intimate combination free from taste of cod-liver oil; Tabellæ or Compressed Drugs, in great variety; Capsules of flexible gelatin of all the more important drugs as Blaud's Pill, Guaiacol, Sandal Oil, etc.; Pills: Gelatin, sugar, and "pearl" coated. Jujubes and Pastilles of all kinds manufactured by patent process. Medicated Throat Pastilles; Lozenges, according to the British Pharmacopœia, Throat Hospital, and numerous private formulæ; Medical and Toilet Soaps. Proprietary articles manufactured by Allen and Hanburys are "The Perfected" Cod-liver Oil, prepared by a special and distinct process, whereby all unpleasant qualities are eliminated; Malt Extract and combinations with cod-liver oil (Bynol), and hypophosphites (Byno-hypophosphites). Bynin Amara corresponds to Easton's syrup; Bynin Emulsion is a perfect combination of cod-liver oil and the hypophosphites of lime and soda with liquid malt. Byno Cascara is a reliable preparation of cascara sagrada at once palatable and active. Byno Pancreatin contains the digestive ferments of the pancreatic juice in very active condition, and is especially adapted for preparing peptonised foods. Infants' Foods: A series of foods adapted to the increasing physiological requirements of the infant, known as The "Allenburys" Milk Food (No. 1); The "Allenburys" Milk Food (No. 2); The "Allenburys" Malted Food (No. 3).

Allsop, Arthur, Duffield, Derbyshire.

Telegrams: "Allsop Duffield."

Maker of Surgical Elastic Stockings, Kneecaps, Ladies' Accouchement Belts, Gentlemen's Riding Belts, Leggings, Socks, Wristlets, etc. The stockings can be had in either Wool, Silk, or Thread. Special instructions for measurement are sent on application to the maker.

Apollinaris and Johannis, Limited, 4, Stratford Place, Oxford Street, London, W.

Telegrams: "Apollinaris London."

Telephone, Paddington 214.

The sole importers of Apollinaris, Johannis, Apenta, and Friedrichshall natural mineral waters. Apollinaris, "The Queen of Table Waters," is a natural effervescent and agreeable beverage, which has been placed by the Académie de Médecine of France at the head of all the natural mineral waters examined for absolute purity and freedom from disease germs. It is bottled only at the Apollinaris Brunnen in the valley of the Ahr, Rhenish Prussia. "Johannis," bottled at the Springs, Zollhaus, Germany, Hesse-Nassau. The extensive pump and bottling rooms at Zollhaus evidence the immense demand for this water, which daily increases in favour. The great advantage of a water naturally mineralised over that which is treated artificially consists in the fact that the gas is retained for a longer period. "Johannis," possessing this most valuable characteristic, combined with exceptional purity, is rightly placed in the foremost rank of mineral waters. Apenta is a Hungarian natural aperient water, constant in composition, and possessing the much esteemed excess of the sulphate of magnesia over the sulphate of soda, and unique in its content of lithium, which renders it so useful in gouty cases. Its quality is guaranteed by the fact that it is bottled under the independent scientific supervision of Professor Josef von Foder, Director of the Hygienic Institute, Royal University, Buda Pest, at the Springs, Buda Pest, Hungary. Friedrichshall is a tonic aperient water from Saxe Meiningen, Germany. This old-established aperient water is of great value in the treatment of habitual constipation. A new spring has recently been opened, the water of which has been found in practice to be in every respect equal to that which for the last fifty years has been a favourite aperient with the medical profession on the Continent of Europe and throughout the civilised world.

Association for the Supply of Pure Vaccine Lymph (The), 12, Pall Mall East, London, S.W.

Telegrams: "Darque London." Established 1877.

Dr. Warlomont's and other pure and reliable Calf Vaccine, in tubes, half-tubes, and single vaccination tubes; also Pomade. Every antiseptic precaution carefully observed. Human Vaccine from healthy children also supplied. Edward Darke, Secretary.

Ayrton and Saunders, Warehouses, 149, Duke Street, Factories, 62 and 64, Parr Street, Liverpool.

Telgrams: "Sundries Liverpool." Telephone, No. 423.

Manufacturers of Round, Square, and Oval Cardboad and Willow Boxes; Patent Lint, Plaisters, and Cotton Wool; White, Blue, and Green Flint Medical Glass Bottles; Wholesale Dealers in Surgical Instruments, Trusses, Elastic Stockings, Patent Medicines, etc.; Perfumers and Fancy Soap Makers; and holders

of every description of Druggists' Sundries. Any lines in drugs or chemicals procured and charged at wholesale list prices. Post orders (except for goods or boxes to be made) despatched same day as received. In consequence of increasing business this firm will remove next March into larger premises now being built for them in Hanover Street, with accommodation for over 400 work-people.

Baiss Bros. and Co., Jewry Street, London, E.C., and New Brown Street, Manchester.

Telegrams: "Ipecac London." Telephone, Avenue 4369.

This firm of wholesale druggists and manufacturing chemists was established in 1833. They make a specialty of Concentrated Liquors, also Solid and Liquid Extracts (B.P. and U.S.P.), Cod-liver Oil, Ext. Malt and Ext. Malt and Cod-liver Oil, Granular Effervescent Salts, Essential Oils (English and Foreign), and are makers of all Pharmaceutical Preparations.

Barclay and Sons, Limited, 95, Farringdon Street, London, E.C.

Telegrams: "Yalcrab London" (ABC Code).
Telephone, Holborn 6717.

Messrs. Barclay and Sons, Ltd., have been established upwards of a century and do a large trade in Druggists' Sundries of all kinds, Photographic Apparatus and Materials (makers of the well-known 50s. Hand Camera and Diamond Favourite Camera), Proprietary Medicines, Disinfectants, Perfumery and Toilet Requisites, Cigars, Cigarettes, Lozenges, Mineral Waters, and numerous other Miscellaneous Articles, details of which are given in their price lists, which will be forwarded post free on application.

Baughan and Co., Walthamstow, London.

Telegrams: "Baughan London."

This is a firm of Show-Case Makers and Shop Fitters. Illustrated price-list of Shop Fittings and Stall Plates of the latest designs, free on application.

Bed Support Company (The), Earlsdon, Coventry.

Manufactures the Bed Support, which prevents patients from slipping down in bed and relieves nurses from frequent raising and lifting. Testimonials, prices, etc., may be had on application.

Beecham (Thomas), St. Helens, Lancashire.

Telegrams: "Beecham's Pills St. Helens."

Beecham's Pills are said to have the largest sale of any patent medicine in the world, and Beecham's Tooth Paste also is in great demand. Chemists can have a great variety of advertising matter on application. All parcels are delivered per rail, carriage paid to destination in any part of the United Kingdom.

Benger (F. B.) and Co., Limited, Otter Works, Manchester.

Telegrams: "Bengers Manchester." Telephone, No. 2969.

A firm of manufacturing chemists. They make a specialty of Food Preparations, among which are Benger's Food for infants and invalids, Benger's Peptonised Beef Jelly, Peptonised Chicken Jelly, and Peptonising Powders, Liquor Pancreaticus (Benger), Liquor Pepticus (Benger), Pepsine (Benger), Concentrated Essence of Rennet, Liquor Thyroidin (Benger), Benger's Extract of Red Marrow, etc. This is probably the only firm engaged solely in utilising the natural digestive and other ferments of the animal organism in the preparation of foods and medicines, not an atom of any such ferments being used which they have not themselves extracted from the secreting glands. Their preparations are known all over the world, and may be obtained through all wholesale houses and shippers.

Berkefeld Filter Co., Ltd. (The), 121, Oxford St., London.

Telegrams: "Tubipores London." Telephone, Gerrard 3994.

The Berkefeld Co. is the sole maker and licensee of the patent Berkefeld Filter for the British Empire and Egypt. The distinctive character of these Filters is in the Filtering Medium, which consists of Kieselguhr (the highly-porous silicious skeletons of diatoms) formed into Hollow Cylinders of various sizes. The Filtering Cylinders lend themselves to a variety of applications, such as ordinary Drip-Filters, Syphon, Pump and High-Pressure Filters. The advantages claimed for these filters are:—They are Germ-Proof, and give an abundant supply of Sterile Water; are simple in construction, and can be easily and effectively cleaned and sterilised.

Biggleston (Edwin R.), Mercery Lane, Canterbury.

The proprietor of John R. Hall's Wood Violet perfume. It is put up in bottles, prices ranging from 1s. 6d. to 21s.

Biltor, Limited (The), 93, Oxford Street, London, W.

Makers of the Biltor Pipe, which is claimed to be the least troublesome, coolest, and most hygienic tobacco pipe yet invented. The smoke must pass through the material of the cartridge (a species of filtering paper), and the pipe has received awards wherever exhibited, at Chicago, Bordeaux, Sheffield and Hull.

Blondeau et Cie., Malden Crescent, London, N.W.

Telegrams and Cable: "Blondeau London."
Telephone, 659 King's Cross.

Manufacturers of Soaps, Perfumery, and other articles for the toilet. Amongst their specialties are Vinolia, Vinolia Pomade, Lait Vinolia, Vinolia Toilet Powder, Dentifrice (American and English), Liquid Dentifrice and Tooth Paste (delicately perfumed). Vinolia Soap: Premier, Sulphur, Carbolic, Terebene, Coal Tar, Floral, Medical (balsamic), Toilet (otto), Vestal, and Violette de Parme. The Blondeau Old English Toilet Soaps include Lilac, Clarified Brown Windsor, Honey, Elder Flower, Cucumber and Glycerin, Oatmeal, Rose, Almond and Glycerin, Lily, White Rose and Cucumber. The Blondeau Toilet Soaps (Favourite Brand) include the following: Baby, Glycerin and Cucumber, Cold Cream, Lys de France, Maréchal Niel, Oriental, Heliotrope, Musk Lavender, White Rose and Cucumber, Violet, Lettuce, Marequil, Jequilla, Shampoo, Opoponax, Jasmin, White Rose. The Blondeau Toilet Soaps (Britannia and Diamond Brands) in assorted colours and perfumes. The Blondeau Toilet Soaps (Boudoir Brand), including Buttermilk and Cold Cream and Glycerin. The Recherché Brand consists of Lilac, Heliotrope, and Rose d'Orient. The Vinolia Shaving Requisites include Shaving Sticks and Soaps (Premier Toilet, Vestal), Shaving Foam (Toilet, Vestal) for using with water, Shaving Cream (for use without brush and water). Other lines include Lypsyl (rose-red and white), and Vinolia Brilliantine, Hair-wash (dry and moist), Cosmetic (for the moustache), and Sachets (in sixteen odours). Amongst the Blondeau Perfumes are Marequil, Jequilla, Vinolia Bouquet, Losaria, Amaryllis, White Rose, White Lilac, Lily of the Valley, White Heliotrope, Hyacinth, New-mown Hay, Clematis, Honeysuckle, Jasmin, Millefleurs, Narcissus, Patchouli, Violet, Wallflower, Maréchal Niel, Ylang-Ylang, Ambergris, Ess. Bouquet, Frangipanni, Jockey Club, Musk, Musk Rose, Mignonette, Rondeletia, Stephanotis, Opoponax, Wood Violet, Violette de Parme, Peau d'Espagne, Rhine Violets, Chypre; also Vinolia Eau de Cologne and Lavender Water. Particulars of the special arrangement for the exportation of perfumes in bond may be had on application. Messrs. Blondeau contract with some of the largest American liners for the supply of Toilet Soaps for the use of passengers. The firm's travellers visit every part of the globe.

Boord and Son, Allhallows' Lane and Bartholomew Close, London, E.C.

Distillers, foreign wine and spirit merchants, and methylators. They supply the Finest Orange Wine for preparing orange quinine wine. Quotations for Rectified Spirit, Methylated Spirit, and Finish on application at the above address.

Bourne, Johnson and Latimer, 34 and 35, Furnival Street, London, E.C.

Telegrams: "Drugsund London."

Wholesale and Export Druggists' Sundriesmen, who have been established nearly fifty years, and have an extensive shipping connection in all parts of the world. Their specialitie are Feeding Bottles, Soothing Teats, and Smelling Bottles, and they have always on hand a large stock of Druggists' Sundries of all kinds.

Bovril (Limited), Farringdon Street, London, E.C.

Telegrams: "Fluid London." Telephone, Holborn 538.

The well-known meat extract "Bovril" is prepared by this firm from Prime Ox Beef, and in addition to the stimulating properties

of the meat extract, contains the actual nourishment of the beef itself. Invalid Bovril is specially prepared for use in the sick room. It is put up in porcelain jars and sold by Chemists and Druggists only. This preparation differs from ordinary Bovril in being more concentrated and quite devoid of seasoning.

Bowers Brothers, Blackfriars Road, London, S.E.

Chemists' printers and advertisement designers. They are noted for Novel Designs, Good Work, and Low Prices. Estimates sent free on application.

Bradley and Bourdas, 48, Belgrave Boad, and 6, Pont Street, London, S.W.

Telegrams: "Bourdas, London."

Messrs. Bradley and Bourdas are pharmaceutical chemists, and the proprietors of the Albatum or White Rouge, for cleaning gold and silver plate, etc.; also of the American Cherry Pectoral for Colds, Coughs, etc.

Bramwell (E.) and Son, St. Helens, Lancashire.

Telegrams: "Bramwell St. Helens."

Manufacturers of Hyposulphite of Soda, Sulphite of Soda, Epsom Salts, Glauber Salts, Alum, "Detergent" (for bottle washing, and for softening water), Precipitated Chalk, etc.

Brand and Co., Ltd., 74 to 84, South Lambeth Road, Vauxhall, S.W.

Telegrams: "Brand's Essence London."

Manufacturers of Concentrated Beef Tea, Meat Essences, etc. Numerous Gold Medals have been awarded for the company's specialties, which include Essences of Beef, Mutton, Veal and Chicken, Meat Juice, Digestive Meat Biscuits, Turtle Soup and Jelly, Beef-tea Jelly, Invalid Soups of all descriptions, Savoury Meat Lozenges, Extractum Carnis, Beef Bouillon, Calf's Foot Jelly, Peptone Preparations, Entrées, Potted Meats, Preserved Provisions, Pies, Portable Soups, and Sauces, among the last-named being Brand's celebrated "International A1 Sauce." The firm has a large wholesale trade, both at home and abroad.

Brecknell, Turner and Sons, Limited, Bee-Hive, 31 and 32, Haymarket, London.

This firm are the makers and sole proprietors of Brecknell's Skin Soap (Prize Medal), which they claim to be the sweetest and most wholesome unscented soap in existence. The late Sir Erasmus Wilson and other leading dermatologists have recommended it.

Broadmoor Chemical Co., Cinderford, Glos.

Telegrams: "Broadmoor Cinderford."

Manufacturers of Pure English White Sugar of Lead. The firm was established in 1860, and is managed by D. Bray, F.C.S. Samples and quotations are sent on application.

Browning (A. J.), Hainton Villas, Hainton Square, Grimsby.

Manufacturer of Artificial Teeth for the dental profession, and has had large experience in Mechanical Dentistry for over twenty years. Charges for single teeth or complete sets on application.

Bullock (J. L.) and Co., 3, Hanover Street, Hanover Square, London, W.

Telegrams: "Totemist London."

Pharmaceutical and manufacturing chemists and the proprietors of Bullock's Pepsina Porci and Acid Glycerin of Pepsin. In the latter preparation advantage has been taken of the solubility of Pepsin in Glycerin to produce a convenient and desirable liquid form of this valuable medicine, which will keep for any length of time.

Burrough (James), Cale Street Distillery, London, S.W.

Telegrams: "Burrocale London."

Mr. Burrough is a distiller who makes a specialty of supplying Spirits of Wine, Methylated Spirit and Finish, Orange Wine, Malaga, Sherry, and Port for medicinal purposes at lowest prices for cash. Quotations on application.

Burroughs, Wellcome and Co., Snow Hill Buildings, London, E.C.

Telegrams and Cables: "Burcome London."
Telephone, Holborn 6601.

Manufacturers of pharmaceutical preparations of various kinds. They also pay special attention to research in the Wellcome Research Laboratories under the direction of Dr. Frederick Power, to the development of serum-therapy in the Wellcome Physiological Laboratories, and to the investigation of recently introduced therapeutic agents. Prominent amongst the products of Burroughs, Wellcome and Co. are the "Kepler" Malt Extract; the "Kepler" Solution of Cod-Liver Oil in Malt; "Tabloid" compressed drugs of all kinds, including Blaud Pill, Cascara Sagrada, Soda-Mint, Chlorate of Potash, and, amongst the more recent comers, Caffeine Compound, Eucaine Hydrochloride, Trional, Tetronal, etc. "Tabloid" Brand Medicinal Syrups have been recently introduced. This is a group of products which includes "Tabloid" Hypophosphites Compound, "Tabloid" Chemical Food (Phosphates Compound), and "Tabloid" Easton Syrup. "Tabloid" Animal Substances are prepared, including Thyroid Gland, Thymus Gland, Spinal Cord, Lymphatic Gland, Bone-Marrow, Suprarenal Gland, Salivary Gland, and similar agents under trial in the treatment of disease. These "tabloid" animal substances contain the whole of the organs the names of which they bear, and retain all the active principles. "Soloid" chemicals are now supplied for analysis. These compressed chemicals are used not only for antiseptic solutions and for water, urine, and general qualitative analysis, but also for the preparation of volumetric solutions. Of Therapeutic Serums, Burroughs, Wellcome and Co, now issue the following in both liquid and dry forms:—Antidiphtheria, Antistreptococcus, Antitetanus, Antityphoid, and Antisyphilis. The method of preparing these serums in the dry scale form is one of the many discoveries made in the B. W. and Co. laboratories.

Burrow (W. and J.), The Springs, Malvern.

Messrs. Burrow supply the Alpha brand Malvern waters which are bottled specially for export. They include Natural Malvern (still), Sparkling Malvern, "Malvernia," Soda, Potash, Lithia, Seltzer, Vichy, Lemonade, Ginger Ale, etc.; also Thirst Quenchers for all climates.

Bush (W. J.) and Co., Ltd., Artillery Lane, London, E.C.

Telegrams: "Tangerine London." Telephone, Avenue 1212.

Manufacturing chemists and drawers of English essential oils. This firm supply Pharmacopœia and other Essential Oils in 1 lb. bottles with a guarantee of their quality and purity. They draw all their own essential oils, the following being included in their list:—Ol. Anisi Ang., Ol. Amygd. Essent. Ang., Ol. Anethi Ang., Ol. Anthemid. Ang., Ol. Carui Ang., Ol. Caryoph. Ang., Ol. Cinnam. Ver. Ang., Ol. Copaibæ Ang., Ol. Coriand. Ang., Ol. Cubebæ Ang., Ol. Juniperi Ang., Ol. Menthæ Pip. Ang., Ol. Myristicæ Ang., Ol. Pimentæ Ang., Ol. Santal. Flav. Ang., Ol. Bergamot (extra), Ol. Eucalypti (extra), Ol. Lavand. Flor. (extra), Ol. limonis (extra), Ol. Rosmar. (extra), Ol. Auranti (extra).

Cadbury Brothers, Bournville, King's Norton.

Telegrams: "Cadbury Birmingham (or London)."

This firm occupies a leading position as manufacturers of Cocoa, Cacao Butter, Chocolate and all its numerous combinations. Their "Cocoa Essence" is guaranteed to be absolutely pure, and therefore claimed to be the best preparation of cocoa on the market. Cadbury's Mexican Chocolate is equally pure, consisting solely of the finest cocoa and sugar, slightly flavoured with vanilla. Chocolate Cakes, Chocolate Biscuits, and Chocolate Creams in all varieties, as manufactured by this firm, possess extreme delicacy of flavour and are accordingly in great demand.

Calvert (F. C.) and Co., Manchester, England.

Telegrams: "Calvert, Bradford, Manchester."

Manufacturers and proprietors of Calvert's Carbolic Disinfectants, Soaps, Tooth Powder, Ointment, etc. Eighty gold and silver medals and diplomas have been awarded to this firm for their preparations.

Cerebos, Ltd., Newcastle-on-Tyne, and 3, Maiden Lane, London, E.C.

Telegrams: "Cerebos Newcastle-on-Tyne." Telephone, 1851.

The proprietors of Pepsalia, which is now being extensively advertised. It bears a good profit, and may be obtained from the wholesale trade or at the above addresses.

Chemists' Aërated and Mineral Water Association, Ltd. (The), (Generally known as CAMWAL), 45, Gifford Street, Caledonian Road, N.

CAMWAL HAS BRANCHES AT BIRMINGHAM, MANCHESTER, BRISTOL, HARROGATE AND MITCHAM.

Telegrams: "Rubine London," "Effervesce Manchester," "Purity Birmingham," "Camwal Bristol," "Chemists Starbeck," or "Camwal Mitcham." Telephone, King's Cross 547.

This Association is well known all over Great Britain, leading chemists in every district being interested in this highly successful co-operative concern, which thrives excellently well under the guidance of the Secretary, Mr. H. T. Butler, and the Managers, Messrs. R. R. Groome and F. G. Pirie. The Camwal products are confined to Aërated Waters of every description, for ordinary or medicinal use, and in syphons or bottles, together with flavouring syrups of all kinds. Supplied only to registered chemists and hospitals, the trade yet increases at such a pace that continual expansion of premises and extension of manufacturing and storing facilities are necessitated. In order to enable members to bring these Waters more prominently before the public "Camwal" supplies the following novelties:—1. A syphon-shaped lamp, fitted up for electric light or gas, free of charge outside chemists' shops in suitable positions. 2. A cylindrical papier-mache "Syphon Cooler and Drip Catcher" handsomely decorated, and fitted with interior springs, which grip the syphon securely. This useful article admits of the Waters being iced in the hot weather, and also catches any drips from the spout of the syphon, thus protecting the table-cover.

Christy (Thomas) and Co., 25, Lime Street, London, E.C.

Telegrams: "Christyfen London." Telephone, Avenue 4247.

Wholesale druggists' importers and dealers in all Pharmaceutical Specialties. Among their leading lines are Petroleum Jelly, Sugar of Milk, Adeps Lanæ in seven or eight different qualities, American and Continental Crude Drugs, etc., etc. Many "New Remedies," such as Coca, Chaulmugra Oil, Menthol, Kola, Strophanthus, Pichi, Succus Papaw, the "Morstadt" Cachet Machines, Cachets, etc., have been introduced and largely owe their present popularity to the energetic pushing of this firm. Cachets are now used to such an extent that the firm makes a particular point of meeting the special requirements of all buyers. With this object some twenty different sizes of the necessery apparatus are stocked each in itself complete, and Christy and Co. claim to be the only makers of a kola preparation (Neo Kola) direct from the fresh undried nuts.

Coate and Co., London Brush Works, Axminster, Devon.

Manufacturers of Ivory, Bone, and Wood Brushes, and patentees of the white enamelled Tooth Brushes. A large stock of finished goods always kept ready for shipping orders.

Comaltana Wine Co., Heckmondwike, Yorkshire.

The sole manufacturers of Comaltana Wine, a nourishing and invigorating wine. It is put up in 3s. quart bottles, that also being the protected minimum price. Samples are sent on application.

Cooper and Co. (Messrs.), 80, Gloucester Road, South Kensington, S.W.

Telegrams: "Sinapine London."

Manufacturing chemists, well known as the introducers of the Cachets "Finot," the great feature of these being coloured inscriptions. Cachets are becoming an absolute necessity to the dispensing counter, and are also especially adapted for headache, neuralgia, and other powders. The Catchets can be had either Plain, White, or Delicately Coloured, with the chemist's name and address, or contents, printed in any desired colour. The colours in general use are Pale or Dark Rose, Carmine, Garnet, Sky Blue, Pale Salmon, Black, etc. Cooper and Co.'s Sinapine Tissue (mustard leaflets) are a most cleanly and convenient form of Mustard Poultice, and may be had in either packets or tins. Their Liquor Quininæ Salicylates is also well known as a valuable pharmaceutical product in the treatment of rheumatism, gout, etc. Samples of Cachets are sent free on application.

Corbyn, Stacey and Co., 300, High Holborn and 22, Great St. Helens, London, E.C.

Telegrams: "Colocynth London." Telephone, Avenue 4033.

Wholesale and Export Druggists, Analytical Chemists, and Manufacturers of all Pharmaceutical Preparations. They make a specialty of Gelatin-Coated Pills and in all pills containing Extr. Coloc. Co. "Corbyn's" only is used. Drug List, Pill List, and Perfume List are sent on application, special quotations being made for large quantities.

Cowan, W., 48 and 50, Dundas Street, Glasgow.

Inventor and maker of the Vaccination Shield.

Cox (Arthur H.) and Co., St. Martin's Place, Brighton.

Telegrams: "Cox Brighton."

These manufacturing chemists have for more than half a century made a specialty of pills, and their business is devoted exclusively to the manufacture of them. They are recognised as the original makers of Tasteless Pills to the medical and pharmaceutical professions, both at home and in the Colonies. The management of the factory and the manufacture of the coating is entrusted to the members of the Cox family only.

Cox (H. W.), 10, 11, and 28, Cursitor Street, London, W.C.

Electrician and Maker of Induction Coils and Apparatus for X Rays. English workmanship throughout.

Darton, F. and Co., 142, St. John Street, London, E.C.

Telegrams: "Exceptional London."

Wholesale Manufacturing Opticians and Makers of Spectacles, Microscopes, Stereoscopes, Medical Batteries and Appliances, Opera Glasses, etc., etc., Barometers, Thermometers, Photographic Apparatus, etc., etc.

Davenport (J. T.), 33, Great Russell Street, Bloomsbury, London, W.C.

Mr. Davenport is a manufacturing and pharmaceutical chemist, his chief specialty being Chlorodyne, which was originally made and used by Dr. Collis Browne, of the Indian Army. This preparation enjoys a universal reputation.

Denoul (Jules) and Co., Carlton Works, New Cross Road, London, S.E.

This firm supply Flexible Capsules for home and export trade. They make a specialty of English Sandal Wood Oil Capsules, also Copaiba and Cascara Sagrada Capsules.

Dinneford and Co., 180, New Bond Street, London, W.

Manufacturers of Horse-hair Flesh-gloves, Belts, Bath-gloves, etc. Among their specialties are Gents' and Ladies' Flesh-gloves (in pairs) for dry use only. The ladies' quality is made with light hair and soft pile. The gents' are made with black or grey hair and pile of various degrees of hardness. Their Flesh Straps for dry use are specially useful for rubbing the back, spine, and shoulders, the Bath Straps being adapted for wet or dry use. The Prince of Wales Bath-gloves and Army Pad are most convenient articles for the Bath. The Oxford Washing Pad readily cleanses and softens the hands, and is a most useful emollient. The firm is also the sole manufacturer of "Dinneford's Magnesia."

Distillers' Co., Ltd. (The), Edinburgh.

Telegrams: "Distillers Edinburgh." Telephone, No. 252.

Sole manufacturers of "D.C.L." Malt Extract, now being widely advertised as a proprietary article. It has been eulogised by eminent analysts and members of the medical profession as one of the purest and best digestive and nutritive preparations. It is put up in bottles in two sizes, 1s. 6d. and 2s. 6d., and in specially prepared lever-lid tins in two sizes, 1s. 3d. and 2s., and can be obtained through the usual wholesale and sundry houses.

Duncan, Flockhart and Co., 104 & 106, South Canongate, Edinburgh, and 38 & 39, Snow Hill, London, E.C.

Telegrams: "Dunhart Edinburgh:" "Dunhart London," Telephone, 874, Holborn 282.

Wholesale export druggists, also manufacturers of Chloroform, Pharmaceutical Preparations, and Aërated Waters. The principal items in their export trade are: Chloroform, s. g. 1·490, containing about 1 per cent. absolute alcohol, and practically non-decomposable. There are three grades, viz., from pure alcohol, from methylated spirit, and from acetone, For home trade s. g. 1·497 is usually supplied. Capsules and Perles: Blaud pill capsules, cascara, Easton, etc., 1500 varieties; Baumol Superfatted Soap for medical, nursery, and toilet use; Syrup. Hypophos. Co. (Duncan), Fluid Extracts, Concentrated and Compound Liquors, Preparations of Animal Glands, especially Thyroid and Orchitic Tablets, Antiseptic Dusting Powder and Antiseptic Dermolia Cream, all varieties of Compressed Tablets, Hypodermic Tablets, Pearl-Coated Pills, Heartburn Tablets, Gutta Percha Tooth Stopping, Sulphur Pastilles.

Elephant Chemical Co., Neate Street, Camberwell, London, S.E.

Makers of Disinfectants, Carbolic Powder, Burning and Lubricating Oils, Chloride of Lime, etc.

Elliman, Sons, and Co., Slough, England.

Telegrams: "Elliman Slough." ABC code used.

The proprietors and manufacturers of Elliman's Royal Embrocation, for horses and cattle, also Elliman's Universal Embrocation, for human use for rheumatism, lumbago, sprains, bruises, chest colds, sore throat from cold, stiffness, etc. A special feature of Elliman's Embrocations is that they contain no alcohol or poison of any kind. The trade marks of the firm are the "Lame Hunter" picture and registered label, also the registered label of "Elliman's Universal Embrocation," which are registered in all markets.

Epps (James) and Co., Limited, 48, Threadneedle Street, London, E.C.

Homœopathic chemists. Revised price list sent on application.

"Essets" Sanitary Fluid and Appliances Co., Ltd., 102, High Street, Battersea.

Proprietors and Manufacturers of "Esset's" Non-Poisonous Disinfectants (Fluid and Powder), Soaps, Sulphur Candles, Sheep Dip, etc., etc.

Evans, Gadd and Co., 97, 98, 99, and 100, Fore Street, Exeter, and at 23 and 24, Redcliff Street, Bristol.

Telegrams: "Gadd Exeter." Telephone, No. 7.

This firm does a general Drug Business, and keeps a large stock of Patent Medicines, Druggists' Sundries, etc.; they are also manufacturers of Galenicals, and give special attention to the preparation of attractive Specialties for Counter Trade. A few of their leading lines are Granular Effervescent Preparations, Select Perfumery, Crushed Linseed, Chemical Food, Exonia Brand of Malt Preparations, Chemists' Proprietaries, and Ambrosia. The firm was established over 100 years ago.

Evans, Lescher, and Webb, 60, Bartholomew Close, London.

Telegrams: "Lescher London." Telephone, Holborn 524.

Wholesale and export druggists, manufacturing chemists, dealers in Druggists' Sundries, etc. A few of their specialties are Savarcsse's Capsules (these are not made of Gelatin, but of Membrane), Savar's Cubeb Cigarettes, Hawley's Counter Adjuncts, Cascara-Hawley for constipation, Savar's Coca Wine, Evans' Fluid Extracts, Lescher's 'Recent Materia Mediea,' fourth edition, etc. For other preparations and articles supplied by this firm see Evans, Sons and Co., Liverpool.

Evans, Sons and Co., 56, Hanover Street, Liverpool.

Telegrams: "Basilio Liverpool." Telephone, No. 558.

Wholesale and export druggists, manufacturing chemists, distillers of Essential Oils, Drug Grinders, dealers in Druggists' Sundries, sole consignees of the "Montserrat" Lime Fruit Juice; also dealers in Patent Medicines, Proprietary Articles, Surgical Instruments, Photographic Requisites and Chemicals, Shop Fixtures and Fittings, Show Cases, etc. The following are some of their specialties:—Chlorodyne, Citrate of Magnesia, Concentrated Infusions, Decoctions and Waters, Extracts, Fluid Extracts, Fossiline, Frothine, Fruit Essences, Granular Preparations, Insect Powder, Liq. Santal Flav. Co., Liq. Copaibæ Co., Castor, Cod-Liver, and Olive Oils, Ointments, Oleates, Pearl-coated Pills, Podophyllin Resin, Powdered Drugs, Effervescing Saline, Sal Volatile, Scammony Resin, Soluble Essences of Ginger, Spirit of Nitre, Tinctures, etc., etc. The firm is connected with Evans, Lescher and Webb, London, and Evans and Sons, Ltd., Montreal, who have branches at Toronto, Victoria, Vancouver, Canada, and Boston, U.S.A.

Ewen (James) and Sons, 5, Hatfield Street, Blackfriars, London, S.E.

This firm supplies Ewen's Plain and Benzoated Lard. It is sent out in tins and pots in sizes of 1, 2, 4, 7, and 14 lbs. The tins are free and the pots are returnable. They are also manufacturers of Toilet Soaps, Perfumery, Ointments and Sundries, and only makers of Ewen's "Hare Skins" for capping bottles.

Fentiman (A. J.) and Co., 2, Upper East Smithfield, London.

Dentists and workers in Mechanical Dentistry for the profession, in Gold, Dental Alloy, Vulcanite, Tubes, Celluloid, Gum Section, etc. Repairs also receive special attention.

Fink (Frederick) and Co., 10 and 11, Mincing Lane, London, E.C.

Telegrams; "Finklein London." Telephone, Avenue 2107.

Importers and wholesale drug dealers. Their specialties include Glycerin, Gum Arabic of all descriptions, Dextrine, Gum Tragacanth, Pure Beeswax, Ceresine Wax, and Honey.

Flatters (Abraham), 16, Church Road, Longsight, Manchester.

Mr. Flatters prepares and supplies high-class Microscopical Preparations in marine zoology, botanical and animal histology, also high-class Lantern Slides, illustrative of every branch of natural history. A Pharmaceutical Series of microscopical studies in elementary and advanced botany, comprising forty-eight preparations are published by Mr. Flatters to meet the requirements of pharmaceutical teachers and students and are sent packed in rack-box, price 21s., post free. Lists, etc., sent on application.

Ford, Shapland and Co., 6, Great Turnstile, High Holborn, London, W.C.

Chemists' and general printers, lithographers, engravers, etc. They do a large business in all kinds of Printing and Stationery required by chemists, such as Price Lists, Pamphlets, Circulars, Billheads, Memorandums, Cards, Counter Bills (pictorial and ordinary), Posters, Folding Cardboard Boxes for putting up specialties, and Labels of every description; Prescription Books, Ledgers, and Account Books, Demy and other Wrapping Papers, Sealing Wax, Twine, etc. They also manufacture Sticky and Chemical Fly-papers; Cabinet Papers in boxes and packets, etc. They are also agents for Registration of Trade Marks.

Formalin Hygienic Co., Ltd. (The), 9 and 10, St. Mary-at-Hill.

Telegrams: "Zimmermann London." Telephone, Avenue 2144.

This company makes a specialty of Formalin Disinfectants, their Normal Formalin Solution (plain and scented) being the most practical form for domestic and invalid use. A Formalin Spray Producer is also supplied by the Company, and the "Alformant," an elegant and ornamental lamp for diffusing from Dry Formalin Tablets a harmless antiseptic and disinfectant gas. An Antiseptic for the treatment of wounds is supplied by this firm in the form of Dr. Schleich's Glutol, a fine powdered formalin gelatin; also Glutol Skins for painful and swollen skin surfaces. Particulars of prices, etc., can be obtained on application to the above address.

Fraser (R. D. and J. B.), Princes Street, Ipswich.

Messrs. Fraser buy old or disused False Teeth, the value

being sent by return of post, or offers made and teeth held over until accepted. The firm has been established since 1833.

Fromm's Extract Co., 61½, Fore Street, London, E.C.

Manufacturers and Proprietors of Fromm's Extract of purely vegetable origin, retailed in jars from 7½d. to 3s. 6d. Recommended by the *Lancet*, and a very favourable analysis of the extract was given some time since in the *Pharmaceutical Journal*.

Fullwood (R. J.) and Bland, 31, Bevenden Street, Hoxton, London.

Telegrams: "Fullwood Hoxton London."

Manufacturers of Annatto and Rennet. Their specialities are Fluid Extract of Annatto for colouring cheese and butter, Cheese Rennet Extract, guaranteed to be a pure extract from the Stomach Rennet of New-Born Calves, and not to contain anything artificial. they also make a new Butter Colouring, "Oleo-Butter Colorine," which is purely vegetable, and prepared with oil.

Gibson (Robert) and Sons, Manchester, and 1, Glasshouse Yard, London.

Telegrams: Nosbig Manchester. Telephone, No. 846.

Manufacturing chemists who make a specialty of Lozenges. They have recently introduced New Enamelled and Beautifully Decorated Tins for their Linseed, Liquorice and Chlorodyne Lozenges. Each tin holds seven pounds, and is given with the lozenges, thus affording security for the lozenges keeping in any climate, they are also very suitable for counter decoration. Wholesale houses in or out of London can supply these articles, and price lists may be obtained from the above addresses.

Giles, Schacht and Co., Clifton, Bristol.

Manufacturing druggists. The original preparation, Liquor Bismuthi Schacht, was invented and introduced by Mr. G. F. Schacht. Among other preparations, they make Syr. Cinchonæ Alcoholic, Pepsina Liquida, Pepsina Liq. c. Bismutho, Pepsina Liq. c. Euonymin, Liq. Bismuthi Sedativus, Liq. Podophylli c. Bismutho, Liq. Cascaræ Dulcis, Bi-digestive Malt and Pepsin Fluids, and Infallible Essence of Rennet.

Glaisyer and Kemp, Chemists, Brighton.

Makers of Throat Pastilles (Pastill Menthol Co.), now being introduced to the Medical Profession, and which can be obtained through the Patent Medicine Houses.

Glass-Lined Syphon Co., Ltd., 183a, St. John's Street Road, London, E.C.

Telegrams: "Angellike London."

Manufacturers of Glass-Lined Syphons, patented in Great Britain and abroad, and of Seltzogenes.

Greeff (R. W.) and Co., 20, Eastcheap, London, E.C.

Telegrams: Greeff London. Telephone, 2425 Avenue.

Agents for the therapeutic serums and other preparations of the Société Chimique des Usines du Rhône and the Antidiphtheritic Serum of the Grenoble Institute prepared under the direction of Professor Berlioz. The firm also expects shortly to be ready with the Antituberculotic Serum (see also p. xii.).

Harker (C. R.), Stagg and Morgan, 15, Laurence Pountney Lane, and Arthur Street West, London, E.C.

Telegrams: "Edulcine London." Telephone, Bank 1949.

Wholesale and export druggists, manufacturing chemists, importers and distillers of Essential Oils. The extensive steam laboratories of this old-established firm are principally devoted to the manufacture of all kinds of high-class pharmaceutical preparations, both official and non-official. Special excellence is claimed for their Emulsions of Cod-liver Oil and Petroleum, Easton's Syrup, Syrup of the Hypophosphites, Chemical Liquors, Liquid Extracts by repercolation, Liquor Papain et Iridin Co., Liq. Euonymin et Papain, Liq. Caulophyllin et Pulsatillæ, Liq. Santal Co., Miscible Liquid Extracts, Liquid Annatto, etc. The importation and distillation of Essential Oils form an important branch of the business, the firm of Harker, Stagg and Morgan being well known as special dealers in Otto of Rose, Musk, Vanilla, Tonquin, the Oils of Peppermint and Lemon, Fruit Essences, and harmless colours for confectionery.

Harrington Brothers, Oliver's Yard, 53a, City Road, E.C.

Manufactory: Cork.

Telegrams: "Siccative London."

Manufacturers of Fine Chemicals for Research, Laboratory, and Educational Purposes, Photographic Chemicals of the highest purity, Technical Chemicals for manufacturers, Magnesia Carbonate and Calcined.

Harvey (S.), Limited, 5, Denman Street, London Bridge, London, S.E.

Sole proprietors of Dr. Mackenzie's Arsenical Soap and Wafers. These preparations have achieved a great success, seeing they have only been on the market a few years, and this success is attributed to the High Quality of the special Ingredients contained in the Soap which, it is claimed, while perfectly harmless, cures spots, pimples, freckles, and eczema, and will produce a lovely complexion. It is shipped to all parts of the world, and has a large sale in South Africa and Australia, and is especially recommended for eczema and other cutaneous affections.

Haslewood, A., Buxton, Derbyshire.

Telegrams: "Haslewood Buxton." Telephone, No. 65.

Patentee of the "Spare Hand," a time-saving appliance for use of dispensers and others.

Hayman (Alfred) and Co., 15, Albemarle St., London, E.C

The sole proprietors and makers of Hayman's Balsam of Horehound, recommended for coughs, colds, hoarseness, influenza, asthma, consumption, hooping cough, bronchitis, and all disorders of the chest and lungs.

Hearon, Squire, and Francis, 38, Southwark Street, London, S.E.

Telegrams: "Francis London."

Wholesale druggists, analytical and manufacturing chemists, makers of liquid, solid and powdered Extracts according to the B.P., B.P.C., and U.S.P., Granular Salts, Concentrated Liquors for Syrups, Concentrated Waters, Rolled Pills, uncoated, pearl, or gelatin-coated, Extract of Malt, semi-solid and liquid, Infants' Food Malted, in bulk, Coca Wine, non-excisable, in pint and half-pint bottles, and every class of Pharmaceutical Galenicals. Specialty: Evaporation of Pharmaceutical Liquors *in vacuo*.

Henry (Thomas and William), 11, East Street, St. Peter's, Manchester, England.

Manufacture their widely-known "Henry's Calcined Magnesia" (originally made in 1772), and still prepared with scrupulous care and in the greatest chemical purity. Registered trade mark, "Henry's Calcined Magnesia."

Hewlett (C. J.) and Son, Charlotte Street, London, E.C.

Telegrams: "Pepsine London." Telephone, Avenue 784.

This firm of wholesale and export druggists was established in 1832, and their name is inseparably connected with some typical pharmaceutical preparations. For over twenty years their specialties have been freely endorsed and largely prescribed by the medical profession, and are to be found in the leading pharmacies, not only in the United Kingdom, but all over the world. For many years the firm has done an extensive export trade with India, China, and the Colonies, and it was one of the earliest to take advantage of the concessions regarding the allowance of drawback on exportation of spirituous medicinal compounds. They now annually export many thousands of gallons of Tinctures, Medicinal Spirits, etc., to every quarter of the globe. More recently they have turned their attention to Perfumes, Soluble and Flavouring Essences, etc., and all the packed goods that chemists abroad find so profitable to have put up for them in England ready for sale over the counter. Messrs. Hewlett and Son are Contractors to Her Majesty's Government, Colonial Governments, India Office, and most of the leading hospitals and institutions, both at home and abroad.

Hickisson (J.), 75, Southgate Road, London, N.

The maker of the original "Crystal Palace, John Bond's Gold Medal Marking Ink," for which Forty-four Gold and other Medals have been awarded, besides Diplomas, whilst the firm holds royal

appointments, and also acts as purveyor to the Army, Navy, the Crown Agents for the Colonies and the Admiralty. A special point is made of presenting to each purchaser of the marking ink a neatly-mounted Rubber Stamp with name or monogram. Mr. Hickisson also manufactures Rubber Stamps and Stencil Plates on a large scale.

Hogg (R.) and Son, 1, Southwick Street, London, W.

This firm supplies Aërated Lime Water in syphons and bottles, also Lithia Water prepared from the original formula of Sir A. B. Garrod.

Hooper, Struve and Co, 55, Grosvenor Street, and 26, Davies Street, W.; 7, Pall Mall East, London, S.W.

Telephone, Gerrard 3857.

Proprietors of the Royal German Spa at Brighton, which is the oldest true seltzer water business in this country. The firm has old-established pharmacies in Grosvenor Street and Pall Mall, and manufactures Indiarubber Water Beds and Other Requirements for Invalids. Another specialty is "Carnabyn," a nourishing meat and malt wine compound.

Hora and Co., 47, Minories, London.

This firm supplies hand-weighed and perfectly-folded Seidlitz Powders, prepared according to the British Pharmacopœia from Howard's Seidlitz Powder and English Tartaric Acid. Are also agents for some of the finest brands of Cod-Liver oil.

Howards and Sons, Stratford, Near London, E.

Telegrams: "Chemical Howards London."
Telephone, Stratford 49.

Manufacturing chemists of world-wide fame. Amongst their specialties are:—Æthers—Pure and Methylated, Acetanilid, Benzoic Acid, Bromine Preparations, Citric Acid, Bicarbonate Soda, Bismuth Preparations, Borax, Boracic Acid, Caffeine, Cocaine, Camphor—"Bells," "Blocks," and "Flowers."—Iodine Preparations, Magnesia, Mercurial Preparations, Rochelle Salts, Seidlitz Powder, Quinine and its Salts, and Spirit Preparations (for home trade and shipment under drawback). Photographic and other fine chemicals. Branch house: Hopkin and Williams, 16, Cross Street, Hatton Garden, E.C.

Ickringill's Patent Hygienic and Elastic Cloth Syndicate, Ltd., 35, Devonshire Street, Keighley.

Telegrams: "Ickringill's Elastic Cloth Keighley."

Manufactures a special Cloth which forms a most perfect covering for the body. Abdominal, Body, and other Supporting Belts, Lumbago, Sciatica, and Anti-cholera Belts, Elastic Stockings, Kneecaps, Chest and Lung Protectors, Under Vests, Bandages, and Surgical Elastic Appliances of all kinds are made with this cloth. It can be washed with soap and hot water without impairing its elasticity or stability, and costs much less than the ordinary silk elastic appliances. The bandages do not smell like most rubber goods when used for a short time. Their natural ventilation permits of the escape of the perspiration of the skin, which with ordinary rubber goods is impossible.

Idris and Co., Ltd., Camden Town, London, Oldham Street, Liverpool, and Coleman Street, Southampton.

Telegrams: "Idris London." Telephone, King's Cross 522.

Manufacture Mineral Waters on a very large scale. Although only some five and twenty years have elapsed since the firm was founded by Mr. T. H. W. Idris, the business has since developed and extended at a marvellous rate. The Idris Royal Mineral Waters consist of Soda, Potash, Seltzer, Lithia, Olympia and Quinine Tonic Waters, Ginger Beer and Ale, Orange Champagne, Hop Ale, etc. Other specialties are the Idris Lime Juice Cordial, Pure Lime Juice, Limetta, Fruit Cordials (twenty varieties), and Palatable Lime Juice. English made Syphons are a specialty of this firm; a separate factory being devoted to their manufacture. The tops are of pure block tin; the uniform high degree of finish and the durability of their silver-plated syphons are well known and appreciated by pharmacists who manufacture mineral waters. These syphons are also in extensive use throughout the British Colonies.

Ingram and Royle, Ltd., East Paul's Wharf, 26, Upper Thames Street, E.C., and at Liverpool and Bristol.

Telegrams: "Ingram-Royle London," or "Celestins Liverpool."
Telephone, Bank 5456.

Importers and Exporters of all Natural Mineral Waters, Salts, and Pastilles. Sole agents for Æsculap, Carlsbad, and Vichy (State Springs), wholesale agents for Hunyadi Janos, Franz-Josef, Rubinat, etc,, etc. Price list and pamphlet on "Natural Mineral Waters: Their Properties and Uses," will be sent post free on application.

Ismay, John, and Sons, Newcastle-on-Tyne.

Telegrams: "Ismays Newcastle-on-Tyne." Telephone, No. 1434.

Manufacturing analytical chemists and makers of high-class pharmaceutical preparations, dealers in drugs, pure chemicals, and druggists' sundries. Specialties: Petroleum Emulsion with Hypophosphites and Compound Syrup of Figs. The firm has been established nearly a century.

Jakson (John) and Co., 17, Philpot Lane, London, E.C., and Mitcham Road, West Croydon.

Manutacturing perfumers, makers of Mitcham Lavender Water, Mitcham Oils, etc., prepared from Mitcham flowers. Terms on application.

James (R. J.), Retford, Notts.

Mr. James is the grandson of the inventor of Lieut. James' Blister for Horses, which is now prepared by him according to the original recipe, and is supplied by most of the leading wholesale houses. Agents for the Colonies are appointed by the manufacturer.

Jameson (W.), 92, Newington Butts, London, S.E.

Proprietor of Jameson's Arsenical Complexion Soap. Each tablet of this soap is warranted to contain a sufficient quantity of arsenic to prevent prosecution under the Food and Drugs Act, and the proprietor undertakes to defend any chemist against prosecution under the Pharmacy Act, provided he himself has fulfilled the statutory obligations. Holders of this article on notifying the proprietor of the fact are supplied with a warranty, said to be a certain protection against prosecution; also a supply of labels for complying with the Pharmacy Act.

Jeffery and Co. (late Allchin), 94, Richmond Road, Barnsbury, London, N.

Manufacturing chemists, sole proprietors of Allchin's Salts (put up in 6d. and 1s. bottles), also Allchin's Ammon. Monocarb. Odorif., and Allchin's Ol. Flavæ Conc., Ol. Rosæ Conc., Nervine Powders, etc. These articles are listed by most of the leading wholesale houses.

Jewsbury and Brown, Ardwick Green, Manchester.

Telegrams: "Oriental Manchester." Telephone, No. 2498.

Manufacturers of all kinds of Aërated Beverages for Home and Export. Correspondence with shippers is invited, as their goods are bottled and packed so as to reduce leakage and breakage to practically nothing. Complete price-lists are sent free on application.

Johnson, Matthey and Co., Ltd., Hatton Garden, London.

Telegrams: "Matthey London" (ABC and A1 codes).
Telephone, Holborn 6568.

Manufacturers of Silver Nitrate, Gold Chloride, Caustics, Chemical Reagents, Laboratory, Mining and Assaying Apparatus, refiners of Gold, Silver, and Platinum, assayers and metallurgical chemists, manufacturers of Platinum Apparatus.

Judd and Manners (successors to Crocker and Co.), 76, Cannon Street, London, E.C.

Telegrams: "Judd 76 Cannon Street London."

Chemists' Valuers, Transfer Agents, and Accountants.

Kay Brothers (Limited), St. Petersgate Mills, Stockport.

Telegrams: "Kay Stockport."

This firm, founded in 1786 and incorporated in 1887, are the manufacturers of numerous specialties, including Kay's Compound

Essence of Linseed ("Linseed Compound," trade mark); Kay's Tic Pills, "Linum Catharticum" Pills, Throat Lozenges, Sapo Lini (linseed toilet soap); Coaguline (a transparent cement); Klinx (a white cement); Cue Cement (for tipping billiard cues); Lava (a fusible imperishable cement for iron and stone work); Cheshire Bird-Lime (in bulk and in tins); Sticky Fly-Paper Materials; Carbolic Disinfecting Powder, all strengths, in bags, casks, and dredger boxes; Soluble Disinfecting Fluid, in bulk and bottles. The trade will be supplied with show tablets, bills, specimens, etc. Special terms on application.

Kearsley, C. and G., North Street, Westminster, London, S.W.

Proprietors of Kearsley's Original Widow Welch's Pills. Special quotations to shippers and for large quantities.

Keene and Ashwell, 74, New Bond Street, London, W.

Telegrams: "Keenwell London."

Manufacturing homœopathic chemists. "Perloids" is the trade mark name under which they have introduced a new form for the administration of Homœopathic Medicines, each Perloid containing one dose. The Camphor Perloids are claimed to be better and stronger than the Pilules, and just as strong as the Tincture. Eucalyptus Perloids are also most convenient for administering the oil. Perloids are put up in chests and cases of various sizes. Showcases, Agents' Counter, or Wall Cabinets are supplied in great variety, a specialty being the "Combination" Agent's Showcase. Tinctures and Pilules and other pharmaceutical galenicals are also prepared.

Kemp (W.) and Son, Horncastle.

Telegrams: "Kemp Druggist Horncastle."

Manufacturing chemists, wholesale druggists, drug grinders and importers. In addition to the manufacture and sale of Pharmaceutical Preparations, Drugs, and Chemicals, both for home and export trade, etc., a large trade is done in Opium, Saffron, Cod-Liver and Olive Oils, Copaiba, Sicilian Essences and Sulphur, Essential Oils, Honey, Beeswax, Gums, Continental Herbs, Perfumes, etc. A specialty of the firm is the production of Pure Crushed Linseed and Linseed Meal.

Kühn (B.), 36, St. Mary-at-Hill, London.

Telegrams: "Carmines London." Telephone, Avenue 5976.

Sole consignee and sole licensee for the United Kingdom, British Colonies and Possessions, for a large number of important new therapeutic remedies. These include Chinosol, a powerful antiseptic; Tannalbin, an intestinal astringent; Diuretin (Knoll), a diuretic; Papain (Finkler); Colchicine Salicylate Capsules; Ferropyrin (Knoll); Exalgine (Brigonnet); Logan's Therapeutical Preparations (Knoll), viz., Thyradén, Heparadén, Medulladén, Lienadén, Ossagén, Onaradén, Pancreadén, Prostadén, Renadén, Suprarenadén, Testadén; Ethyl Chloride (Bengué), supplied in glass bulbs with curved and straight neck combined; and Anestile (Bengué), a mixture of ethyl and methyl chlorides, supplied in nickel-plated copper cylinders.

Labern (H.) and Son, Jenner Road, Stoke Newington, N., and 25, Bouverie Street, London, E.C.

Wholesale perfumers and proprietors of Labern's Flower of France. Their perfumes include all the fashionable and popular odours, and are put up in the newest styles, the firm making a specialty of high-class colour-printing for labels. Amongst their special lines are elegant Satin-lined Cased Perfumery and Fancy Boxed Perfumery of all descriptions for Christmas trade, also 6d. and 1s. lines in great variety, with labels printed without makers' name. The firm, which was originally established in 1841, issues a protective agreement to customers, particulars of which will be sent on application.

Lambert (W.) and Co., 173, Seymour Place, London, W.

The sole preparers of Dr. Scott's Bilious and Liver Pills. These are put up in a Green Bottle, wrapped in Green Paper.

Lazenby (E.) and Son, Ltd., 18, Trinity Street, London, S.E.

Telegrams: "Trinity London." Telephone, Hop 616.

This firm make a specialty of Lazenby's Soup Squares (Mulligatawny, Gravy, Julienne, etc.) for making fresh soup or improving home-made stock. It is claimed to be the most economic, convenient, and portable form of soup, each square producing a pint and a half of strong nutritious liquid.

Leo and Co., 8, Creechurch Lane, London, E.C.

Telephone, Avenue 4279.

Manufacturers of Compressed Chlorate of Potash, Chlorate of Potash and Borax, etc., etc. These are supplied by all the wholesale houses, or quotations will be given for large and small quantities on application.

Levermore (Aug.) and Co., 34, Lime Street, London, E.C.

Telegrams: "Levermore London" (ABC Code).

Dealers in a Precipitated Chalk (Creta Præcip., P.B.). They also supply Prepared French, Finger, Billiard, and Coloured Chalks and Crayons of all descriptions.

Liebig's Extract of Meat Co., Ltd., 9, Fenchurch Avenue, London, E.C.

Telegrams: "Liebig's Co. London." Telephone, 83 Avenue.

Manufacturers of Liebig Company's Extract of Beef, signed J. v. Liebig in blue, the original and only Liebig's Extract with which the inventor ever had any connection. Also a new invalid food called Peptarnis, which embodies all the latest scientific discoveries in regard to invalid food. It is easy of assimilation, palatable, and highly nutritious.

Lincoln and Midland Counties' Drug Company (The), Lincoln.

Telegrams: "Lindum Lincoln."

The sole proprietors and makers of Clarke's Blood Mixture. It may be procured from all wholesale patent medicine houses or from the proprietors.

Lindsey and Sons, 32, Ludgate Hill, London, E.C.

Manufacturers of Trusses. Illustrated price list sent post free to any address on application.

Lloyd, A. and Co., 3, Spur Street, Leicester Square, London, W.C.

Proprietors and manufacturers of A. S. Lloyd's Euxesis for Shaving without soap, water, or brush.

Lloyd, T. H., and Co., Leicester.

Offices: 86, High Street. Warehouse: Town Hall Lane.

Telegrams: "Colloid Leicester." Telephone, No. 65.

Wholesale Manufacturing Chemists and Export Druggists. Importers of every description of Drugs and Chemicals. Manufacturers of Fluid Extracts, Concentrated Infusions and Decoctions, Tinctures of all kinds, Concentrated Liquors for Tinctures and Syrups, Bonded Tinctures for Exportation, Medicated Lozenges of all descriptions. These are all carefully prepared in the own laboratory under the supervision of a fully-qualified Pharmaceutical Chemist. Dealers in all kinds of Sundries, Chemical and Surgical Appliances, and Surgical, Dental, and Scientific Instruments. Manufacturers of the celebrated "Lloyd's Leicester" Soluble Pearl-Coated Pills, Compressed Tablets, "Colloid" Capsules, "Bi-Conical" Horse Balls, "Compressed Flowers," and every description of Packed Goods for Chemists. The full name and address should be stated on all Indents forwarded through Merchants and Shippers.

Lonsdale Bros., 22, Goswell Road, London, E.C.

The specialty of this firm of photographic engineers is the supply of Camera Components made of seasoned mahogany, and glued up and machined for amateur finishing. Complete sets of woodwork and fittings for constructing a ¼-plate or pocket camera and three double slides are supplied for twenty shillings.

Lorimer and Co., Britannia Row, Islington, London, N.

Telegrams: "Calisayin London." Telephone, King's Cross 7524.

Manufacturing chemists and wholesale druggists, importers, exporters, etc. They supply all kinds of Chemists' Counter Specialties, drugs in bulk, etc. Among some of their new preparations are

Rennet Powder, St. John's First-Aid Lotion and Embrocation, Fluid Beef, Castile Soap, for Toilet, St. John's Germicide Soap, Nelson's Invalid Wines, Anti-rheon (a remedy for piles), and Velo Skin Lotion, Petroleum Emulsion, Beef Extract, "Lion Cologne," and they are also agents for Miller's American Milled Soaps. Chemists' Specialties are supplied with buyer's name only on labels, when so ordered.

Macdonalds, Ltd., 29, Piccadilly, Manchester.

This firm does Mechanical Work for the Dental Profession and teaches Surgical and Mechanical Work to Students and Improvers. Dental Businesses and Dental Materials are also bought and sold.

Macfarlan (J. F.) and Co, 93 and 109, Abbeyhill, Edinburgh, and 9 and 11, Moor Lane, Fore Street, London, E.C.

Telegrams: "Morphia Edinburgh (or London)."
Telephone, 198 Bank (London).

Manufacturing chemists, who make a specialty of Alkaloids and other Fine Chemicals. They are particularly noted for their Opium Products, including Morphine and Codeine, and their salts; also for their Pure Chloroforms, Anæsthetic Ether, Chrysophanic Acid, Salicin, and Beberine Sulphate, to single out a few items only. Of late years, too, they have come to the front as manufacturers of Antiseptic Dressings and Appliances, as used in the Listerian System of Surgery. They were the first to prepare and sell these Antiseptic Surgical Dressings, having commenced the manufacture under the personal supervision of Lord Lister, P.R.S.

Marshalls', Limited, 27, Red Lion Square, London, W.C.

Works: Henfield, Sussex.

Telegrams: "Oddments London." ABC Code used.

Manufacturing Chemists, Perfumers, Importers and Exporters of English and Foreign Pharmaceutical Products and Accessories. Sole agents for the "Sterling" Tablet Machine and Graduated Measures with Racks, Hill's Cajeput Jelly, Louis Chapuis' Perfumery (Grasse and Paris), and the Marvine Geloids, and Proprietors of Marshalls' Reel Fly Catchers. Original and largest fillers of Enamelled Collapsible Tubes for the trade.

Mather (William), Ltd., Dyer Street, Hulme, Manchester.

Telegrams: "Mathers Hulme Manchester."

Manufacturers of the Royal Balsamic Plaisters, as supplied to the Army and Navy at Scutari Hospital. Chemists' own Specialty Plaisters of every kind are made to order, also Fly-Papers, the firm being the oldest manufacturer of Chemical Fly-Papers in the United Kingdom. The London agents are Messrs. Mace and Haldane, 94, Milton Street, E.C.

Matto, Limited, 32 and 34, Clerkenwell Road, London, E.C.

The makers and proprietors of the Matto Chain for Massage at Home. It is said to be used by Sandow and by athletes generally, and of great benefit in Liver complaints, Rheumatism, and all nervous disorders. Wholesale only from the firm.

Maw (S.), Son and Thompson, 7 to 12, Aldersgate Street, London, E.C.

Telegrams: "Eleven London." Telephone, Bank 232.

Surgical Instrument makers and Druggists' Sundriesmen. With the exception of drugs and chemicals, all that a chemist requires in the way of business, both for use and ornament, may be obtained from this firm. The entire Fittings of his shop, the Glass Cases, Show Carboys, Scales, Weights, Mortars, Measures, Presses, Bottles, Boxes, and every other Implement and Utensil of the trade are provided; also Lint, Dressings, Plaisters, Perfumery, Patent Medicines, Sponges, Toilet Bottles, Brushes, and Fancy Goods of all kinds. Surgical Instruments of every conceivable kind are manufactured by this firm, special attention being given to the Antiseptic Sterilisation of instruments. The production of Artificial Limbs and the manufacture of Spinal and other Deformity Apparatus, and Boots and Shoes for cripples are notable features of the firm, Sterilisers, Syringes, Bronchitis Kettles, Beef-Tea Apparatus, Pill Rollers, and a variety of other goods are also supplied.

Mawson Filter Co., 137a, Pilgrim Street, Newcastle-on-Tyne.

The Proprietors and Manufacturers of the "Mawson" Filter charged with special filtering medium (not ordinary charcoal), specially prepared and arranged by layers in proper strata to secure filtration.

McKesson and Robbins, 91, Fulton Street, New York, U.S.A.

Wholesale druggists and manufacturing chemists, and one of the oldest drug firms in America. As dealers in Crude Drugs they occupy a prominent position, but in addition to the regular drug business the firm carries on a large trade in Patent Medicines and Druggists' Sundries. Cork Cutting is also carried on, and they probably possess the largest stock of Sponges in the United States. Besides their English trade they also have representatives in South America, Mexico, South Africa, Australia, and India, with each of which countries considerable business is transacted. The firm is best known in England for their Gelatin-capsuled Pills, in which line they were the pioneer house. The pills are manufactured so as to ensure absolute accuracy in dosage, a 5-grain quinine pill, for instance, containing within 1/50 grain of the specified amount of active ingredient. The coating of these pills will remain permanent in any climate. They make a special brand of hydrogen peroxide, termed Pyrozone, and also supply Ethereal Solutions containing 5 and 25 per cent. of pure H_2O_2 respectively. Among the other specialties of this firm are the beautiful preparation Compound Stearate of Zinc, Tartarlithine, an Acid Lithium Salt, and Oleo Stearate of Zinc. Messrs. S. Maw, Son and Thompson, Aldersgate Street, London, E.C., are the British Agents for this firm.

Mene Towel Co. (The), 43, Barbican, London, E.C.

This company manufactures the Halfpenny Mene Towels for Ladies (Nos. 1, 2, and 3). They are antiseptic and absorbent, and it is claimed will last twice as long as any penny towel. They can be obtained from almost any wholesale house.

Moores, De Saulles and Co., Wordsley, near Stourbridge.

Manufacturers of Microscopical Cover Glasses and Slides, and all kinds of Photographic Glass Goods. Price list sent on application.

Mosquera-Julia Food Co., 21, North Audley Street, Grosvenor Square, London, W.

Telegrams: "Cascara London." Telephone, Gerrard 5196.

Chief Office, Detroit, Mich., U.S.A. Parke, Davis and Co., sole Agents.

Mould and Tod, 3 and 4, St. James's Square, Edinburgh, Scotland.

Telegrams: "Mould Edinburgh." Telephone, No. 116.

This firm of Medical Label Printers was established in 1825. Estimates and samples are sent free on application.

Mumford (G. S.), Farringdon Road, London, E.C.

This firm supplies Crushed Linseed, Linseed (tea), Starch Powder, Fuller's Earth, Precipitated Chalk, "White Earth," for toilet purposes, Liquorice Juice, etc. Carriage is paid to railway stations within 200 miles of London (or allowance made for distances beyond) on a total weight of 112 lbs. and upwards of above-mentioned articles.

Newball and Mason, Nottingham.

Telegrams: "Extract Nottingham." Telephone, No. 1532.

Well known for their Extract of Herbs, Ginger Extract, Essence of Coffee, and Wine Essences. The last-named are being specially pushed in view of approaching Christmas festivities.

Newbery (F.) and Sons, 1 and 3, King Edward Street, Newgate Street, London, E.C.

Telegrams: "Newbery London." Telephone, Holborn 6905.

Importers and exporters of British and Foreign Goods, Druggists' Sundries, etc. They are the sole British agents for Ayer's Medicines, Bromo-Soda, Cascarine Leprince, "Green Mountain" Asthma Cure, Ingluvin, Loze's Filter Papers, Trommer Malt

Extract, W. R. Warner and Co.'s Preparations, Dr. Jayne's Remedies, etc. Among other specialties are Berdoe's Perfumes, Newbery's Coal Tar Soap, "St. Paul's" Perfumes, Valentine's Meat Juice, Nerve and Brain Salt, etc., etc. The firm has been established over 150 years.

Newsholme, G. T. W., 27, High Street, Sheffield.

Telegrams: "Pepsine Sheffield." Telephone, No. 118.

This business is that of a manufacturing pharmaceutical chemist, and the specialties offered include Fluid Nitrite (a substitute for Spt. Æther. Nit.), Gluten Bread, Neutral Ipecacuanha, Glycerole of Pepsin, etc., etc. Chemical, microscopical, bacteriological, and other apparatus are also largely stocked. Of special interest at the present time are the Antiseptic Inhaler and special sets of slides for pharmaceutical students.

O'Brien, Thomas, Slater Street, Liverpool.

Manufacturer of Self-Closing Check Tills, suitable for quick cash trade. Fourteen days' trial allowed before purchase. Prices, without Coin Exhibitor, £3 net, or with Coin Exhibitor £4 10s. net.

Orridge and Co., 32, Ludgate Hill, London, E.C.

Chemists' Transfer Agents and Valuers. Valuations have always been a prominent feature with this firm, whose announcements have appeared in the *Pharmaceutical Journal* since the year 1846.

Palmer and Co., Ltd., Stratford, London, E.

Sole licensees and manufacturers of Dr. Trestrail's Patent Carbolic Disinfectant Night Lights, which clear the atmosphere, act as a disinfectant, and are beneficial in cases of whooping cough, influenza, and bronchial catarrh.

Parke, Davis and Co., 21, North Audley Street, and 34, North Row, Grosvenor Square, W.

Telegrams: "Cascara London." Telephone, Gerrard 5196.

Manufacturers of Fluid Extracts, Normal Liquids, Compressed Tablets, Sugar- and Gelatin-Coated Pills, Tablet Triturates, Digestive Ferments, Taka-Diastase, etc., etc., also Sole Agents for the Mosquera-Julia Food Company. The Chief Laboratories of the firm are at Detroit, Mich., U.S.A.

Peacock's Ovaline Soap Co., Ltd., 145, Queen Victoria Street, London, E.C.

Telegrams: Ovorum London.

The proprietors and manufacturers of "Ovaline," claimed to be the only soap prepared with yolk of egg. It is sold in 4d., 6d., and 8d. tablets, and 1s., 1s. 6d., and 2s. boxes, at a profit of 33 per cent., the prices being protected by the P.A.T.A. A profit of 50 per cent. on the outlay. The general get-up is unique, the colour of the boxes being heliotrope, light blue and cream, making a very effective display. Sample boxes and prices are sent on application.

Pears (A. and F.), Limited, 71 to 75, New Oxford Street, London, W.C.

Telegrams: "Pears London." Telephone, Gerrard 2585.

Soapmakers by special warrant to the Queen and Prince of Wales. Twenty highest awards, including the Gold Medal at Paris in 1889, have been awarded to this firm, which has been established more than a century.

Peck, E., East Dereham, Norfolk.

Wholesale chemist and dealer in Photographic and Optical Goods and Perfumery.

Pectakos Co., Ltd.

The Proprietors of "Pectakos" for Coughs and Bronchitis, which is supplied by the wholesale houses.

Poppelreuter, William, 54, Portland Street, Manchester.

Branch Office: 19, St. Dunstan's Hill, London, E.C.

Telegrams: "Poppel Manchester" and "Oxygenated London." Telephone, No. 1666, Manchester, and No. 5771, London.

Agent for the United Kingdom for Heinrich Haensel's Terpeneless Concentrated Essential Oils, also for the following Valsol Oils, which consist of pure Hydrocarbons impregnated with Oxygen. They are Iodine Valsol, Iodoform Valsol, Chloroform-Camphor Valsol, etc. Another specialty is Valsolum Purum Spissum, an aseptic ointment base.

Potter and Clarke, 60, 62, and 64, Artillery Lane, London, E., and 54, Great Ancoats Street, Manchester.

Telegrams: "Horehound London." Telephone, Avenue 100.

Wholesale and export druggists. They supply New Remedies, Herbs in Packets, Coated Pills, Fluid Extracts, Malt Preparations, Lozenges, Asthma Specialties, Composition Essence, Herb Beer Extract, Seeds (flower and vegetable), Cigarettes (medicated), Drugs and Chemicals, etc., etc.

Powell (Thomas) Ltd, 1, Albion Place, Blackfriars Bridge, London, S.E.

Telegrams: "Aniseed London."

The proprietors and sole makers of "Powell's Balsam of Aniseed" and Powell's Mild Aperient Pills. The firm supplies Counter Bills, large or small, with name and address printed thereon, and Show Cards free and carriage paid on application to any of the wholesale houses, or to above address.

Price's Patent Candle Co., Ltd., Belmont Works, Battersea, London, S.W.

Telegrams: "Belmont London" or "Price's Birkenhead." Telephone, Battersea 91.

This firm owns the largest Candle Making concern in the world, and also manufactures Price's Pure Glycerin, which is guaranteed to be free from arsenic, and to stand all the tests of the British Pharmacopœia; Night-lights, the principal of which are "New Patent," "Palmitine Star," "Improved Childs'," "Royal Castle" and "Nations'"; Toilet Soaps, known as "Regina," "York Rose," "Glycerin Cream," "Savon de Flore," "Elaine," etc.; these are all "milled" soaps of high quality. The firm's "Sanitary" Soaps, also "milled," contain Glycerin, Carbolic Acid, Coal Tar, Eucalyptus Oil, etc.

Rackham and Co., St. Peter's, Norwich, Norfolk.

Makers of Rackham's Small Black Pearl Pills, Dog Medicines, Horse and Cattle Medicines, Japan Soap, and also all kinds of Dog Foods.

Raimes and Co., York.

Telegrams: "Raimes York." Telephone, No. 9.

Wholesale Druggists, Analytical and Manufacturing Chemists. Copies of monthly prices current of drugs, chemicals, and galenicals, with latest market report, also net cash price list of patent medicines and proprietary articles revised to date, will be sent on receipt of trade card. Water and other analyses are undertaken in the Firm's laboratory. A few of the Firm's specialties are Emulsio Ol. Morrhuæ, Syrup. Hypophosp. Co., Liq. Violæ Conc. 1-15, and Concentrated Infusions.

Raimes, Clark and Co., Edinburgh.

Telegrams: "Raimes Edinburgh."

Wholesale druggists and manufacturing chemists; one of the oldest wholesale drug firms north of the Tweed, having been established in the year 1816. They commenced the manufacture of Gelatin Capsules about two years ago, having previously devoted considerable time and trouble to the study of the entire question. Their machinery is of the latest design, and they have made numerous improvements on the old-fashioned methods. The capsules so made include Blaud Pills, Easton Syrup, Quinine Sulphate, Cascara, Castor Oil, Gregory Powder, Copaiba, Copaiba and Cubebs, Turpentine, Eucalyptus Oil, Guaiacol, Creosote Carbonate, Ergotin, and Creosote. Guaiacol is filled into Hard Capsules. All the others are very soft and flexible, have a nice shape, and are guaranteed to contain what the label states. A Blaud Capsule, containing the equivalent of three pills, is not much larger than an ordinary Blaud Pill. A very strong point with Messrs. Raimes, Clark and Co. is that each batch of Blaud Mass made since they began this branch has been carefully tested and standardised. Besides the capsule department, the firm makes a specialty of the "Premier" Extract of Malt and its combination with Cod-Liver Oil, both of which are articles of very superior quality, and quite equal to any sold at fancy prices. In addition,

all the branches of an ordinary wholesale drug business are carried on, while the laboratory, under Mr. George Coull's fostering care, has acquired a high name for the excellence of the quality of its products.

Ransom (W.) and Son, Hitchin, near London.

Telegrams : "Ransom and Son Hitchin."

Manufacturing pharmaceutical chemists. This firm has been established half a century as distillers of Essential Oils and cultivators of Medicinal Plants. Specialties :—Solid and Liquid Extracts, Expressed Juices, English Essential Oils, Scammony Resin, Jalap Resin, Elaterium, Mercurial Pill and Ointment, Aloin, Euonymin, Leptandrin, Iridin, Hydrastin, Dried Medicinal Leaves, English Dandelion and Aconite Roots, Medicinal Tinctures and Spirits supplied for export in bond. All standardised preparations of the British Pharmacopœia are tested and corrected by the firm's analyst before leaving the laboratory.

Raphael (J.) and Co., 51, Clerkenwell Road, London, E.C.

Telegrams : "Astigmatic London." Telephone, Holborn 1299.

Manufacturing opticians, who have laid themselves out to meet the requirements of Pharmacists embarked in the Optical Trade. Besides being prepared to supply every class of Optical Goods to chemists, they have brought out a special good and cheap Test Case, and have arranged for Classes in Sight-testing and Correction under the direction of a practical optician of large experience. Prescriptions, repairs, and special orders are despatched by return of post from their large and convenient premises at the above address.

Raybould (Flesher) and Co., Ltd., Reform Works, Dudley.

Manufacturers of Raybould's Furniture Polish, sold retail in 1d. tins and in stone bottles at 1d., 3d., 6d., and 1s.

Reade Brothers and Co., Ltd., Varnish Works, Wolverhampton.

Varnish manufacturers. Specialty, superior Varnishes for coachbuilders, decorators, builders, and wheelwrights.

Reichenhall Syndicate, Ltd., 60, Queen Victoria Street, London, E.C.

The proprietors of Mack's Austrian Pine Products, for throat and chest affections.

Reichert, C., 26, Bennogasse, Vienna VIII.

Manufacturer of First-Class Microscopes with Apochromatic and Semi-apochromatic Objectives, Microtomes, Polarising Instruments, and Photo-Micrographic Apparatus ; also of Hämometers and Dr. Jolles' Ferrometer for the determination of iron in the blood.

Reynolds and Branson, 13, Briggate, Leeds.

Telegrams : "Reynolds Leeds." Telephone, No. 50.

Manufacturing pharmaceutical chemists, dealers in Surgical Appliances, Photographic, Chemical, and Physical Apparatus, and a large number of ingenious appliances for storing Pill Boxes, Roller Bandages, Antiseptic Dressings, etc,, etc. Manufacturers of "Sparkling puritzerwater," makers of X Ray apparatus.

Ridge and Co., Kingsland, London.

Makers of Dr. Ridge's Patent Cooked Food for Infants and Invalids.

Richford, C. D., 44, Snow Hill, London, E.C.

Telegrams : "Stamperies London."

Manufacturer and patentee of Rubber Stamps and Type, Patent "Effective" and "Nigropadd" (self-inking stamp pads), Stencils, Seals, Embossing Presses, etc. The firm makes a special feature of Prescription Stamps for chemists, and sends full particulars as to agencies free.

Ringrose and Cobb, 129, Cambridge Road, Mile End, London, E.

Cork merchants, and manufacturers of every description of Corks, Bungs, Shives, Taps, Bath Mats, etc. Samples on application stating price and class of goods required.

Robare (J.)

Maker of "Aureoline," well known for twenty years as a harmless and effectual preparation for causing the hair to acquire a golden hue. It is put up in 4-oz. and 8-oz. bottles, at prices giving retailers a wide margin of profit. It can be obtained of all the wholesale houses. Agents : Messrs. R. Hovenden and Sons, of Berners Street, W., and City Road, London, E.C.

Robbins (J.) and Co., 147, Oxford Street, London, W.

Pharmaceutical chemists ; this firm is believed to be the first to manufacture "Peroxide of Hydrogen," and to introduce it as a commercial article, and their special preparation continues to hold its own for purity, definiteness of strength, and keeping powers against all others. Compound Anæsthetic Ether, for producing local anæsthesia by spray, introduced by the late Sir Benjamin Ward Richardson, Methylene and Solution of Ethylate of Sodium are also specialties of the firm. Other special preparations are Vegetable Ivory, Charcoal Capsules, an efficient remedy for indigestion, and Styptic Colloid for wounds and hæmorrhage.

Robinson and Cleaver, Belfast, and 164, 166, and 170, Regent Street, London, W.

Linen manufacturers, who make a specialty of Irish Cambric Pocket Handkerchiefs and Irish Damask Table and House Linen, for which they have been awarded several Medals and Diplomas. They send samples and illustrated price lists post free on applying at the works, Belfast.

Robinson and Co., 13, Orford Hill, Norwich.

Telegrams : "Robinson Co. Norwich."

Manufacturing chemists, who make a specialty of Norfolk Emulsion, being the Cream of Cod-liver Oil with Hypophosphites. The *Lancet* says : — "The Preparation is a Perfectly Uniform Emulsion, and being Skilfully Flavoured with Aromatics, is Free from Repulsive Taste of Cod-Liver Oil." Prices 2s. 6d. and 4s. 6d. per bottle. (Sample 1s. 3.d) The London agents are Messrs. Barclay and Sons, Ltd. ; W. Sutton and Co.

Robinson and Sons, Ltd., Wheat Bridge Mills, Chesterfield, and 55, Fann Street, Aldersgate Street, London, E.C.

Telegrams : "Staglint Chesterfield (or London)."

Cotton spinners, weavers, and bleachers, manufacturers of Lint, Cotton Wool, and Medicated Dressings, and also large makers of Cardboard Pill Boxes, Homœopathic Bottle Cases, etc. The firm makes a specialty of Surgical Dressings, such as Absorbent Cotton Lints, Roll Bandages, Flax Lints, Cotton Wools, Antiseptic Dressings, etc., etc. They are also the sole proprietors of the patent "Gamgee Tissue," and of the new Cellulose Wadding and Dressing.

Robinson (Benjamin), Church Street, Pendleton, Manchester.

Telegrams : "Benjamin Robinson Pendleton."

Manufacturer of Concentrated Waters. Amongst his specialties are to be found Aqua Flor. Aurant., Anethi, Anisi, Cinnam. Ver., Rosæ, Menth. Pip., Sambuci, Conc., and some dozen others.

Ross, Ltd., 111, New Bond Street, London, W.

Telegrams : "Rossano London." Telephone, Gerrard 3540.

This firm was established in 1830, and are manufacturers of all kinds of Microscopes, Objectives and Apparatus, Photographic Lenses and Cameras, Telescopes, Opera and Field Glasses. They also make a specialty of Eye-glasses and Spectacles. Five separate awards have been received this year for excellence of manufactures at the Brussels Exhibition. Special terms are given to chemists ; a new illustrated catalogue will besent on application.

Rouse Brothers, 61, Charlotte Street, Tottenham Court Road, London, W.

Manufacturing druggists and Packers to the Trade, their special line being Concentrated Preparations for Toilet and Perfumery Articles, the principal of which are Rouse's Quintessence or Concentrated Perfumes, five varieties for Heliotrope, Lilac, Cucumber Paste, Carmine, and Concentrated Essences for Lavender Water,

Eau de Cologne, Toilet Vinegar, and Bay Rum. They also pack Seidlitz Powders (20 varieties of packing), Seltzogene Charges and Drugs in general, such as Salts, Senna, and Soda, and are makers of Children's Powders in six varieties—cooling and teething, pink, grey, worm, fever, cooling and aperient. Penny Goods, of which they pack seventy different sorts, are also a special line with them.

Rowland, A. and Sons, 20, Hatton Garden, London., E.C.

Proprietors of Rowland's Macassar Oil, retailed in bottles at 3s. 6d., 7s., 10s. 6d., and 21s. Other specialties are Rowland's Kalydor, a preparation for the face, hands, and arms, Rowland's Odonto or Pearl Dentifrice, Rowland's Eukonia, a fragrant toilet powder, and Rowland's Essence of Tyre.

Sanford and Son, Sandy, Beds.

Telegrams : "Sanford Sandy."

The makers of Sanford's Rat Poison. Wholesale of Maw, Son and Thompson, Newbery and Son, Edwards and Son, and others.

Sanitas Co., Ltd. (The), Letchford's Buildings, Three Colt Lane, Bethnal Green, London, E.

Telegrams : "Sanitas London." Telephone, Avenue 1011.

The well-known manufacturers of the "Sanitas" Disinfectants, including Fluid, Crude Fluid, Oil, Embrocation, Powders, Soaps, and a great number of general, Toilet, Veterinary, and Surgical Preparations. Among their other disinfectant preparations are Carbolic Fluids and Powders, "Okol" Disinfecting Fluid (a non-poisonous emulsion of certain phenoloid bodies of germicidal power), "Creocide," a disinfecting liquid miscible with water, being a combination of certain coal tar and essential oil principles, Sulphur Fumigating Candles, Patent Preserved Peroxide of Hydrogen, L.G.B. (corrosive sublimate), Pellets, Carbolic Acid, and Permanganate of Potash Pellets. They also manufacture Patent Drain Testers in four patterns, Nos. 1, 2, 3, and 4, and a great variety of Fumigating, Inhaling, and Disinfecting Appliances.

Savory and Moore, 143, New Bond Street, London, W.

Telegrams : "Samoore London." Telephone, Gerrard 3776.

Wholesale, retail, and export druggists, also manufacturers of all kinds of Medicine Chests and regulation Medical and Surgical Equipments for home and foreign service. They also manufacture Foods for Infants, Peptonised Foods, Peptic and Pancreatic preparations, and Invalids' Foods of every kind, including Condensed Peptonised Milk, Cocoa and Milk, and Coffee and Milk. Several gold and other medals have been awarded for their foods and medicine chests.

Saxlehner, Andreas, Budapest, Hungary.

London Agency : Trafalgar Buildings, Charing Cross, W.C.

Telegrams : "Saxlehner Budapest," "Saxlehner London."

The proprietor of the Hunyadi János Natural Aperient Water, which has a record of over twenty-five years' success in the United Kingdom. Every bottle bears the signature of the proprietor, "Andreas Saxlehner."

Scott and Bowne, Ltd., 95, 96, 97, and 98, Great Saffron Hill, and 13, Cross Street, Hatton Garden, London, E.C.

The manufacturers and proprietors of Scott's Emulsion, which is frequently prescribed by physicians, who have found by personal observation that it is a reliable emulsion.

Sellers (J.), 57, Farringdon Road, London, E.C.

Manufacturing chemist, who does a wholesale trade both in Great Britain and the Colonies. Some of his principal lines are Sellers' Naphthol and Potash Soaps for toilet purposes, Pure Carmine, Liquid Carmine, improved preparations of Cerium, including Liquor Cerii, Mistura Cerii Comp., Mist. Bismuthi Co., and Sellers' Mist. Bismuthi Co. *c.* Pepsin.

Shew, J. F., and Co., Newman Street, London, W.

Manufacturers and dealers in Photographic Apparatus. Their specialty is Shew's Hand Camera.

Silverlock, H., 92, Blackfriars Road, London, S.E.

Telegrams : "Silverlock London."

Chemists' and medical label and general printer. The firm supplies all kinds of Counter Bills, Price-lists, Illustrated Trade Catalogues, Prospectuses, Pamphlets, Show Cards, Fancy and other Labels, Prescription Books, Register Books for the sale of poisons, Ledgers, Cash and Day Books, etc., etc., also Chemical Fly-papers in three designs, Indiarubber Stamps, and Tornographic Seals. Among the specialties are Silverlock's Medical and Surgical Emergency Reference Book, Johnson's Compendium Form for entering trade receipts and expenses, and Silverlock's Postal Order Record Book.

Smith (Stephen) and Co., Malmesbury Road, Bow, London, E.

Telegrams : "Truxillo London."
Telephone, No. 5284, Eastern Exchange.

The proprietors of Hall's Wine, a powerful nerve tonic and an excellent preparation of its kind. They also make "Liebig's Extract of Meat and Malt Wine" (Keystone Brand), the chief feature of which is that it is made with the Liebig Company's (extract) of meat, this firm being the only one having authority to use the Company's name in connection with Meat and Malt Wines.

Smith (T. and H.) and Co., 21, Duke Street, Edinburgh, and 12, Worship Street, London, E.C.

Telegrams : "Meconic Edinburgh" or "Meconic London."
Telephone, No. 11395 London ; 198 Edinburgh.

Manufacturing chemists, and are the inventors and sole makers of the "Tela Vesicatoria," or blistering tissue. Among their other preparations are Morphine and its Salts, Morphine Tartrate, Codeine and its Salts, Apomorphine Muriate, Capsicine, Gingerine, Jalap and Scammony Resins, Chloroform, Ergotine, Cantharidine, and Coffee Essences.

Société Chimique Des Usines Du Rhône (The), 8, Quai de Retz, Lyons, France.

Telephone, Avenue 577.

Prepare a number of serums for therapeutic purposes at the Bacteriological Institute in Lyon-Vaise, including Antidiphtheritic Serum, Antistreptococcic Serum, Vaccine Lymph (Jenner), in sterilised tubes, specially prepared for use in warm climates, and Antituberculotic Serum. The Lyons Antistreptococcic Serum is becoming popular, owing to its great immunising power in the treatment of Erysipelas, Puerperal Fever, Medical or Surgical Septiphlegmons, Angina, Broncho-Pneumonia, etc., as well as Diphtheria, Scarlatina, Influenza, Typhoid Fever, and Tuberculosis. The Société Chimique des Usines du Rhône also manufacture Salicylic Acid, Medicinal Resorcine, Synthetical Carbolic Acid, and the whole range of Synthetical Perfumes. Their London Agents are R. W. Greeff and Co., 3, Eastcheap, E.C.

Southall Brothers and Barclay, Birmingham.

Telegrams : "Southall Birmingham."

Manufacturing, analytical and pharmaceutical chemists, wholesale and export druggists, etc. They do an extensive business in drugs, chemicals, pharmaceutical preparations, druggists' sundries, specialties with name and address of buyer, photographic and chemical apparatus, sanitary towels, etc., etc. They have recently introduced a new preparation "Dimatos," consisting of an infusorial earth which serves as an excellent filtering medium or as a basis for violet powder, dentifrices, plate powders, etc.

Southall (John E.), Newport, Mon.

Printer of Labels for aërated water makers, manufacturing confectioners, sugar boilers, jam factories and chemists, etc. Printed wrappers, office stationery, and all description of printing.

Spongio Piline.

The manufacturers of Spongio Piline claim that poultices are superseded by this article, the advantages being greater comfort, more speedy efficacy, durability, and retention of warmth and moisture. It can be washed and re-used as often as required, and obviates all the trouble of the old mode of poulticing and fomenting. The Impermeable Piline is used for rheumatism, promoting

perspiration, and the application of stimulating liniments. It is listed by most of the wholesale houses.

Squire & Sons, 413, Oxford Street, London W.

Telegrams: "Squire London." Telephone, Paddington 96.

Manufacturing pharmaceutical chemists. Among their numerous specialties and preparations are Squire's Chemical Food for Delicate Children, Syrup of Senna, Confectio Belæ Recentis, Kasak Elixir, Kasak Pilules and Capsules, Liquor Morphiæ Bimeconatis (Liquor Meconicus), Toilet Requisites known as the Lehlia Cream, Dentifrice, Dusting Powder, Extract, and Soap.

St. Dalmas (A. De) and Co., Leicester.

Telegrams: "St. Dalmas Leicester."

This firm makes a specialty of Medical Plasters and Bandages, which they supply under the trade marks "National" and "The Leicester," amongst which are Porous and Ribbon Plasters, Hospital Strapping on Holland, Belladonna Plaster on Scarlet Felt, Surgeon's Emergency Case, Accouchement Binders, Menthol Leaves, Selvedge Bandages, Patent Wound and Bed-sore Pads, Adhesive Umbilical Pads, Menthol, Breast, Marginal, and numerous other Plasters and Bandages. The "National" Rubber, Dental, Dermal, and Salicylic Plasters, Mustard Leaves, Plaster Caddy, and Patent Stand and Ribbon Plasters on Spools constitute another series, besides the "Trilby" and "Crescent" Corn Plasters, "Francis" Bronchial Protectors, etc.

Stevens (P. A.), 72, Mansfield Road, London, N.W.

Surgeon-dentist, and the sole proprietor and manufacturer of "Silvery-White Gutta Percha Enamel Tooth Stopping." Special terms to wholesales houses for sheets or sticks, stamped with their own name. Price list and samples free.

Stone, W., 41, Gloucester Street, London, W.C.

Maker of Dispensing and Analytical Balances. The late Professor Redwood specially recommended this maker's (box) dispensing balance, price 40s., or in glass case, price 70s.

Symes and Co., Ltd., Liverpool.

Telegrams: "Symes Liverpool." Telephone, 1023.

Pharmaceutical and manufacturing chemists, wholesale and export druggists. The firm makes a specialty of Ol. Lavand. Rect., which they claim to be the nearest approach to Mitcham oil. They also do a large trade in Tonquin Beans, Araroba, Tayuya, Lac Bismuthi, Lac Bismuthi et Cerii, etc.

Symons, John and Co., Ltd., Totnes, Devon.

Manufacturers of Devonshire Cider made from ripe apples and sole makers of "Symonia" and "Sydrina."

Tetu, J., 16, Surrey Square, Old Kent Road, S.E.

Agent for French Calf Vaccine in 1s. and 2s. tubes.

Thornton-Pickard Manufacturing Company, Ltd. (The), Altrincham.

Telegrams: "Thornton Pickard Altrincham." Telephone, No. 69.

Makers of all kinds of apparatus required by Photographers, their specialty being the manufacture of Shutters in many varieties, such as Time and Instantaneous, Stereoscopic, Studio, and Focal Plane Shutters; the firm also makes the "Amber" and "Ruby" Cameras, Automatic Tripods, and the "Thornton-Pickard" plate-holders.

Tinplate Decorating Co., Ltd. (The), Melyn Tin Works, Neath.

Telegrams: "Japan Neath."

Patentees and manufacturers of Decorated and Crystallised Tinplates, Fancy Tin Boxes and Canisters, printed in colours, Seamless Decorated Tin Boxes for polishing paste, etc. The firm has received the highest awards for its goods at Sydney, Barcelona, Calcutta, and Adelaide.

Tomlinson (Thomas) and Son, 9, New Cannon Street, Manchester.

Telegrams: "Tomtom Manchester."

Chemists' Transfer Agents and Valuers.

Townsend, James and Son, Little Queen Street, Exeter.

Telegrams: "James Townsend Exeter."

Medical label printer. Among his specialties for chemists are Billheads, Blotting Papers, Prescription Envelopes, Prescription Books, Circulars, Gold Paper Labels, Linseed Meal Bags, Wrapping Papers, etc., etc., also Townsend's Art Bills, Illustrated Family Medicine Guide, and Price List, etc.

Treble (George) and Son, 59 and 61, Rhodes Street, Holloway, London, N.

Chemists' Shop Fitters and Show Case Makers. The firm is prepared to send out Plans and Estimates free of charge to all chemists who are fitting their shops or making alterations.

Tunbridge and Wright, Castle Street, Reading, and 4, Gallowgate, Newcastle-on-Tyne.

Telegrams: "Flies Reading."

Wholesale chemists and druggists, are the originators of the Sticky Fly-papers, known as the "Fly Cemetery," which they ship to all parts, both at home and abroad. The firm are also the proprietors of Dr. Mackenzie's Catarrh Cure Smelling Bottle, and of "Viko," an Insect Powder of exceptional strength.

Turner, J. A, 202, Whitefield Road, Everton, Liverpool.

The manufacturer of Turner's Tamarind Cough Emulsion for Influenza, Bronchitis, and other throat and chest affections.

United British Castor Oil Co., Ltd., Ossory Road, London, S.E.

Telegrams: "Tasteless London." Telephone, Hop 125.

The manufacturers and proprietors of Mitchell's Castor Oil. This is "made in England" and is guaranteed to be pure. It is put up in 2, 4, and 8 oz. panel bottles; 1, 2, 3, 4, 6, and 8 oz. Mexican flat bottles; 2½, 5, and 10 oz. blue bottles for export; and in Winchesters and tins. Particulars of prices, etc., can be obtained from the above address.

Van Houten and Zoon.

Van Houten and Zoon, of Weesp, Holland, are the manufacturers of Van Houten's Pure Soluble Cocoa. It may be obtained from all wholesale houses.

Vi-Cocoa (Dr. Tibble's), Ltd., 60, 61, and 62, Bunhill Row, London, E.C.

The proprietors and manufacturers of Dr. Tibble's Vi-Cocoa. It is retailed in 6d., 9d., and 1s. 6d. packets and tins, and the proprietors fix the selling price at not less than 5½d., 8½d, and 1s. 4½d., any chemist, grocer, or stores, cutting below these prices being refused supplies direct from the firm. Carriage is paid on orders value £2 and upwards, 5 per cent. discount being allowed up to £5, and 7½ per cent. on larger orders, no higher discount being given in any case.

Vimbos, 130, Queen Victoria Street, London, E.C.

Telegrams: "Vimbos London." Telephone, Bank 5438.

Vimbos is a British beef preparation manufactured in Edinburgh. It is claimed to be the best and most sustaining meat extract on the market, and is extensively used by athletes and other sportsmen. A sample will be sent on receipt of post-card mentioning *Pharmaceutical Journal*.

Wand, Haymarket, Leicester.

Manufacturing chemist, is the maker of the following specialties:—Soluble Pearl-coated Pills, Medicated Bougies, Pessaries, Suppositories, Cachets, Tablets of Compressed Medicines, etc. Special attention is paid to Cachets, the substance of which is readily Soluble and Inert, although firm enough to envelope and render tasteless the most nauseous powder. They are made in various sizes.

Warner (W. R.) and Co., Philadelphia, U.S.A.

Telegrams: "Newbery London." Telephone, Holborn 905.

Manufacturing chemists. Their specialties are Soluble Sugar, and Gelatin-Coated Pills, Parvules, Granules, Effervescent Salts, Compressed Drugs, and "Ingluvin," a powder prescribed in the same manner and doses as pepsin. Tono-Sumbul, a heart stimulant promoting rest and sleep, is their latest introduction. The firm has been awarded sixteen World's Fair Medals for the excellence of its preparations. The British agents are Messrs. F. Newbery and Sons, 1, King Edward Street, London, E.C.

Warrick Brothers, 7, Portpool Lane, London, E.C.
(off Gray's Inn Road).

Telegrams: "Warrickers London." Telephone, Holborn 298.

Wholesale druggists, perfumers, etc. They supply French Essences, Essential Oils, Otto, Musk, etc., etc.

White (Alfred) and Sons, Castle Street, Saffron Hill, E.C., and West Drayton, Middlesex.

Telegrams: "Ether Methylated London."

This firm are old-established (1775) manufacturing chemists, makers of Acids, Æthers, Sp. Æther. Nit., Sp. Ammon. Arom., Liq. Ammon., Soldering Solution, etc., and preparations of Animal Charcoal, Antimony, Baryta, Bismuth, Strontia, Zinc, etc.

Widenmann, Broicher, and Co., 33, Lime Street, London, E.C.

Telegrams: "Widenmann London."

British Agents for Messrs. Zimmer and Co., Frankfurt-on-Main.

Willows, Francis and Butler, 101, High Holborn, London.

Telegrams: "Burgess Willows London."
Telephone, Holborn 800.

Wholesale and manufacturing chemists and export druggists. The firm was established in 1751, and makes a specialty of animal Extracts, such as Suprarenal Preparations, which prove very useful in various forms of vasomotor relaxation and paresis, in exophthalmic goitre, functional or "cyclic" albuminuria, diabetes, etc., etc. Pituitary Body Preparations in the form of fluid extract, elixir, and tablets; Bone Marrow Extract; Extractum Corticis Cerebri (brain extract), which is recommended for use in those innumerable maladies grouped under such titles as neurasthenia, nervous exhaustion, hypochondriasis, etc.; Thyroid Extract (for myxœdema, goitre, cretinism, etc.); Thyroidine, containing the active principle of the thyroid glands of the sheep, 4 grains equal to about $\frac{1}{8}$ of a fresh gland; also Pills and Tablets, each containing a dose of thyroidine. Leaflets descriptive of above and list of Drugs and Pharmaceutical Preparations on application.

Wilton and Co., Ltd., 17, Withy Grove, Manchester.

Proprietors of Golden Nugget Ointment for piles, retailed at 1s. $1\frac{1}{2}$d.

Wood (Vincent), Albion Place, Blackfriars, London, S.E

Telegrams: "Acme London" or "Elastic Nottingham."

Manufacturer of Elastic Hosiery, Trusses, Belts, Suspensory Bandages, etc. Specialties: The Vinwool Chest Protectors, the Eureka Medicated Pure Wool Felt Protectors, etc.

Woodruff (T.) Withington, Manchester.

Pharmaceutical chemist and patentee of Woodruff's Transparent Celluloid Spray Producer for applying small and measured quantities of medicaments to the larynx, pharynx, and nasal cavity. The only adjustable spray in the market; may be used for either oily or watery liquids, and is practically unbreakable. Patented in England, Germany, France, and United States, America. Price list, press opinions, etc., on application.

Woolley (James), Sons & Co., Ltd., Victoria Bridge, Manchester.

Laboratories and Drug Mills: Knowsley Street, Cheetham.

Telegrams: "Pharmacy Manchester." Telephone, No. 939.

Manufacturing pharmaceutical chemists and wholesale and export druggists. They manufacture Spirit of Nitrous Ether which is guaranteed to contain the B.P. maximum proportion of nitrous ether, and to answer the other official tests; Aromatic Spirit of Ammonia, made from volcanic ammonia; Levigated Ointments, prepared by steam power; Tasteless Coated Pills, with soluble pearl coating; Flavouring Essences, used in the manufacture of aërated beverages, cordials, etc.; Concentrated Infusions and Decoctions, Flexible Gelatin Capsules, Compressed Pellets, Tinctures, Fluid Extracts, and all other galenical and pharmaceutical preparations. They also carry on an extensive trade in Chemical and Physical Apparatus, Photographic Requisites, Microscopes and Accessories, Surgical Instruments and Appliances, Druggists' Sundries, Nursery and Toilet Requisites, Perfumery, Proprietary Medicines, etc., a special department being devoted to the manufacture and repairing of trusses of every description. Illustrated catalogues and price-lists are forwarded free to registered chemists on receipt of business card.

Wright, Layman and Umney, Southwark Street, and Union Street, London, S.E.

Telegrams: "Umney London." Telephone, Hop 608.

Wholesale druggists of long standing, occupying a prominent position in the London drug trade. They combine the functions of manufacturing pharmaceutical chemists, importers, and distillers of essential oils, drug grinders, analytical chemists, etc., etc. Of late the firm has devoted special attention to essential oils and their examination, with the result that business has developed greatly in this direction. In addition to Crude and Powdered Drugs, Chemicals of every description, Essential Oils and Terpeneless Essential Oils, Galenical Preparations, Concentrated Fruit Essences, Toilet Essences, Granular Effervescent Preparations, etc., the firm is the sole maker of Wright's "Liquor Carbonis Detergens" and Wright's Coal Tar Soap, both articles of special excellence. Wright, Layman and Umney are large exporters to the Colonies, and have a special concession from the Board of Inland Revenue for exporting all alcoholic preparations under drawback.

Wyleys, Ltd., Coventry

Telegrams: "Wyleys Coventry." Telephone, No. 17.

Manufacturers of Pharmaceutical Preparations. This firm has been established nearly a century and a half, and has a laboratory book dated 1757. Specialties: Extracts, Standardised Tinctures, Gelatin and Pearl Coated Pills, Compressed Pellets, Tropels, Flexible Gelatin Capsules, Granular Effervescent Preparations, Extract of Malt, etc.

York and Son, 67, Lancaster Road, Notting Hill, London, W.

Telegrams: "Vassalage London."

Messrs. York supply Optical Lantern Slides for educational purposes, embracing every branch of science; also Interesting and Moral Tales, illustrated by life models. They have been awarded sixteen medals for excellence. The catalogue of new sets can be had on application, and terms on receipt of business card.

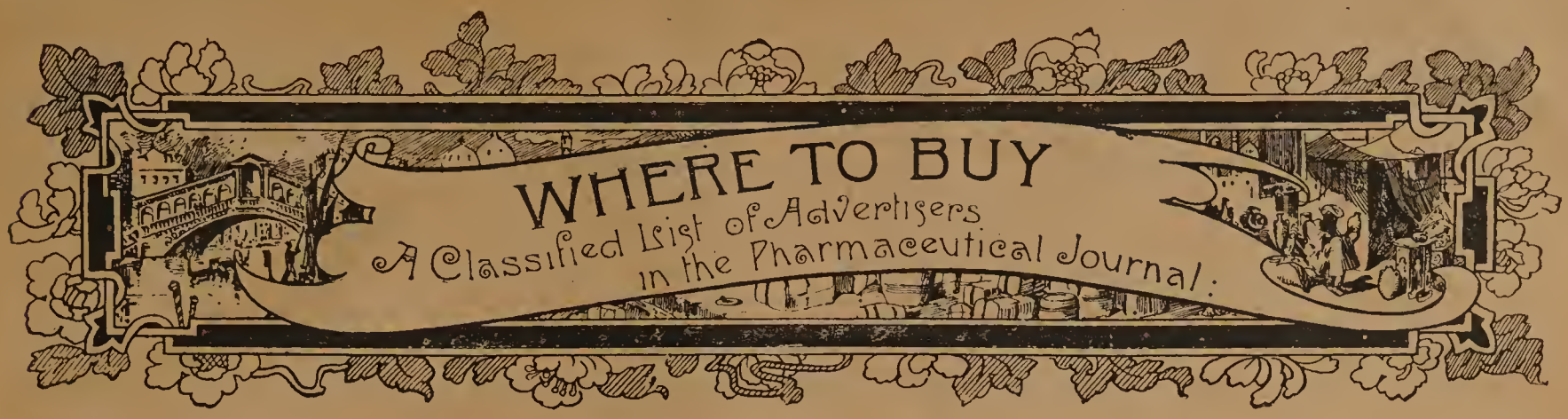
Zimmer and Co., United Quinine Works, Frankfurt a/Main.

Manufacturing chemists and proprietors of Euquinine, a derivative of quinine, its advantages over that alkaloid being tastelessness, innocuousness to the stomach, and greatly reduced effect on the nervous system. Other specialties of the firm are Quinine (Jobst and Zimmer), Quinidine, Cinchonidine, Cinchonine, Quinoidine, Quinine Pearls and Pills, Quinine Chocolates, Cocaine, Sulphonal, Eunatrol, and Eunatrol Pills (chemically pure Oleate of Sodium), said to be an excellent cholagogue, furthering the flow of bile, also useful for gallstone, bilious, and liver complaints. British Agents: Messrs. Widenmann, Broicher and Co., 33, Lime Street, London, E.C.

Zimmermann (A. and M.), 9 and 10, St. Mary-at-Hill, London, E.C.

Telegrams: "Zimmermann London." Telephone, Avenue 2144.

Wholesale agents for Schering's Pure Chemicals, for use in pharmacy, photography, and the arts, among which are Aronson's Diphtheria Antitoxin, Bismuth (Subgallic), Chloral, Cocain, Eucain (hydrochlor.), and Euphthalmin (new mydriatic), Glycerophosphates of Lime, Soda, Iron, etc., Piperazin (pure), Phenocoll (Hydrochlor.), Sanose (dietetic), Urotropin.



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Sanitas Co., Ltd.

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Rouse Brothers
Sellers, J.

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Kemp, W. & Son.
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Macfarlan, J. F., & Co.
Robbins, J., & Co.
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Sellers, J.
Smith, T. and H., & Co.
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Woolley, Sons & Co., Ltd.
Wright, Layman & Umney.
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Smith, T. & H., & Co.
Wright, Layman & Umney.
Zimmermann, A. & M.

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Symons, J., & Co.

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Harker, Stagg & Morgan
Hearon, Squire & Francis
Potter & Clarke
Smith, Stephen & Co. (Hall's)
Wright, Layman & Umney
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Van Houten & Zoon

Cod-Liver Oil.
Allen & Hanburys, Ltd.
Baiss Brothers & Co.
Burroughs, Wellcome & Co.
Christy & Co.
Evans, Lescher & Webb
Evans, Sons & Co.
Harker, Stagg & Morgan
Hearon, Squire & Francis
Hora & Co.
Ismay & Sons
Kemp & Son
Lorimer & Co.
Raimes & Co.
Smith, T. and H. & Co.
Southall Brothers & Barclay
Woolley, Sons & Co., Ltd.
Wright, Layman & Umney

Collapsible Capsules.
Marshalls', Limited

Compressed Medicines.
Allen & Hanburys, Ltd.
Burroughs, Wellcome & Co.
Duncan, Flockhart & Co.
Leo & Co.
Lloyd, T. H., & Co.
Parke, Davis & Co.
Wand, S.
Wright, Layman & Umney

Concentrated Liquors.
Hewlett, C. J., & Son
Lloyd, T. H., & Co.

Concentrated Waters.
Robinson, B.

Corks.
Christy, T., & Co.
Ringrose & Cobb

Cotton Wool.
Ayrton & Saunders
Maw, Son & Thompson
Robinson & Sons

Dentifrices.
Beecham, T.
Blondeau et Cie.
Maw, Son & Thompson
Parke, Davis & Co.
Sanitas Co., Ltd.

Dentistry.
Browning, A. J.
Fentiman & Co.
Macdonalds, Ltd.
Stevens, P. A.

Disinfectants.
Calvert, F. C., & Co.
Elephant Disinfectant Co.
Esset's Fluid Co.
Formalin Hygienic Co.
Kay Brothers, Ltd.
Kühn, B.
Sanitas Co., Ltd.

Distillers.
Boord & Son
Burrough, Jas.
Robinson, B.

Druggists' Sundries.
Ayrton & Saunders.
Barclay & Sons, Ltd.
Bourne, Johnson & Latimer
Evans, Lescher & Webb
Evans, Sons & Co.
Ismay & Sons
Kay Brothers, Ltd.
Lloyd, T. H., & Co.
Maw, Son & Thompson
Newbery, F., & Sons
Woolley, Sons & Co.

Drugs.
Allen & Hanburys, Ltd.
Baiss Brothers & Co.
Corbyn, Stacey & Co.
Duncan, Flockhart & Co.
Evans, Lescher & Webb
Evans, Sons & Co.
Evans, Gadd & Co.
Harker, Stagg & Morgan
Hearon, Squire & Francis
Ismay & Sons
Kemp & Son
Lloyd, T. H., & Co.
Potter & Clarke
Raimes & Co.
Raimes, Clark & Co.
Southall Brothers & Barclay
Woolley, Sons & Co., Ltd.
Wright, Layman & Umney
Wyleys, Ltd.

Drug Grinders.
Evans, Sons & Co.
Kemp & Son
Woolley, Sons & Co.
Wright, Layman & Umney

Drysalteries.
Reade Brothers & Co.

Dyes.
Ayrton & Saunders

Embrocations.
Elliman, Sons & Co.
Sanitas Co., Ltd.

Emulsions.
Duncan, Flockhart & Co.
Giles, Schacht & Co.
Harker, Stagg & Morgan
Ismay & Sons
Kemp & Son
Lloyd, T. H., & Co.
Lorimer & Co.
Raimes & Co.
Robinson, J., & Co.
Scott and Bowne, Ltd.
Turner, J.
Wright, Layman & Umney

Enemas.
Evans, Sons & Co.
Maw, Son and Thompson
Wood, V.

Essences.
Bovril, Ltd.
Bush, W. J., & Co.
Hewlett, C. J., & Son.
Idris & Co., Ltd.
Rouse Brothers
Woolley, Sons & Co., Ltd.

Essential Oils.
Baiss Brothers & Co.
Bush, W. J., & Co.
Evans, Sons & Co.
Harker, Stagg & Morgan
Jakson, J., & Co.
Poppelreuter, W.
Ransom, W., & Son
Sanitas Co., Ltd.
Symes & Co., Ltd.
Warrick Brothers
Woolley, Sons & Co
Wright, Layman & Umney

Ether.
Duncan, Flockhart & Co.
Howards & Sons
Macfarlan, J. F., & Co.
Robbins & Co.
Smith, T. H., & Co.
White, A., & Sons.
Woolley, Sons & Co., Ltd.
Wright, Layman & Umney

Eucalyptus Oil.
Sanitas, Co., Ltd.

Extract of Meat.
Bovril, Ltd.
Brand & Co.
Liebig Co.
Vimbos, Ltd.

Extract of Vegetables.
Fromms' Essence Co.

Extracts (Fluid).
Allen & Hanburys, Ltd.
Baiss Brothers & Co.
Corbyn, Stacey & Co.
Evans, Gadd & Co.
Evans, Lescher & Webb
Evans, Sons & Co.
Harker, Stagg & Morgan.
Hearon, Spuire & Francis
Hewlett, C. J., & Son
Ismay & Sons
Parke, Davis & Co.
Potter & Clarke
Ransom, W., & Son
Woolley, Sons & Co., Ltd.
Wright, Layman & Umney

Feeding Bottles.
Allen & Hanburys, Ltd.
Ayrton & Saunders
Bourne, Johnson & Latimer
Burroughs, Wellcome & Co.
Evans, Sons & Co.
Maw, Son & Thompson

Filters.
Berkefeld Filter Co.
Mawson Filter Co.

Flesh Brushes.
Dinneford & Co.

Fly Papers, Etc.
Ford, Shapland & Co.
Marshalls', Ltd.
Mather, W., Ltd.
Maw, Son & Thompson
Silverlock, H.
Tunbridge and Wright

Foods.
Allen & Hanburys, Ltd.
Benger, F. B., & Co.
Brand & Co.
Burroughs, Wellcome & Co.
Christy, T., & Co.
Fromms Extract Co.
Hearon, Squire & Francis
Hooper, Struve & Co.
Lazenby, E., & Sons
Liebig Co.
Lorimer & Co.
Ridge & Co.
Savory & Moore
Squire & Sons
Vimbos, Ltd.

Fruit Syrups and Essences.
Bush, W. J., & Co.
Chemists' Aerated Waters Assoc.
Idris & Co., Ltd.
Wright, Layman & Umney

Fuller's Earth.
Barclay & Sons, Ltd.
Mumford, G.
Rouse Brothers

Furniture Polish.
Raybould, F., & Co.
Marshalls', Ltd.

Glycerin.
Price's Candle Co., Ltd.

Granular Preparations.
Baiss Brothers.
Duncan, Flockhart & Co.
Evans, Sons & Co.
Harker, Stagg & Morgan
Hearon, Squire & Francis
Lorimer & Co.
Raimes & Co.
Raimes, Clark & Co.
Wright, Layman & Umney

Gums.
Fink & Co.

Gutta Percha Enamel.
Stevens, P. A.

Herb Beer Extracts.
Newball & Mason
Potter & Clark

Homœopathic Medicines.
Epps & Co.
Keene & Ashwell

Hot Water Bottles.
Barclay & Sons, Ltd.
Evans, Sons & Co.
Maw, Son and Thompson

Infusions.
Hewlett, C. J., & Son
Wright, Layman & Umney

Inhalers.
Burroughs, Wellcome & Co.
Evans, Sons & Co.
Maw, Son & Thompson
Newsholme, G. T. W.
Sanitas Co., Ltd.

Insecticides.
Barclay & Sons, Ltd.
Ford, Shapland & Co.
Marshalls', Ltd.
Mather, W., Ltd.
Sanitas Co., Ltd.
Tunbridge & Wright

Jujubes and Pastilles.
Allen & Hanburys, Ltd.
Gibson, R., & Sons.

Labels.
Ford, Shapland & Co.
Mould & Tod
Silverlock, H.
Southall, J. E.
Townsend, J.

Lavender Water.
Bush, W. J., & Co.
Jakson, J., & Co.

Lime Juice.
Evans, Sons & Co.
Idris & Co., Ltd.

Linen Goods.
Robinson & Cleaver

Linseed (Crushed).
Evans, Gadd & Co.
Kemp & Son.
Mumford, G.

Lint.
Christy, T., & Co.
Maw, Son & Thompson
Robinson & Sons

Liquorice.
Christy, T., & Co.
Mumford, G.

Lozenges.
Allen & Hanburys, Ltd.
Gibson, R., & Sons
Lloyd, T. H., & Co.
Lorimer & Co.
Potter & Clarke
Raimes & Co.
Southall Brothers & Barclay
Warrick Brothers
Wyleys, Ltd.

Magnesia.
Dinneford & Co.
Evans, Gadd & Co.
Evans, Sons & Co.
Henry, T. & W. (Calcined)
Howards & Sons

Malt Extract.
Allen & Hanburys. Ltd.
Baiss Brothers
Burroughs, Wellcome & Ce.
Distillers Co., Ltd.
Harker, Stagg & Morgan
Hearon, Squire & Francis
Parke, Davis & Co.
Raimes & Co.
Raimes, Clark & Co.
Wright, Layman & Umney

Marking Ink.
Hickisson (Bond's)

Medicine Chests.
Ayrton and Saunders
Burroughs, Wellcome & Co.
Maw, Son & Thompson
Savory & Moore

Menthol.
Ayrton & Saunders
Burroughs, Wellcome & Co.
Christy, T., and Co.
Evans, Lescher & Webb
Maw, Son & Thompson

Mercurials.
Howards & Sons

Methylated Spirit.
Boord & Son
Burrough, J.
Smith, S., & Co.

Methylene.
Robbins, J., & Co.

Microscopical.
Ayrton & Saunders
Darton & Co.
Flatters, A.
Moores, De Saulles & Co.
Newsholme, G. T. W.
Reichert, C.
Ross, Ltd.
Woolley, Sons & Co., Ltd.

Mineral Waters.
Apollinaris Co., Ltd.
Burrow, W. & J.
Chemists' Aerated Waters Association, Ltd.
Hogg & Son
Hooper, Struve & Co.
Idris & Co., Ltd.
Ingram & Royle, Ltd.
Jewsbury & Brown
Reynolds & Branson
Saxlehner, A.

Morphine.
Macfarlan, J. F., & Co.
Smith, T. and H., & Co.

Night Lights.
Palmer & Co., Ltd.
Price's Candle Co., Ltd.

Nitrate Silver.
Johnson, Matthey & Co.

Ointment Bases.
Burroughs, Wellcome
Christy, T., & Co.
Evans, Sons & Co.
Ewen, J., & Sons
Popplereuter, W.

Opticians.
Darton & Co.
Raphael, J., & Co
Ross, Ltd.
Woolley, Sons & Co Ltd
York & Son

Otto of Roses.
Bush, W. J., & Co.
Warrick Brothers
Wright, Layman & Umney

Packed Goods.
Allen & Hanburys, Ltd.
Evans, Gadd & Co.
Lloyd, T. H., & Co.
Lorimer & Co.
Rouse Brothers

Pastilles.
Allen & Hanburys, Ltd.
Gibson & Sons
Glaisyer and Kemp

Peppermint Oil.
Bush, W. J., & Co.
Jakson, J., & Co.
Ransom, W., & Son.
Wright, Layman & Umney

Pepsin.
Benger, F. B., & Co.
Bullock & Co.
Burroughs, Wellcome & Co.
Christy, T., & Co.
Giles, Schacht & Co.
Parke, Davis & Co.
Warner & Co.

Perfumery.
Ayrton & Saunders
Baiss Brothers & Co.
Barclay & Sons, Ltd.
Biggleston, E. R.
Blondeau et Cie
Burgoyne, Burbidges & Co.
Burroughs, Wellcome & Co.
Bush, W. J., and Co.
Corbyn, Stacey & Co.
Evans, Gadd & Co.
Evans, Sons & Co.
Hewlett, C. J., & Son
Jakson & Co.
Labern, H., & Son.
Lloyd, A. S.
Lloyd, T. H., & Co.
Marshalls, Ltd.
Newbery, F., & Sons
Peck, E.
Price's Patent Candle Co.
Rouse Brothers
Sanitas Co., Ltd.
Warrick Brothers
Woolley, Sons & Co.
Wright, Layman & Umney

Petroleum Products.
Allen & Hanburys, Ltd.
Christy, T., & Co.

Peroxide of Hydrogen.
Robbins & Co.
Sanitas Co., Ltd.

Pharmaceutical Preparations.
Allen and Hanburys, Ltd.
Baiss Brothers & Co.
Burroughs, Wellcome & Co.
Cooper & Go.
Corbyn, Stacey & Co.
Duncan, Flockhart & Co.
Evans, Gadd & Co.
Evans, Lescher & Webb
Evans, Sons & Co.
Giles, Schacht & Co.
Hearon, Squire & Francis
Hewlett & Son
Howards & Sons
Ismay & Sons
Kemp and Son
Kuhn, B.
Lloyd, T. H., & Co.
Lorimer & Co.
Macfarlan, J. F., & Co.
Marshalls', Ltd.
Parke, Davis & Co.
Potter & Clarke
Raimes & Co.
Raimes, Clarke & Co.
Ransom, W., & Son.
Robinson, J., & Co.
Smith, T. H., & Co.
Southall Brothers & Barclay
Squire & Sons
Symes & Co., Ltd.
Willows, Francis & Butler.
Woolley, Sons & Co., Ltd.
Wright, Layman & Umney
Wyleys, Ltd.
Zimmer & Co.
Zimmermann, A. & M.

Photographic Goods.
Barclay & Sons, Ltd.
Burroughs, Wellcome & Co.
Evans, Sons & Co.
Harrington Brothers
Howards & Sons (Chemicals)
Lonsdale Brothers
Moores, De Saulles & Co.
Peck, E.
Raphael, J., & Co.
Reynolds and Branson
Ross, Ltd.
Shew, J. F., & Co.
Thornton-Pickard Co., Ltd.
White, Alfred, & Sons
Woolley, J., Sons & Co., Ltd.
Zimmermann & Co.

Pills, Coated, etc.
Allen & Hanburys, Ltd.
Baiss Brothers & Co.
Beecham, Thomas
Corbyn, Stacey & Co.
Cox, A. H., & Co.
Evans, Gadd & Co.
Evans, Lescher & Webb
Evans, Sons and Co.
Harker, Stagg & Morgan

Pills, Coated, etc.—contd.
Hearon, Squire & Francis
Kearsley, C. & G.
Lloyd, T. H., & Co.
McKesson & Robbins
Newbery, F., & Sons
Parke, Davis & Co.
Potter & Clarke
Raimes & Co.
Raimes, Clark & Co.
Southall Brothers & Barclay
Wand, S.
Warner, W. R., & Co.
Wright, Layman & Umney
Wyleys, Ltd.

Plasters.
Ayrton & Saunders
Cooper & Co.
Evans, Lescher & Webb.
Evans, Sons & Co.
Mather, W., Ltd.
Maw, Son & Thompson
St. Dalmas, A. De

Polishing Materials.
Bradley & Bourdas (Albatum)
Raybould, F., and Co.

Printing.
Bowers Brothers
Ford, Shapland & Co.
Mould & Tod
Silverlock, H.
Townsend, J.

Proprietary Medicines.
Barclay & Sons, Ltd.
Beecham, T.
Bradley and Bourdas
Davenport, J. T.
Dinneford & Co.
Evans, Gadd & Co.
Evans, Lescher & Webb
Evans, Sons & Co.
Hayman, A., & Co.
Kay Brothers
Kearsley, C. & G.
Lambert & Co. (Scott's Pills)
Newbery, F., & Sons
Pecktakos, Ltd.
Powell, Thos., Ltd.
Reichenhall Syndicate.
Turner, J.
Wilton & Co., Ltd.

Publishers and Booksellers.
Burleigh, T.
Churchill, J. & A.
King, J. K., & Co.
Lewis, H. K.
Macmillan & Co.
Street Brothers

Quinine.
Corbyn, Stacey & Co.
Howards & Sons
Woolley, Sons & Co.
Zimmer & Co.

Radiographic Apparatus.
Cox, H. W.
Darton & Co.
Reynolds and Branson
Ross, Limited

Rennet.
Duncan, Flockhart & Co.
Evans, Gadd & Co.
Fullwood & Bland
Giles, Schacht & Co.
Lorimer & Co.

Rubber Goods.
Hooper, Struve & Co.
Maw, Son & Thompson

Rubber Stamps.
Hickisson, J.
Richford, C. D.
Silverlock, H.

Salts.
Cerebos Salt Co.
Ingram & Royle
Jeffery & Co.

Sauces and Pickles.
Maw, Son & Thompson

Seeds.
Potter & Clarke

Seidlitz Powders.
Hora & Co.
Rouse Brothers

Seltzogenes.
Evans, Sons & Co.
Glass-lined Syphon Co., Ltd.
Maw, Son & Thompson

Serums.
Allen & Hanburys
Burroughs, Wellcome & Co.
Greeff & Co.
Kuhn, B.
Willows, Francis & Butler
Zimmermann, A. & M.

Shaving Materials.
Barclay & Sons
Blondeau et Cie
Lloyd, A. S.
Maw, Son & Thompson

Sheep Dips.
Essets Fluid Ce.
Sanitas Co., Ltd.

Shop Fitters.
Ayrton & Saunders
Baughan & Co.
Evans, Son & Co.
Maw, Son & Thompson
Treble, G., & Son

Soaps.
Allen & Hanburys, Ltd.
Ayrton & Saunders
Blondeau et Cie
Brecknell, Turner & Sons, Ltd.
Duncan, Flockhart & Co.
Evans, Sons & Co.
Ewen & Sons
Harvey, S.
Jameson, W.
Lorimer & Co.
Newbery, F., & Sons
Peacock's Ovaline Soap Co.
Pears, A. & F.
Reichenhall Syndicate
Sanitas Co., Ltd.
Wright, Layman & Umney

Soloids.
Burroughs, Wellcome & Co.

Spectacles.
Raphael, J., & Co.
Ross, Limited

Spirits of Wine.
Boord & Son
Burroughs, Jas.

Sponges.
Ayrton & Saunders
Evans, Lescher & Webb
Evans, Sons & Co.
Maw, Son & Thompson

Suppositories.
Wand, S.

Surgical Appliances.
Allen & Hanburys, Ltd.
Allsop, A.
Barclay & Sons, Ltd.
Bed Support Co.
Evans, Sons & Co.
Ickringill's Hygienic Cloth Syndicate, Ltd.
Lindsey & Sons
Lloyd, T. H., & Co.
Macfarlan, J. F., & Co.
Maw, Son & Thompson
Newsholme, G. T. W.
Reynolds & Branson
Robinson & Sons
St. Dalmas & Co.
Sanitas Co., Ltd.
Southall Brothers & Barclay
Spongio Piline
Wood, V.
Woodruff, T.
Woolley, Sons & Co., Ltd.

Syphons.
Chemists' Aerated and Mineral Waters Association, Ltd.
Glass-lined Syphon Co., Ltd.
Idris & Co , Ltd.
Jewsbury & Brown

Syrups.
Bush, W. J., & Co.
Chemists' Aerated and Mineral Waters Association, Ltd.
Idris & Co., Ltd.

Tablets (Compressed).
Allen & Hanburys, Ltd.
Burroughs, Wellcome & Co.
Leo & Co.
Lloyd, T. H., & Co.
Wand, S.
Wright, Layman & Umney

Tabloids.
Burroughs, Wellcome & Co.

Tabellæ.
Allen & Hanburys, Ltd.

Tea.
Burroughs, Wellcome & Co. (Tabloids)

Thermometers.
Ayrton & Saunders
Barclay & Sons, Ltd.
Maw, Son & Thompson
Raphael, J., & Co.
Reynolds & Branson
Ross, Limited

Tinctures.
Baiss Brothers & Co.
Corbyn, Stacey & Co.
Duncan, Flockhart & Co.
Harker, Stagg & Morgan
Hearon, Squire & Francis
Hewlett, C. J., & Son
Lloyd, T. H., & Co.
Parke, Davis & Co.
Southall Brothers & Barclay
Wright, Layman & Umney
Wyleys, Ltd.

Toilet Requisites.
Blondeau et Cie
Labern, H., & Son
Lloyd, A. S.
Robare, J.
Marshalls', Ltd.
Rowland, A., & Sons
Squire & Sons

Tooth Pastes.
Beecham, T.
Blondeau et Cie
Maw, Son & Thompson

Trusses.
Lindsey & Sons
Maw, Son & Thompson
Wood, V.
Woolley, Sons & Co., Ltd.

Vaccination Lymph.
Association for Supply Pure Vaccine Lymph
Tetu, J.

Vaccination Shields.
Cowan, W.

Valuers and Transfer Agents.
Judd & Manners
Orridge & Co.
Tomlinson, Thos., & Son

Varnishes.
Reade Brothers & Co.

Vermin Destroyers.
Sanford & Son

Veterinary Medicines.
Elliman, Sons & Co.
James, R. J.
Lloyd, T. H., & Co.
Rackham & Co.
Sanitas Co., Ltd.
Wand, S.

Vinolia Preparations.
Blondeau et Cie

Waters, Concentrated.
Robinson, B.

Weed Killer.
Aeme Chemical Co.
Ayrton & Saunders

Wholesale Druggists.
Allen and Hanburys, Ltd.
Baiss Brothers
Corbyn, Stacey & Co.
Duncan, Flockhart & Co.
Evans, Gadd & Co.
Evans, Lescher & Webb
Evans, Sons & Co.
Harker, Stagg & Morgan
Hearon, Squire & Francis
Hewlett & Son
Ismay & Sons
Kemp, Wm., & Son
Lloyd, T. H., & Co.
Lorimer & Co.
Macfarlan, J. F., & Co.
Potter & Clarke
Raimes & Co.
Raimes, Clark & Co.
Southall Brothers & Barclay
Symes & Co., Ltd.
Willows, Francis & Butler
Woolley, Sons & Co., Ltd.
Wright, Layman & Umney
Wyleys, Ltd.

Wines and Spirits.
Boord & Son
Burrough, J.
Comaltana Wine Co.
Hearon, Squire & Francis
Hooper Struve & Co.
Potter & Clarke
Robinson, B.
Smith, S., & Co. (Coca)
Wyleys, Ltd.